

WATER SYSTEM PLAN

FEBRUARY 2018 – FINAL



CITY OF LEAVENWORTH WATER SYSTEM PLAN

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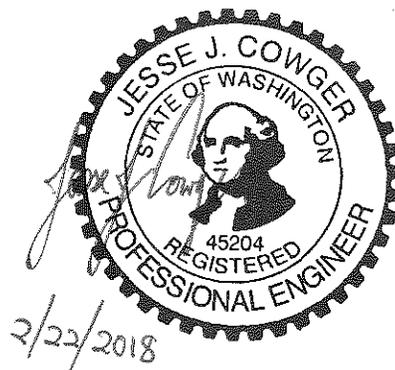
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FEBRUARY 2018 – FINAL



CITY OF LEAVENWORTH
WATER SYSTEM PLAN

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ABBREVIATIONS

(Not all of the abbreviations below appear in this report)

AC	asbestos cement water main material	max.	maximum
ADD	average day demand	MCL	maximum contaminant level
ac-ft/yr	acre-feet per year (a measure of water volume withdrawn from a well)	MDD	max day demand
add'l.	additional	MG	million gallons
ave.	average	mgd	million gallons per day
CCS	cross connection control specialist	mg/L	milligrams/liter
CDBG	Community Development Block Grant	MHI	median household income
cfs	cubic feet per second	mi.	mile
CIP	capital improvements plan	min.	minimum
CY	cubic yards	NRCS	Natural Resources Conservation Service (formerly SCS)
DI	ductile iron water main material	NEPA	National Environmental Protection Act
dia.	diameter	NPDES	National Pollutant Discharge Elimination System
DOE	Wash. State Department of Ecology	O&M	operation and maintenance
DFW	Wash. State Department of Fish and Wildlife	PHD	peak hour demand
DOH	Wash. State Department of Health	prv	pressure reducing valve
DWSRF	Drinking Water State Revolving Fund	PVC	polyvinyl chloride (plastic) water main material
elev.	elevation	PWTF	Public Works Trust Fund
Ecology	Wash. State Department of Ecology	RCW	Revised Code of Washington
ERU	equivalent residential user (a measure of water demand in terms of an equivalent number of single family dwellings)	RD	Rural Development (formerly FmHA)
FF	fire flow	ROW	right of way
FmHA	Farmer's Home Administration, now known as Rural Development	SCADA	supervisory control and data acquisition (i.e., computerized control system)
gal	gallons	SEPA	State Environmental Protection Act
gpcd	gallons per capita per day	suppl.	supplemental
gpd	gallons per day	UGA	urban growth area
gpm	gallons per minute	ULID	utility local improvement district
GMA	Growth Management Act	VOC	volatile organic chemicals
GO	general obligation (a type of bond secured by property taxes)	WAC	Washington Administrative Code
HP	horsepower	WSDM	Water System Design Manual (published by DOH)
IOC	inorganic chemicals	WSP	water system plan
LF or L.F.	lineal feet	WTP	water treatment plant
LID	local improvement district		

EXECUTIVE SUMMARY

Section 1 – Description of Water System

- The City of Leavenworth’s water system consists of two pressure zones, one booster station, three wells adjacent to the Wenatchee River, one surface water treatment plant drawing from Icicle Creek, and two reservoirs.
- This Water System Plan is consistent with the City’s Comprehensive Plan and Chelan County’s Comprehensive Plan.

Section 2 – Planning Data

- The City serves approximately 1,404 residential and commercial connections, approximately 72% of which lie within City Limits. The City estimates its water system serves approximately 2,559 people. Customer types include a combination of residential and commercial connections.
- Over the past three years the City has produced an average of 320 million gallons annually. The City recorded its highest annual water production in 1987 (also refer to **Section 4.3** for water rights discussion).
- Average daily water use by an equivalent residential unit (ERU) has decreased since the City’s previous Water System Plan. The City attributes this change to higher water rates and voluntary conservation by customers. An ERU currently uses approximately 269 gpd.
- The City projects water use to increase 2.2% annually; this equates to an increase of approximately 24% over the next 10 years and 55% over the next 20 years. The City expects this growth to occur in the main zone and the existing Ski Hill zone during the 10-year planning horizon. Growth in the 20-year horizon will likely require additional Ski Hill pressure zones.
- The City has contemplated future urban growth area (UGA) boundary amendments, where they might occur, and the density at which the land included in the boundary might be built. The City has chosen to include an area north of the existing UGA as a potential area for future UGA inclusion. The City based its buildable land capacity analysis and ultimate planning improvements on this concept. This Water System Plan carries forward the planning numbers developed as part of this analysis and infrastructure proposed herein has been sized to meet the projected ultimate demands.

Section 3 – Design Standards

- In general, the City structures its standards based on regulatory requirements, engineering judgment, industry practice, staff expertise, customer input, and aesthetic considerations.
- Some of the City’s standards exceed regulatory requirements (e.g. the City endeavors to provide 40 psi minimum pressure during peak hour demand (PHD), DOH requires 30 psi minimum pressure during PHD).

Section 4 – System Analysis

- The City’s wells and water treatment plant (WTP) have adequate capacity to meet existing and projected 20-year system demands with the largest producing supply facility (Well #1 or the WTP) offline. Supply facility redundancy will decrease as City demand increases with growth.
- The WTP Operator has identified a number of non-critical shortcomings of the WTP that affect its ease of operation.
- Chlorination facilities at the City’s wells and WTP provide continuous disinfection of the City’s water supplies.
- The wells and WTP have excellent water quality and comply with all existing sampling and testing regulatory requirements.
- The City has annual water rights in the amount of 2,275.95 ac-ft and instantaneous water rights in the amount of 5.25 cfs uninterruptible and an additional 7.64 cfs interruptible. The City is in the process of acquiring additional water rights that are currently pending.
- The City has adequate storage to meet existing and projected needs. However, when the City establishes additional pressure zones on Ski Hill, an additional reservoir will likely be built.
- The hydraulic analysis indicates that some high elevation areas of the system do not meet the City’s pressure goal during peak hour demand (PHD). Other isolated areas do not meet fire flow criteria under max day demand (MDD).

Section 5 – Improvements

- The City has adequate supply capacity to meet projected 20-year demands. The City plans several minor improvements to the WTP to improve operability/functionality including: onsite maintenance water storage, expanded lab/office, and fencing around the perimeter of the WTP site. The City also plans to have an in-depth evaluation and analysis of the WTP performed to determine the City’s ultimate plan for the WTP. Additional improvements to the WTP may be planned based on the results of the WTP evaluation and analysis.
- The City is currently in the process of acquiring additional water rights that are currently pending. At some point beyond the 20-year planning period the City may need to acquire additional instantaneous ground water rights if the City does not wish to rely on interruptible rights.
- The Ski Hill area requires two additional booster zones to serve the area within the UGA. Zone 3 will be an open system with a gravity reservoir and Zone 4 will be a closed system.
- Relatively small isolated areas within the existing system do not meet the City’s PHD pressure and MDD fire flow criteria. The City plans to address existing distribution system deficiencies through implementation of distribution system ultimate planning improvements.
- The water system requires approximately \$2.5M in improvements to meet existing deficiencies, \$7M in improvements as facilities deteriorate or no longer meet regulatory requirements, and \$3M in improvements to serve future growth. Improvements total approximately \$12M-13M to meet ultimate system needs.

Section 6 – Implementation

- The minor improvements planned for the WTP have potential to affect the City’s ability to use the WTP as a source. It appears the City can time the modifications to coincide with low demand periods and supply the system exclusively from the wells during this period.
- Upgrading the pumps in the Zone 2 booster station will temporarily interrupt the City’s ability to supply Zone 2. The City plans to time these improvements such that they occur during low demand periods when the Zone 2 standby storage can supply Zone 2 for the duration of the upgrade.
- Establishing additional pressure zones to serve the higher elevation areas on Ski Hill (Zone 3 and Zone 4) will require acquisition of property and construction of a distribution system.
- Zone 1 transmission and distribution system improvements will likely cause brief water service interruptions for existing customers and may cause traffic detours common to construction in roadways.
- Many of the planned improvements will require a DOH Project Report.
- The City will fund improvements with a combination of local reserves and a combination of the following depending on the situation: developer financing, revenue bonds, LID bonds, RD loans/grants, PWTF, and DWSRF.

Section 7 – Finances

- The City has solvent finances; revenues cover operating expenses and the City plans to raise water rates in order to allocate money each year to reserves which will in turn fund capital improvements as needed.
- The base residential monthly water rate varies based on meter size between \$60-\$75 inside City Limits and \$74-\$93 outside City Limits, which includes the first 7,500 gallons of water. Commercial base water rates also vary based on meter size and include the first 7,500 gallons of water.
- The City reads residential water meters monthly April through October and reads commercial meters monthly year round.
- Total system revenue varies little from year to year.
- If the City implements \$2.5M in improvements to address existing system deficiencies the impact to residential customers’ water rates would likely be an additional \$5-10 per month depending on the funding package.

Capital Improvements Plan

- The Capital Improvements Plan from **Section 6** has been reproduced in this Executive Summary for reader convenience.

City of Leavenworth Capital Improvement Plan

Category	Component	Project	2017-2026	2027-2036
Supply	WTP	Conduct in-depth evaluation and analysis of WTP ⁽¹⁾	\$30,000-60,000	
		Onsite water storage and pump system for maintenance	80,000	
		Expand lab/office	75,000	
		Onsite chemical storage shed	25,000	
		Fence perimeter of WTP	25,000	
		Other reported WTP issues	610,000	
Booster Zones	Zone 2	Upgrade booster pump capacity in Zone 2 booster station		\$40,000
	Zone 3	New booster station, reservoir, and transmission main to serve Zone 3		1,200,000
	Zone 4	New closed system booster station to serve Zone 4		510,000
	Supply Transmission	3,400 LF of 18" main on Icicle Rd from wells t-main to Icicle Reservoir	700,000	
		2,000 LF of 20" main from Icicle Reservoir to Commercial St & Mill St	520,000	
	Downtown Transmission	5,800 LF of 16" main on Icicle Rd from E. Leavenworth Rd to well field transmission main.	1,090,000	
		1,400 LF of 18" main on Commercial St from Mill St to 3rd St	330,000	
		1,300 LF of 12" main on Commercial St from Division St to 14th St	140,000	
	Deteriorating Mains	800 LF of 12" main on Front St from 8th St to between 9 th and 10 th St	220,000	
		12,000 LF of 16" main on East Leavenworth Rd ⁽²⁾		2,200,000
	PRV	12,400 LF of 18" main from WTP to East Leavenworth Rd		2,500,000
		PRV between Zone 2 (Titus Rd) and Zone 1 (Chumstick Hwy)	50,000	
Service Meters	Replace all service meters citywide	450,000 ⁽³⁾		
Control System	PLC	PLC upgrades at WTP, reservoirs and booster station	260,000	
Total			\$4,635,000	\$6,450,000

(1) The City plans to move forward with the in-depth evaluation and analysis of WTP prior to implementing other WTP improvements identified in this WSP.

(2) The City's ultimate planning analysis calls for 12" or 16" main depending on location of future storage; this CIP assumes the City will install the 16" main.

(3) Total cost of meter replacement is estimated at \$900,000. The City anticipates half (\$450,000) of that cost will be funded by the WaterSMART funding program and half the City plans to fund through reserves. Only the City's portion is shown.

INTRODUCTION

Purpose and Scope

The primary purpose of this Water System Plan is to provide present and future system officials with an engineering analysis of the existing water system, assist them in setting system priorities, and select the improvements that best meet the system's needs. This Plan identifies needed improvements, prioritizes their implementation, and sets forth a long range plan for water system improvements based on the projected growth of the system

The City of Leavenworth initiated this Water System Plan (WSP) in compliance with Washington State Department of Health (DOH) requirements. This WSP has been prepared in accordance with WAC 246-290 and the DOH Water System Design Manual.

City staff provided extensive assistance in the development of this Water System Plan. Joel Walinski, Herb Amick, Arnica Briody, Tracy Valentine, Nathan Pate, and Chantell Steiner deserve special recognition for their contributions.

1.0 DESCRIPTION OF WATER SYSTEM

1.1 Ownership and Management

The water system is owned and operated by the City of Leavenworth.

DOH ID Number:	46500
Address:	City of Leavenworth 700 Hwy 2 PO Box 287 Leavenworth, WA 98826
Phone:	(509) 548-5275
City Administrator	Joel Walinski
Public Works Director:	Herb Amick
Water Treatment Plant Operator:	Arnica Briody (WTPO-2), CCS
Water Distribution Operator:	Tracy Valentine (WDM-2)

1.2 System Background

1.2.1 *History of Water System Development*

Leavenworth developed rapidly as a railroad and lumber town in the early 1900's, reaching a peak population of about 5,500 by the 1920's. After closure of the lumber mill and rerouting of the railroad in the 1920's, the population declined, and Leavenworth settled into its role as a small town based on fruit, forest products and local trade with a population under 1,000.

The revitalization of Leavenworth began with a study in 1962, which resulted in the creation of a Bavarian theme for Leavenworth, including remodeling of the buildings located in the downtown commercial district, public facility improvements, and the initiation of seasonal festivals. The efforts resulted in the emergence of tourism as a principle source of economic activity and growth in the City.

1.2.2 *Geography/Location*

The City of Leavenworth is located along State Highway 2 in the Wenatchee River valley near the confluence with Icicle Creek. High mountains rise above the valley floor on all sides of the City. Substantial variations in elevation necessitate the use of multiple pressure zones to provide water service.

1.2.3 Tourism

Tourism is a substantial component of the local economy in Leavenworth. Sources estimate that up to 2,000,000 people visit Leavenworth annually and that some festival weekends attract as many as 60,000 tourists. As a result, water use by businesses can vary substantially with tourism peaks. These large variations in water use necessitate vigilant observation of water demand conditions by water treatment plant operators.

1.2.4 Neighboring Purveyors

The nearest public potable water system is located in Peshastin, approximately 4 miles away. In addition, the Upper Ski Hill Water Association (USHWA) and the River Bend Park Water System (RBPWS), both of which are private potable water systems, are located within the City's urban growth area (UGA); refer to **Figure 2** for location of USHWA and RBPWS.

1.2.5 Ordinances

Refer to **Appendix D** for the City's water/sewer ordinances.

1.3 Inventory of Existing Facilities

The City has water customers both inside and outside the City Limits. The water system utilizes two pressure zones designated Zone 1 and Zone 2. The surface water treatment plant (WTP) and wells supply Zone 1 and the Icicle reservoir provides storage for Zone 1. In general, the WTP provides primary water supply and the wells provide secondary supply when system demands exceed capacity of the WTP. The intake for the WTP is on Icicle Creek and the wells are adjacent to the Wenatchee River. The Ski Hill booster station supplies Zone 2 and the Ski Hill reservoir provides storage to Zone 2; the City constructed the Ski Hill booster station and reservoir in 2004-2005.

The following sections provide a detailed description of select system components.

1.3.1 Surface Water Supply – Icicle Creek Water Treatment Plant

The City's primary water supply is the Icicle Creek water intake and filter plant, located about 4½ miles southwest of the City. The filter plant was constructed in 1969 and is an Infilco direct filtration dual media plant, with a pretreatment reaction tank, four sand-anthracite filter beds totaling 476 SF filter area, 133,000 gallon chlorine contact basin, and two vertical turbine finished water pumps. The plant was originally designed for a maximum MGD (about 6 gpm/sf including backwash loss at 5%). The intake pipe limits practical plant capacity to approximately 2.3 MGD; the flocculation chamber has a cold water capacity of approximately 2.0 MGD and a warm water capacity of at least 2.3 MGD. The plant finished water clearwell and contact basin hydraulic grade line (HGL) are approximately at elevation 1,367, which is roughly 26 feet higher than the Icicle reservoir overflow elevation (1,341); this allows gravity supply from the filter plant at about 2.0 MGD (1,390 gpm). Prior to the installation of the chlorine contact basin, the WTP utilized finished water pumps when necessitated by demand. The pumps are 20 HP and 125 HP, and are manually controlled. The larger pump has a maximum rated capacity of approximately 4 MGD

(2,800 gpm) and the smaller pump (which is also used for pumping backwash supply) has a capacity of approximately 1.9 MGD (1,350 gpm). However, after installing the chlorine contact basin between the pumps and the transmission main, the WTP lost the ability to pump directly to the transmission main using the finished water pumps (i.e. the pumps can no longer be used for their original purpose of increasing the flow rate out of the WTP).

Icicle Creek water quality varies widely depending upon the season. Water turbidity increases during spring snowmelt and periodically during heavy rainfalls in the summer. In general, turbidity remains low during autumn, winter and most of summer. The water is usually very cold, and has low alkalinity. In the past, these raw water characteristics have made the Icicle Creek supply difficult to treat; however, modern water chemistry has made these variations in raw water quality largely innocuous to the WTP’s ability to meet treatment requirements.

1.3.2 Ground Water Supply – Wenatchee River Well Field

In 1989 the City constructed two wells in the vicinity of the City’s old collector well. In 2014 the City constructed Well #3 in the same area. These three wells comprise the City’s Wenatchee River Well Field. The table following summarizes details on the City’s wells:

Table 1-1 Description of Wells

Description ⁽¹⁾	Well #1	Well #2	Well #3
Total Well Depth	106 ft.	94 ft.	115 ft.
Casing Diameter	12"	16"	12"
Screen Diameter	12"	16"	12"
Pump Type	Lineshaft	Submersible	Submersible
Pump Motor Horsepower	125 HP	75 HP	150 HP
Pump Speed (nominal)	1800 RPM	3600 RPM	3600 RPM
Pump Capacity (approximate)	1,200 gpm	750 gpm	1,300 gpm

⁽¹⁾ Note that the original well logs for Well #1 and Well #2 incorrectly state the legal description. The well log for Well #3 states the correct legal description. The correct legal description for all three wells is SW¼ SE¼ NE¼ of Section 14, T 24N, R17E.

The water surface level in the Icicle reservoir controls operation of the well pumps. The operator can manipulate lead/lag well pump and on/off levels via the SCADA system. The City has equipped Well #1 with a soft start and Well #2 has variable speed capability. The City conditions power coming into the pump station to ensure compatibility with the soft start and VFD.

The well pump station includes a chlorination room; the chlorine gas injection system provides continuous chlorination when the well pumps operate. A variable speed chlorine gas injection pump matches dosing with flow rate from either or both wells. A 24” ductile iron transmission main connects the wells to the distribution system; this large diameter transmission main provides approximately 10 minutes of chlorine contact time when Wells 1 and 2 operate from point of injection to the first customer service. Were all three well pumps to run concurrently, contact time would reduce to 7 minutes.

1.3.3 Booster Stations

The City currently has only one booster station; the Ski Hill booster station pumps from Zone 1 to Zone 2. The booster station fills the Ski Hill reservoir. At present two identical 10 HP pumps

provide approximately 200 gpm each to Zone 2. The table following summarizes booster station details:

Table 1-2 Description of Booster Station

Description	Ski Hill Booster
Building/Enclosure Type	CMU Block Building
Suction Zone	Zone 1
Discharge Zone	Zone 2
Number of Pumps	Two (identical)
Pump Type	Close Coupled End Suction
Pump Motor Horsepower	10 HP (each)
Pump Speed (nominal)	3,600 RPM
Pump Capacity (approximate)	200 gpm (each)

The booster station piping has provision for installation of a third pump as eventual growth in Zone 2 causes demand to increase. However, present demand in Zone 2 does not sufficiently cycle the Ski Hill reservoir during the winter months and can cause ice to accumulate and water quality to deteriorate. The City installed a diaphragm valve between the suction and discharge piping where the third pump can eventually sit; this valve bleeds back approximately 100 gpm to Zone 1 in order to cycle the Ski Hill reservoir. As Zone 2 demands increase with growth the City will eventually cease bleeding back water to Zone 1.

1.3.4 Reservoirs

The City has two reservoirs: the Icicle reservoir serves Zone 1 and the Ski Hill Reservoir serves Zone 2. The Table following summarizes details for each reservoir.

Table 1-3 Description of Reservoirs

Description	Zone 1 (Icicle) Reservoir	Zone 2 (Ski Hill) Reservoir
Zone Served	Zone 1	Zone 2 and Zone 1 via PRVs
Year Built/Rehabilitated	1938, 1954, 1970, 1990, 2008	2004
Construction Type	Cast in Place Concrete	Welded Steel
Shape	Rectangular	Round
Approximate Footprint	50 ft x 120 ft	74 ft diameter
Depth to Overflow	18.5 ft	23.25 ft
Approximate Overflow Elevation	1,341	1,423.75
Approximate Base Elevation	1,322.5	1,400.5
Approximate Volume	800,000 gal	700,000 gal

The Icicle reservoir was originally constructed in 1938, and is located on a rocky hillside at the west end of the City near the intersection of Hwy 2 and Icicle Rd. In 2008 the City demolished the Icicle reservoir and rebuilt the existing structure on the same site. A 14” ductile iron main installed in 1990 connects the Icicle reservoir to the 12” transmission/distribution main on Icicle Road.

The City put the Ski Hill reservoir into service in 2005 at the same time it put the Ski Hill booster station into service. These improvements established Zone 2 and allowed the City to serve higher elevation portions of the Ski Hill area unserviceable by the main zone. The transmission main between the Ski Hill booster and the Ski Hill reservoir consists of approximately 2,400 LF of 12” main and 1,900 LF of 16” main.

1.3.5 Transmission and Distribution System

A 16” steel transmission main conveys treated water northeast from the WTP until it branches into a 12” steel main on Icicle Rd and a 10” steel main on E Leavenworth Rd. These two mains convey water from the WTP to the City; the mains run from near the south end of the Icicle valley to the south limits of the distribution system. The transmission mains from the WTP on Icicle Rd and E Leavenworth Rd also serve as distribution mains with a combined total of approximately 300 service connections. Total length of 16” main from the WTP to the intersection of E Leavenworth Rd and Icicle Rd is approximately 12,300’. From that point approximately 11,200’ of 12” main runs to the City along Icicle Road and about 12,500’ of 10” main runs along E Leavenworth Road. Approximately 3,700’ of 10” main along E Leavenworth Road was recently (2013) replaced with 16” extending to City’s Urban Growth Area. Supply from the well field flows into the Icicle Road main through a 24” transmission main approximately 1000’ in length. The 24” well field transmission main connects to the 12” main on Icicle Rd approximately one mile south of the City near the Wenatchee River Bridge. Records indicate the City installed the 10” main on E Leavenworth Rd. in the 1930’s, and the 16” and 12” mains on Icicle Rd between 1955 and 1967.

The water distribution system within the City consists primarily of mains ranging in diameter from 4” to 12”. Pipe materials include steel, cast iron, ductile iron, and PVC. Steel mains generally are dipped and wrapped with o-ring type joints while the cast and ductile iron mains have push-on rubber gasket type joints. The Icicle Valley south of the City has minimal water distribution facilities; pipes in this area consist mostly of privately owned small diameter service lines connected to the transmission/distribution mains on Icicle Rd and E Leavenworth Rd. This Plan does not contain detailed records of pipe sizes and locations for the services along Icicle Road and East Leavenworth Road.

The table following summarizes total lengths and diameters of distribution/transmission mains:

Table 1-4 Size and Lengths of Transmission/Distribution Mains

Main Diameter	Length
4”	8,500
6”	19,900
8”	30,100
10”	14,900
12”	29,100
14-24”	20,800
Total	123,300

1.3.6 Number of Service Connections

The City’s current DOH Water Facilities Inventory (WFI) form indicates the City has a DOH calculated total of 2,342 active service connections and that the system has approval for up to 3,131 connections (refer to **Appendix B** for copy of WFI). The actual current number of connections may not match exactly the number of connections stated on the WFI. The City updates the WFI annually to ensure the information contained therein remains current.

Most of the residential and small commercial services within the City are ¾” iron pipe, with a corp stop and copper meter setter which is connected to iron service pipe. The City meters all service connections.

1.3.7 Interties with Neighboring Water Systems

Leavenworth has no interties with other water systems.

1.4 Overview of System Operation

From a supply standpoint, the WTP Operator generally uses the WTP as the primary source of supply in the Main Zone and uses the wells to supplement supply as demands fluctuate throughout the day. Seasonally the Operator adjusts the various sources of supply to match demand conditions. The Ski Hill booster station pumps from the Main Zone to supply the Ski Hill Booster Zone and fill the Ski Hill reservoir.

1.5 Related Planning Documents

Planning activities of other institutions or government entities can affect planning for water utilities. The City of Leavenworth seeks to reduce potential conflicts and overlaps in planning through coordination with local entities that may impact the City’s water system. The sections following outline the City’s efforts to coordinate the planning efforts of this Water System Plan with entities that have interest.

1.5.1 City of Leavenworth Comprehensive Plan

The City’s Comprehensive Plan lays out a vision for the future of Leavenworth during a 20-year period and fulfills the requirements of the Growth Management Act. This Water System Plan is consistent with the City’s Comprehensive Plan. Refer to **Appendix A** for a copy of the City’s planning consistency checklist.

1.5.2 Chelan County Comprehensive Plan

The City believes this Water System Plan is consistent with Chelan County’s Comprehensive Plan. It is important to note that the population projections used within this Plan are for the purposes of this Plan only and do not reflect those population projections which were agreed upon by Chelan County and its incorporated cities via interlocal agreement to aid in distribution of OFM population projections pursuant to the requirements of the Growth Management Act. Refer to **Appendix A** for a copy of the City’s planning consistency checklist.

1.5.3 Water Resource Inventory Area (WRIA) 45 Watershed Plan

The City believes this Water System Plan is consistent with Water Resource Inventory Area (WRIA) 45’s Watershed Plan.

1.6 Existing Service Area Characteristics

1.6.1 Existing Service Area

Figure 2 contains a schematic map of the City’s existing water system facilities. This Figure shows locations of the water treatment plant, wells, reservoirs, booster station, water mains, and pertinent elevation data.

1.6.2 Zoning and Land Use

Figures 1A and **1B** contain current zoning and land use.

1.7 Retail Service Area and Water Rights Place of Use

Figure 1C shows the City’s Retail Service Area (RSA) boundary; the City intends the RSA to be identical to the UGA boundary defined in the City’s Comprehensive Plan. However, there are a number of services outside the UGA the City currently provides service to. These existing services are a patchwork of individual parcels (**Figure 1C** shows them as “blue parcels” when outside of the UGA), and these separate parcels are also included in the City’s RSA. **Figure 1C** also shows the City’s Service Area Expanded Water Rights Place of Use Boundary in accordance with the 2003 Municipal Water Law.

The City has special policies concerning water service in the area outside of the City Limits and UGA/RSA but within the water service area boundary. The City originally provided service in this area prior to the GMA. This area is outside the City Limits and UGA/RSA but the City provides water service in this area under limited circumstances.

The City’s Comprehensive Plan states the following on this topic:

Capital Facilities Element, General Goal 1, Policy 9:

Consumption of the City’s water rights should be limited to the urban growth area and the incorporated City limits.

Rationale: Allowance of additional hook-ups outside of the City and urban growth area encourages residential densities beyond those of a rural nature. This policy allows the City to continue to be a limited purveyor of water while not promoting additional urban sprawl.

Capital Facilities Element, General Goal 1, Action Items:

Additional connections to the City of Leavenworth water system shall not be allowed outside of the urban growth area or the incorporated City limits except for:

- *A water hook-up outside the urban growth area may be allowed when a person has provided documentation that the lot was legally created prior to March 12, 1996 and at least two attempts to drill wells in different locations on parcels 5 acres or greater and one attempt on parcels less than five acres down to bedrock yielded no potable water.*
- *Water hook-up may be allowed for a recorded plat or short plat in situations where the City indicated that water would be available and the County approved the lot sizes and final plat based on the City’s commitment to provide water.*
- *Water hook-up may be allowed if the lot was legally created prior to March 12, 1996, PROVIDED, the applicant upgrades or installs a new 8 inch water main; however, the City Public Works Director may*

authorize connection, but not extension to an existing City-approved substandard main if the substandard main meets the requirements of WAC 246-290-230.

- *The City of Leavenworth may impose a moratorium on the future hook-ups in the Icicle Road-East Leavenworth Road area when the 150 water connections authorized by Resolution 8-1992 have been consumed.*

In addition, City Ordinance No. 1355 outlines the conditions under which the City will allow additional connections in the area outside of the retail service area, but within the water rights place of use service area boundary:

- A water connection may be allowed when a person has provided documentation that the lot was legally created prior to March 12, 1996 and at least two attempts to drill wells in different locations on parcels 5 acres or greater and one attempt on parcels less than five acres down to bedrock yielded no potable water.
- Water connection may be allowed for a recorded plat or short plat in situations where the City indicated that water would be available and the County approved the lot sizes and final plat based on the City's commitment to provide water.
- Water connection may be allowed if the lot was legally created prior to March 12, 1996, PROVIDED, the applicant upgrades or installs a new 8 inch water main; however, the City Public Works Director may authorize connection, but not extension to an existing City-approved substandard main if the substandard main meets the requirements of WAC 246-290-230.
- Multiple structures located on one lot which share one water connection shall not be allowed to split the connection into two or more for purposes of subdividing the lot.

As an alternative to the criteria outlined above, property owners outside the UGA and RSA can petition the City for inclusion in the UGA and RSA.

1.8 Duty to Serve and Conditions of Service

The City has a duty to provide service to all new connections within the RSA (refer to **Figure 1C** for RSA) when the circumstances meet four threshold factors (refer to RCW 43.20.260):

1. The City has sufficient capacity to serve water in a safe and reliable manner.
2. The service request is consistent with adopted local plans and development regulations.
3. The City has sufficient water rights to provide service.
4. The City can provide service in a timely and reasonable manner.

Refer to **Section 1.7** for conditions of service pertaining to those areas outside of the existing retail service area but inside of the water service area boundary.

The City's process for addressing a request for service determines whether the request meets the four threshold factors defined in RCW 43.20.260.

Refer to the City of Leavenworth Municipal Code (LMC) for additional details regarding water service and other water supply standards. Excerpts from the LMC pertaining to the water system and development can be found in **Appendix D**.

Process for Requesting Service

Potential customers obtain a water service application provided by the City and submit the completed application to the Leavenworth City Hall. The City processes and responds to all applications in a timely manner.

System Capacity Determination

The City consults the Water System Plan, Comprehensive Plan, and applicable regulations to see if obvious issues exist that would prevent service of an additional customer. The City consults the City's Engineer if it appears the system may not have capacity to serve the proposed connection. The City's Engineer then conducts an analysis to ascertain whether sufficient system capacity exists (supply, storage, distribution system, water rights, etc.) to serve the requesting customer and determines what additional improvements are required (if any) to provide service. Specific financing requirements depend on a variety of factors; in general, the customer requesting service is responsible for financing the system improvements necessary to provide service.

Non-Technical Conditions Affecting Provision of Service

Those requesting annexation must comply with relevant City ordinances and development codes. The City can only provide service if adequate water rights are available to serve the requestor (see System Capacity Determination above).

Denial of Service and Appeals

For details on denial of service refer to LMC 14.14.100 Water Supply Standards contained in **Appendix D**. If service is denied by the City during the application review process then appeals can be made under LMC 14.14.200.

All development is subject to the development application and review process per LMC 21.07 and 21.09. If a development is denied by the City during the development review process, then appeals may be made per LMC 21.11. Appeals go to the Hearing Examiner then may be further appealed to superior court.

1.9 Service Area Agreements

In the interest of efficient planning, adjacent water systems can establish service area agreements to prevent overlap of future service areas. This helps prevent duplication and/or costly over sizing of system facilities. The Upper Ski Hill Water Association and the River Bend Park Water System are non-expanding water systems inside the City's UGA. At present the City does not have a service area agreement with the Upper Ski Hill Water Association or River Bend Park Water System nor has one been proposed by the City or either of the two entities.

1.10 Service Policies and Regulations

Title 13 of the City’s Municipal Code governs the City’s water and sewer systems. The following Table summarizes topics relating to the water system from Title 13.

Table 1-5 Service Policies and Regulations

Section	Title
13.04.010	Purpose
13.04.020	Scope
13.04.040	Definitions
13.04.040	Mandatory domestic service and private irrigation wells
13.04.050	Application, contract and installation of new service
13.04.060	Owner of rental properties responsibilities
13.04.070	Meter reading, billing and adjustments
13.04.080	Payment of bills
13.04.090	Provisions for shutoff of water
13.04.100	Service charges
13.04.110	Monthly water rates and tap fees
13.04.120	Mailing and receiving city communications
13.04.130	Change of occupancy
13.04.140	Transfer of previous unpaid accounts
13.04.150	Resale
13.04.160	Point of service, delivery, care and ownership of facilities
13.04.170	Repair and maintenance of service lines
13.04.180	Customer's responsibility for city property
13.04.190	Right of access
13.04.200	Inspection
13.04.210	Meter tests
13.04.220	Separate meter for each class of service
13.04.230	Home occupations
13.04.240	Water use during fire
13.04.250	Fire protection piping
13.04.260	Fire hydrant--Obstruction prohibited
13.04.270	Fire hydrant--Unauthorized use prohibited
13.04.280	Fire hydrant spacing--Installation required
13.04.290	Right to restrict water use
13.04.300	Water saver devices required
13.04.310	Cross-connection control
13.04.320	Negligent use, condition of customer's facilities
13.04.330	City representation by employees
13.04.340	Violations

The City of Leavenworth Municipal Code contains development policies and requirements for development within and outside the City limits and the UGA. The Table following summarizes the topics relating to development standards.

Table 1-6 Development Standards

Section	Title
Title 14: Chapter 14.14: Street Sidewalk, Water, Wastewater, Stormwater and Miscellaneous Utility Development Standards	
14.14.010	Purpose
14.14.020	Scope
14.14.030	Conformance with other regulations
14.14.040	Concurrency for public facilities and utilities
14.14.050	Definitions
14.14.060	Permits required
14.14.070	Permit applications
14.14.080	Approval proves
14.14.090	General road and utility standards
14.14.100	Water supply standards
14.14.110	Sewage disposal standards
14.14.120	Storm drainage standards
14.14.130	Fire protection standards
14.14.140	General utility standards
14.14.150	Access standards
14.14.160	Curb, gutter, and sidewalk standards
14.14.170	Fees and performance or surety bonds
14.14.175	Cost sharing
14.14.180	Nonconformance
14.14.190	Variances
14.14.200	Appeals
14.14.210	Administrative interpretations
14.14.220	Compliance and enforcement
14.14.230	Severability
Title 21: Development Standards	
21.01	Introduction
21.03	Administration
21.05	Application forms
21.07	Application process
21.09	Application review
21.11	Appeals
21.13	Enforcement and penalties
21.15	Hearing examiner
21.31	Comprehensive plan amendment process
21.90	Common definitions

1.11 Satellite Management

At present the City does not manage or operate any private systems. Leavenworth does not seek to become a satellite management agency (SMA). The City may consider taking over a failing water system located within or adjacent to the service area if ownership, management, financing, and capital improvement issues were worked out in a satisfactory manner in advance.

1.12 Complaints

Water system customers may register complaints at City Hall. The City deals with complaints on a case by case basis. Complaints which cannot be resolved by City staff can be brought to the City Council for further consideration.

2.0 PLANNING DATA

2.1 Current System Data

2.1.1 Types and Numbers of Connections

The Table following contains the City's water connections as of January 2017. Refer to **Section 1.3.6** for additional information regarding water service connections.

Table 2-1 Connections

Class	Description	Connections	Comments
Single Family Residential	Inside City Limits	725	
	Outside City Limits	348	
	Senior Inside City Limits	12	Subsidized
	Senior Outside City Limits	5	Subsidized
Vacation / Inactive	Inside City Limits	26	Part-time residents
	Outside City Limits	20	Part-time residents
Multi-Family Residential	Inside City Limits	48	Apartments, duplexes, condos, etc.
	Outside City Limits	3	Apartments, duplexes, condos, etc.
Commercial	Inside City Limits	197	Businesses
	Outside City Limits	20	Businesses
Total		1,404	

2.1.2 Population

The City's existing water service area shown on **Figure 1C** includes homes and businesses both inside and outside the City limits. The Washington State Office of Financial Management (OFM) estimates the current population within the City Limits at 1,990. Chelan County Resolution 2015-112 provides population allocations for Chelan County and each of the designated Urban Growth Areas (UGA) including the incorporated City of Leavenworth. This document allocates 2,419 persons in the Leavenworth UGA. This includes the estimated 1,900 persons residing in the City Limits. The following table summarizes estimated total water service area population.

Table 2-2 Current Estimated Population

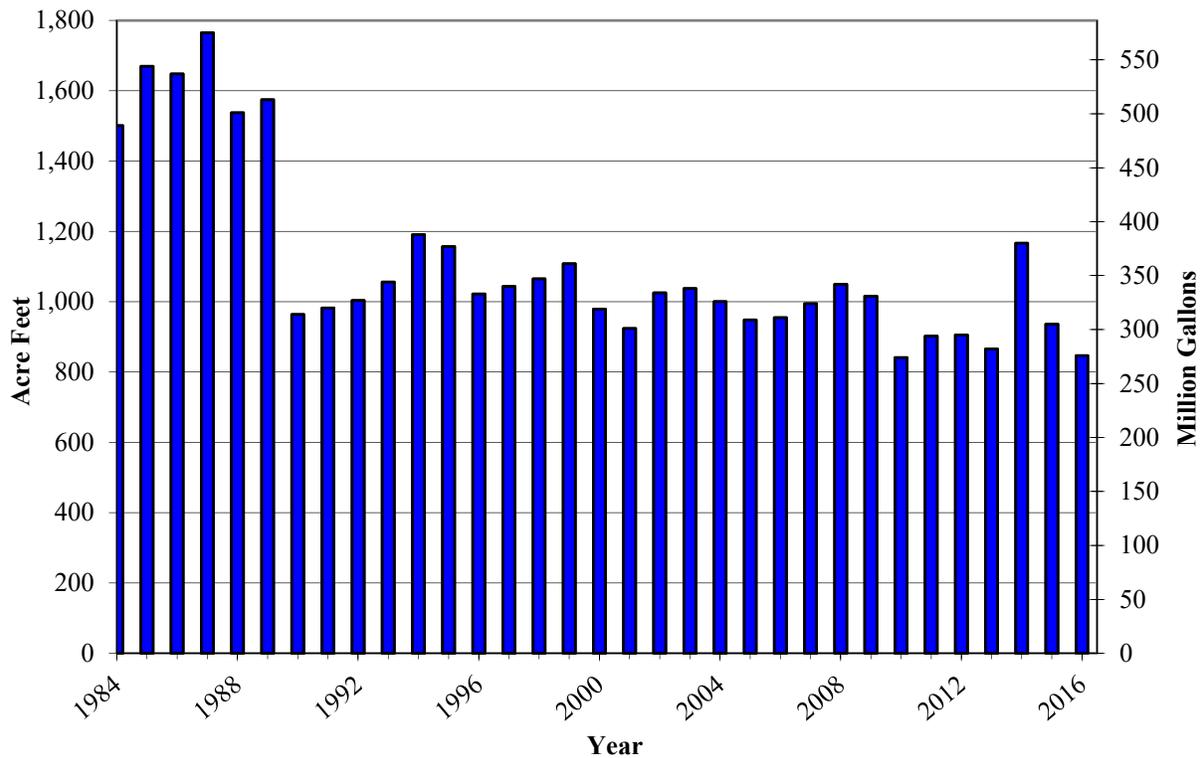
Designated Area	Population
Leavenworth (City Limits)	1,990
Leavenworth UGA (Outside City Limits)	429 ⁽¹⁾
Total Water Service Area Population	2,559

⁽¹⁾ Population figures obtained from City of Leavenworth 2017 Wastewater General Sewer Plan and Facility Plan.

2.1.3 Historical Source Production

The Figure following shows the trends in annual water production over the past three decades. The City perfected its highest quantity of water rights in the mid 1980s; refer to **Table 4-4** located in **Section 4.3**. In the late 1980s annual system demand decreased by approximately 30% when the City began metering all services. The Figure illustrates the dramatic affect metering of services can have on system demand.

Figure A Historical Source Production



2.1.4 Current Source Production and System Demands

The Table following shows system production and demand for 2014-2016. Refer to **Appendix A** for monthly and annual production totals per source and monthly water sold totals.

Table 2-3 Existing Source Production and System Demands

Description	Units	2014	2015	2016	Average
Annual	MG	379.6	305.1	275.9	320.2
	ac-ft	1,165.0	936.4	846.8	982.7
ADD	MGD	1.04	0.84	0.76	0.88
	gpm	722	580	525	609
MDD ⁽¹⁾	MGD	2.42	1.92	1.66	2.00
	gpm	1,678	1,333	1,153	1,388
PHD ⁽²⁾	gpm	2,800	2,250	1,954	2,335

⁽¹⁾ Based on actual MDD recorded by system Operator. The City's average ADD:MDD peaking factor for 2014-2016 is approximately 2.28.

⁽²⁾ PHD values calculated using Equation 5-1 from DOH 2009 Water System Design Manual (N = 3,257 ERUs). Based on reservoir levels, well pump operation, and water treatment plant operation, the system operator has reported that City PHD typically varies between 2,000-2,300 gpm.

2.1.5 Customer Water Use and Seasonal Consumption Patterns

The City meters all connections to the water system. Each customer receives a monthly bill that reflects the customer's consumption during the billing period. The City upgraded its water billing

system in 2007; the first full year recorded in the new billing system was 2008. The Table following contains the City’s 2008 and 2009 water use organized by customer class as reported in the City’s 2009 Water System Plan.

Table 2-4 Historical Water Use by Customer Class (2008-2009)

Customer Class	2008		2009		Average	
	(MG)	(percent)	(MG)	(percent)	(MG)	(percent)
Residential	87	25%	119	36%	103	31%
Commercial	245	72%	200	61%	223	66%
Unaccounted	10	3%	12	4%	11	3%
Total Produced	342	100%	331	100%	337	100%

The Table following contains the City’s current water use organized by customer class.

Table 2-5 Current Water Use by Customer Class

Customer Class	2014		2015		2016		Average	
	(MG)	(percent)	(MG)	(percent)	(MG)	(percent)	(MG)	(percent)
Residential	106.3	28%	109.8	36%	104.8	38%	107.0	33%
Multi-Family	19.0	5%	18.3	6%	19.3	7%	18.9	6%
Commercial	113.9	30%	115.9	38%	110.4	40%	113.4	36%
Unaccounted ⁽¹⁾	140.5	37%	61.0	20%	41.4	15%	81.0	25%
Total Produced	379.6	100%	305.1	100%	275.9	100%	320.2	100%

⁽¹⁾ Also see **Section 8** for a discussion of the City’s unaccounted/non-revenue/distribution system leakage.

The water use data contained in **Tables 2-4** and **2-5** indicates that the City’s water use patterns have changed over the last decade; in particular, the ratio of residential (including multi-family) to commercial water use has increased from a 31/66 split in 2008-2009 to a 40/36 split in 2014-2016.

With the exception of 2014, the City’s total water production has not increased over the last ten years, which shows that the City as a whole has not increased water usage. The City’s unaccounted for portion of water is estimated at an average of 24% between 2014-2016; the City does not currently meet the distribution system leakage (DSL) standard of less than 10% set forth in WAC 246-290-820 (refer also to discussion in **Section 8**). Decreasing unaccounted for water could allow the City to add connections without increasing total system water production.

The rate of consumption within customer classes changes seasonally throughout the year. The City has two main customer classes: residential and commercial. The City reads commercial meters every month and residential meters five months per year (May through September) which provides insight into the summer/winter consumption ratio. The Table following shows the estimated percentage use by each customer class by season.

Table 2-6 Seasonal Consumption Patterns

Season	Residential	Commercial
Summer	75%	65%
Winter	25%	35%
Total	100%	100%

2.1.6 Equivalent Residential Units

The Washington State Department of Health (DOH) defines an equivalent residential unit (ERU) as the amount of water consumed by a typical full-time single family residence. Calculating the amount of water consumed by a typical full time single family residence requires a system to possess accurate water volume sales records for a one year period for single family connections.

The Table following contains the City’s historical ERU daily consumption as reported in the City’s 2001 WSP and 2009 WSP with 2014 to 2016 data added.

Table 2-7 Historical ERU Daily Water Use

Year	Daily ERU Consumption (gpd)
1998	357
1999	423
2000	385
2008	222
2009	304
2013	245
2014	269
2015	276
2016	266
Average	305

The following calculations show the City’s water use ERU for 2014 to 2016:

2014

Volume sold to residential customers: 106.3 MG (see **Table 2-5**)
 Number of residential connections: 1,081 (July 2014)
 Average annual use per residential connection: 106.3 MG / 1,081 residential connections \approx 98,300 gal
 Average daily use per residential connection: 98,300 gal / 365 days \approx 269 gpd/ERU

2015

Volume sold to residential customers: 109.8 MG (see **Table 2-5**)
 Number of residential connections: 1,090 (July 2015)
 Average annual use per residential connection: 109.8 MG / 1,090 residential connections \approx 100,800 gal
 Average daily use per residential connection: 100,800 gal / 365 days \approx 278 gpd/ERU

2016

Volume sold to residential customers: 104.8 MG (see **Table 2-5**)
 Number of residential connections: 1,095 (July 2016)
 Average annual use per residential connection: 104.8 MG / 1,095 residential connections \approx 95,700 gal
 Average daily use per residential connection: 95,700 gal / 365 days \approx 262 gpd/ERU

2014-2016 Average (269 gal + 278 gal + 262 gal) / 3 \approx **269 gpd/ERU**

As shown in **Table 2-7** and the preceding calculations, the City’s water use ERU has fluctuated between 222 gpd and 423 gpd. The recent ERU values suggest that the City has decreased its average use per household since 1998-2000. However, due to the previously discussed change in the City’s billing system in 2007, comparing the 1998-2000 data to the 2008-2009 and 2014-2016 data may be like comparing apples and oranges.

For the purpose of this WSP, the City chooses to use the water use ERU of 269 gpd calculated from the 2014-2016 average. The following calculations estimate the total number of ERUs currently served by Leavenworth:

2014

Residential ERUs	
2014 Ave. residential connections:	1,081 (ERUs)
Multi-Family ERUs	
2014 Ave. multi-family metered volume:	19.0 MG
Average daily commercial metered volume:	19.0 MG / 365 days \approx 52,000 gpd
Number of Commercial ERUs:	52,000 gpd / 269 gpd/ERU \approx 193 ERUs
Commercial ERUs	
2014 Ave. commercial metered volume:	113.9 MG
Average daily commercial metered volume:	113.9 MG / 365 days \approx 312,000 gpd
Number of Commercial ERUs:	312,000 gpd / 269 gpd/ERU \approx 1,158 ERUs
Unaccounted for ERUs	
2014 Ave. unaccounted for volume:	140.5 MG
Average daily unaccounted for volume:	140.5 MG / 365 days \approx 384,800 gpd
Number of unaccounted for ERUs:	385,000 gpd / 269 gpd/ERU \approx 1,428 ERUs
Residential ERUs:	1,081
Multi-Family ERUs:	193
Commercial ERUs:	1,158
<u>Unaccounted for ERUs:</u>	<u>+ 1,428</u>
2014 Total ERUs:	3,861

2015

Residential ERUs	
2015 Ave. residential connections:	1,090 (ERUs)
Multi-Family ERUs	
2015 Ave. multi-family metered volume:	18.3 MG
Average daily commercial metered volume:	18.3 MG / 365 days \approx 50,200 gpd
Number of Commercial ERUs:	50,000 gpd / 276 gpd/ERU \approx 182 ERUs
Commercial ERUs	
2015 Ave. commercial metered volume:	115.9 MG
Average daily commercial metered volume:	115.9 MG / 365 days \approx 317,600 gpd
Number of Commercial ERUs:	317,600 gpd / 276 gpd/ERU \approx 1,151 ERUs
Unaccounted for ERUs	
2015 Ave. unaccounted for volume:	61.0 MG
Average daily unaccounted for volume:	61.0 MG / 365 days \approx 167,200 gpd
Number of unaccounted for ERUs:	167,200 gpd / 276 gpd/ERU \approx 606 ERUs
Residential ERUs:	1,090
Multi-Family ERUs:	182
Commercial ERUs:	1,151
<u>Unaccounted for ERUs:</u>	<u>+ 606</u>
2015 Total ERUs:	3,028

2016

Residential ERUs	
2016 Ave. residential connections:	1,095 (ERUs)
Multi-Family ERUs	
2016 Ave. multi-family metered volume:	19.3 MG
Average daily commercial metered volume:	19.3 MG / 365 days \approx 52,900 gpd
Number of Commercial ERUs:	52,900 gpd / 262 gpd/ERU \approx 202 ERUs
Commercial ERUs	
2016 Ave. commercial metered volume:	110.4 MG
Average daily commercial metered volume:	110.4 MG / 365 days \approx 302,400 gpd
Number of Commercial ERUs:	302,400 gpd / 262 gpd/ERU \approx 1,153 ERUs
Unaccounted for ERUs	
2016 Ave. unaccounted for volume:	41.4 MG
Average daily unaccounted for volume:	41.4 MG / 365 days \approx 113,400 gpd
Number of unaccounted for ERUs:	113,400 gpd / 262 gpd/ERU \approx 432 ERUs
Residential ERUs	1,095
Multi-Family ERUs	202
Commercial ERUs	1,153
<u>Unaccounted for ERUs</u>	<u>+ 432</u>
2016 Total ERUs	2,882

2014-2016 Average

$(1,081 + 1,090 + 1,095) / 3 =$	1,089 Single Family Residential Connections (ERUs)
$(193 + 182 + 202) / 3 =$	192 Multi-Family Residential ERUs
$(1,158 + 1,151 + 1,153) / 3 =$	1,154 Commercial ERUs
$(1,428 + 606 + 432) / 3 =$	822 Unaccounted for ERUs
	3,257 Total ERUs

2.2 Demand Projections

2.2.1 Projected Land Use

The City’s UGA extends mostly to the north of City Limits. **Figures 1A** and **1B** show planned land use and zoning (refer also to the current City and County Comprehensive Plans for current land use and zoning).

2.2.2 Projected Population

The Washington State Office of Financial Management (OFM) Forecasting Division develops official State and local population estimates for use in the allocation of certain State revenues and for use in growth management and other planning functions. The OFM is the State agency responsible for administering the US Census Bureau State Data Center Program in Washington State. The OFM projects population changes for all counties in the State.

Chelan County adopted Resolution 2015-112 (refer to **Appendix A** for copy of Resolution) which contains OFM based population allocations for Chelan County and designated Urban Growth Areas including the City of Leavenworth. These growth projections are utilized in the City’s recently updated Comprehensive Plan. Based on the projections contained in the resolution, the 10-year average annual growth rate for Leavenworth is calculated at approximately 0.47%. The City chooses to project population growth at 0.47% annually. The Table following contains the City’s projected water service area population over the 10-year planning horizon.

Table 2-8 Projected 10-Year Water Service Area Population

Year	Population
2017 (Current) ⁽¹⁾	2,559
2018	2,571
2019	2,583
2020	2,595
2021	2,607
2022	2,619
2023	2,631
2024	2,644
2025	2,656
2026 (10-Year)	2,668

⁽¹⁾ Refer to **Table 2-2** for current water service area population details.

2.2.3 Projected ERUs

The City is currently in the process of acquiring additional water rights. Leavenworth along with a number of local water providers established the Wenatchee Water Working Group (WWWG) to begin the process of working the Department of Ecology on a Wenatchee Cost-Reimbursement Program to obtain additional water rights (refer to **Section 4.1** for additional information regarding additional water rights). During this process an analysis was completed to determine an annual growth rate for the area. The WWWG determined the OFM “high series” growth rate of 2.2% per year would be suitable for the purpose of projecting water demand growth; water demand growth is often correlated with population growth, but not always directly linked (refer to **Appendix A** for copy of WWWG Letter regarding growth rate).

During Planning Consistency review, Chelan County noted the 2.2% water use growth rate is higher than the projected population growth rate adopted by the County in Resolution 2015-112 (refer to **Appendix A** for copy of resolution). The City believes water demand in Leavenworth will grow at a different rate than Chelan County’s projected population due to the makeup of Leavenworth’s customers. The City’s current and projected water users consist of a large number of hotels, resorts, and tourist based businesses. Therefore, water use will increase but not necessarily population.

The City chooses to project water demand growth at **2.2%** annually. At 2.2% annual growth, water system demand will increase by approximately 24% (from present demands) for the 10-year planning period and 55% (from present demands) for the 20-year planning period.

Water mains generally have a service life of at least 50 years. Unlike other components of water system infrastructure (wells, reservoirs, booster stations, etc.) systems generally cannot add transmission capacity incrementally as a system grows. Sizing transmission and distribution

system improvements for a 20-year projection can in some cases lead to the need for additional transmission capacity long before a particular water main has served its full useful life.

For this reason, the City has chosen to estimate build-out demands for the Future Service Area to aid in sizing transmission and distribution system improvements; the build-out demand estimate looks only at water use equivalent residential units (ERUs) and does not incorporate population projections in any way. As a part of past planning efforts, Leavenworth performed a buildable lands capacity analysis. The buildable land capacity analysis included the UGA and land outside the existing UGA that may eventually become part of the UGA. This analysis estimates the demands the system will experience when the existing UGA and some potential UGA expansion areas reach build-out and identifies the water system infrastructure needed to serve ultimate demands. For the purposes of this Water System Plan the build-out demands are referred to as ultimate demands. The City has chosen to oversize some of the water system infrastructure improvements selected herein to meet ultimate demands. The Table following contains the City’s projected ERUs for established planning horizons.

Table 2-9 Projected Total System ERUs

Time Frame	ERUs
Current ⁽¹⁾	3,257
10-year ⁽²⁾	4,048
20-year ⁽²⁾	5,033
Ultimate ⁽³⁾	7,852

- (1) Refer to **Section 2.1.6** for assumptions governing present ERU calculation.
- (2) Water use ERUs assumed to increase at 2.2% annually. Refer to **Section 2.2.3** for growth rate rationale.
- (3) The ultimate ERU number contained in this Table comes from the City’s buildable land capacity analysis; the analysis contains an estimate of system ERUs required for the development of the current UGA and its potential expansion area north of the existing UGA (refer to discussion in preceding paragraph).

2.2.4 Distribution of Projected Growth ERUs

Addition of new customers and water demand does not occur uniformly throughout City pressure zones. This Section distributes projected growth to the existing and future pressure zones. The following table shows the assumed distribution of growth to system pressure zones based on discussions with the City staff, land available for development, and existing UGA boundary and potential UGA additions.

Table 2-10 Pressure Zones ERU Growth Distribution

Pressure Zone	Current ERUs ⁽¹⁾	Present to 10-year		10-year to 20-year		Ultimate ERUs ⁽²⁾
		Percent of Growth	ERUs ⁽¹⁾	Percent of Growth	ERUs ⁽¹⁾	
Zone 1 (Main Zone)	3,172	55%	3,607	25%	3,853	6,232
Zone 2 (existing Ski Hill)	85	45%	4411	40%	835	923
Zone 3 (future upper Ski Hill)	-	0%	-	25%	246	545
Zone 4 (future top Ski Hill)	-	0%	-	10%	98	152
Total System	3,257	100%	4,048	100%	4,948	7,852

- (1) Current, 6-yr, and 20-yr ERU distribution estimated based on land availability, zoning, and the professional judgments of City staff and the City’s Engineer. All ERUs listed include unaccounted/non-revenue/leakage ERUs.
- (2) Refer to discussion in **Section 2.2.3**; ERU figures developed based on the City’s buildable land capacity analysis.

Growth projected in Zone 1 will manifest itself as infill inside City Limits and, to a limited extent, infill along East Leavenworth Rd and Icicle Rd; refer to **Section 1.6** for details pertaining to City policies for additional connections outside UGA and RSA but inside water service area.

2.2.5 Projected Water Demand

The following Table contains projected water demand for the established planning horizons based on the growth projections developed in preceding Sections.

Table 2-11 Projected Water Demand

Zone	Attribute	Existing ⁽¹⁾	10-year ⁽²⁾	20-year ⁽²⁾	Ultimate ⁽³⁾
Zone 1 (main zone)	ERUs	3,172	3,607	3,853	6,232
	Annual (MG)	312	355	379	751
	ADD (gpm)	593	674	720	1,428
	MDD (gpm) ⁽⁴⁾	1,352	1,534	1,641	3,071
	PHD (gpm) ⁽⁵⁾	2,277	2,573	2,740	5,042
Zone 2 (existing Ski Hill)	ERUs ⁽⁶⁾	85	441	835	923
	Annual (MG)	8	43	82	111
	ADD (gpm)	16	83	156	212
	MDD (gpm) ⁽⁴⁾	36	188	356	455
	PHD (gpm) ⁽⁵⁾	119	410	683	856
Zone 3 (future upper Ski Hill)	ERUs	-	-	145	545
	Annual (MG)	-	-	16	66
	ADD (gpm)	-	-	31	125
	MDD (gpm) ⁽⁴⁾	-	-	72	269
	PHD (gpm) ⁽⁵⁾	-	-	199	559
Zone 4 (future top Ski Hill)	ERUs	-	-	58	152
	Annual (MG)	-	-	6	18
	ADD (gpm)	-	-	12	35
	MDD (gpm) ⁽⁴⁾	-	-	29	75
	PHD (gpm) ⁽⁵⁾	-	-	102	205
Total System	ERUs	3,257	4,048	5,033	7,852
	Annual (MG)	320	398	495	946
	ADD (gpm)	609	757	941	1,799
	MDD (gpm) ⁽⁴⁾	1,388	1,725	2,145	3,869
	PHD (gpm) ⁽⁵⁾	2,335	2,875	3,546	6,661

(1) Refer to **Section 2.1.4** for source of existing demand figures.

(2) Refer to **Section 2.2.3** for growth rate.

(3) Refer to discussion in **Section 2.2.3**; ultimate demands developed based on the City's buildable land capacity analysis.

(4) Existing, 6-year, and 20-year reflect an ADD:MDD peaking factor of 2.28; also see note 3.

(5) Existing, 6-year and 20-year PHD calculated using Equation 5-1 from the 2009 DOH WSDM; also see note 3.

(6) Due to insufficient booster station pumping records, ERUs calculated based on 70 existing ERUs determined in 2009 for the 2011 WSP. City staff estimates approximately 15 additional single family homes constructed in the Ski Hill Booster Zone between 2010-2016 equaling roughly 15 additional ERUs. Therefore 85 existing ERUs is estimated for Zone 2 in this WSP.

2.3 Topography

The City's water system currently consists of two pressure zones. The UGA encompasses a large portion of the Ski Hill area to the north of downtown. The Ski Hill area spans approximately 200 vertical feet. The planning data in preceding Sections includes two additional pressure zones which will provide service to the area of land not serviceable by the City's existing pressure zones. Refer to **Figure 2** for system topography and approximate pressure zone boundary contours.

3.0 DESIGN STANDARDS

Water systems must establish minimum facility design standards to evaluate the adequacy of existing facilities and to size future system components. Facility design standards must meet regulatory requirements and customers' needs and expectations. Many water systems in the State of Washington use one or more of the following as the basis for facilities design standards.

- DOH Water System Design Manual
- Recommended Standards for Water Works (“10 State Standards”)
- System owner requirements and preferences
- Local fire protection authority input
- Washington Surveying & Rating Bureau (regarding fire flow)
- Engineering judgment
- Industry practice

Washington Administrative Code (WAC 246-290) pertaining to public water systems administered by Washington State Department of Health (DOH) contains the regulations applicable to this water system.

The Sections following define the City's system design standards.

3.1 Water Supply Capacity

WAC 246-290-222(4) requires systems to have source capacity at least equal to the max day demand (MDD) of the system. The DOH Water System Design Manual recommends systems develop source capacity that enables the system to replenish depleted fire suppression storage within a 72-hr period while concurrently supplying MDD of the system. The 10 State Standards recommend systems have a minimum of two sources and total source capacity at least equal to MDD with the largest source out of service.

The City selects the following supply capacity requirement:

- Supply facilities shall have sufficient capacity to meet the system max day demand.

3.2 Booster Stations

3.2.1 *Open System Booster Stations*

An open system pressure zone pumps water to a reservoir open to the atmosphere. The level of the reservoir being filled typically controls the operation of the booster pumps that fill it. Open system booster stations shall be designed in accordance with DOH criteria as outlined in Chapter 10 of the Water System Design Manual (WSDM). The following summarizes the WSDM criteria:

- Equalizing storage or additional booster pump capacity must be provided to ensure the Peak Hour Demand (PHD) of the zone can be met
- Max Day Demand (MDD) of the booster zone must be met with all pumps in service
- Average Day Demand (ADD) of the booster zone must be met with the largest capacity pump out of service

3.2.2 Closed System Booster Stations

A closed system pressure zone pumps to a distribution system that is closed to the atmosphere; some closed zones utilize pressure tanks, and/or variable speed pumps, and/or PRVs to meet system demands without over pressurization. Closed system booster stations shall be designed in accordance with DOH criteria as outlined in Chapter 10 of the DOH WSDM. The following summarizes the WSDM criteria:

- Provide PHD at minimum 40 psi service pressure (DOH requires 30 psi, however, the City endeavors to provide 40 psi minimum normal service pressure) with the largest pump out of service.
- Provide MDD + fire flow rate at minimum 20 psi residual pressure with the largest routinely used pump out of service (fire pumps are not considered a routinely used pump).
- Provide auxiliary power generator that activates automatically in the event of a power outage or manual switch gear for portable generator.

3.3 Storage

As required by WAC 246-290-235, City storage facilities shall be designed with sufficient capacity to meet the requirements of the following storage components as defined in the DOH WSDM:

- Dead Storage
- Operational Storage
- Equalizing Storage
- Standby Storage
- Fire Suppression Storage

The City may, at its discretion, apply the alternate design concept as described in the DOH WSDM and further detailed in sections following.

3.3.1 Dead Storage (DS)

Dead storage is the portion of a reservoir below which some customers in the system will experience pressures less than the minimum requirement. Standpipes typically have a portion of the reservoir intentionally designed as dead storage.

Conversely, if a system's source (well or booster pump) does not have sufficient capacity to fill a reservoir above a certain elevation, that portion of the reservoir cannot provide storage to the system and technically is dead storage.

3.3.2 Operational Storage (OS)

Operational storage is the volume in a reservoir used during normal operation of the system; it is the storage volume used between turning the supply pumps on and off. In general, systems control the operation of supply sources with level sensors or floats in the reservoirs they fill. Using OS allows a reasonable amount of time between pump start/stop which protects the pump motors from heat damage that can result from excessive on/off cycling of the pump. The system uses OS when supply sources are off. Systems that utilize variable speed pumps can eliminate OS by setting up the pumps to maintain a full reservoir.

3.3.3 Equalizing Storage (ES)

Equalizing storage is the quantity of storage required to meet peak demands that exceed supply capacity. The following equation from the DOH WSDM calculates the volume of required ES:

$$ES = (PHD - Q) \times 150 \text{ minutes}$$

Where *ES* = equalizing storage in gallons

PHD = peak hour demand in gpm

Q = source capacity in gpm

3.3.4 Standby Storage (SB)

The purpose of SB is to provide a measure of reliability should sources fail or when unusual conditions impose higher demands than anticipated. The DOH WSDM provides separate equations for calculating required SB volume for systems served by one source and for systems served by multiple sources as described below.

- Water Systems (or Pressure Zones) with a Single Source

The required SB volume for systems (or pressure zones) served by a single source of supply is two times the system's ADD for the design year to be available to all service connections at minimum service pressure of 20 psi.

$$SB_{TSS} = (2 \text{ days}) (ADD) (N)$$

Where *SB* = is the total standby storage in a single source system in gallons

ADD = Average day demand, gpd/ERU

N = Number of ERUs

- Water Systems with Multiple Sources

The required SB volume for systems served by multiple sources must be available to all service connections at a minimum service pressure of 20 psi and is based upon the following equation.

$$SB_{TMS} = (2 \text{ days}) [(ADD) (N) - (tm) (Q_s - Q_L)]$$

Where *SB* = the total standby storage in a multiple source system in gallons (in no case can volume be less than 200 gal per ERU)

ADD = Average day demand, gpd/ERU

N = Number of ERUs

tm = Time the remaining sources are pumped on the day when the largest source is not available, in minutes. Unless restricted otherwise, assume 1,440 minutes.

Q_s = Sum of all available source, gpm

Q_L = Capacity of largest source, gpm

SB storage is intended to satisfy the requirements imposed by the system customers for unusual situations; DOH recommends that the SB volume be not less than 200 gallons/ERU. Systems may justify a further reduction in required SB volume by providing automatic backup power at the sources of supply; refer to Storage Alternate Design Concept in subsequent sections.

Power consideration: Reduction in the standby storage volume because of multiple sources is permissible only if adequate standby power is available or the power supply is shown to be reliable by meeting both of the following criteria:

1. Frequency

Outages shall average three or less per year based on data for the three previous years with no more than six outages in a single year. Power must be lost for a minimum of 30 minutes in order to qualify as an “outage” for purposes of this policy.

2. Duration

Outage duration shall average less than four hours based on data for the three previous years. Not more than one outage during the three previous year period shall have exceeded eight hours.

3.3.5 Fire Suppression Storage (FS)

FS is the quantity of storage needed to meet required firefighting flows. If a public water system provides fire flow, it is required to construct and maintain facilities, including storage reservoirs, capable of delivering fire flow while maintaining a minimum pressure of 20 psi at all service connections within the distribution system [WAC 246-290-221(5)].

The volume of FS required for each pressure zone is the product of the maximum fire flow rate and duration established as City criteria; this may or may not be the same fire flow rate and duration required by the local fire protection authority or County Fire Marshal for individual structures within the City. For water systems located in areas governed under the Public Water System Coordination Act of 1977 (PWSCA), Chapter 70.116 RCW, minimum flow rates and duration that must apply for residential, commercial, and industrial developments are specified in the Water System Coordination Act regulations, WAC 246-293-640. Greater FS requirements for individual structures may be specified by the local fire protection authority, County Fire Marshal, and/or locally adopted Coordinated Water System Plan; however, the City is not obligated to provide fire flow above and beyond City criteria established in this Water System Plan.

3.3.5.1 Nesting of Fire Suppression Storage and Standby Storage

A water system may elect to “nest” the SB and FS storage volumes [WAC 246-290-235(4)]. If a purveyor chooses to nest SB and FS, the larger of either SB or FS is used as the total volume required. Provided that such practice is not prohibited by:

- Adopted Coordinated Water System Plan
- Local Ordinance
- Local Fire Protection Authority

The City elects to nest the SB and FS storage volumes in storage calculations as allowed by the WAC. The City consulted Chelan County Fire District 3 (CCFD 3) on this decision; refer to **Appendix A** for documentation of CCFD 3 involvement.

3.3.6 Storage Alternate Design Concept

The DOH WSDM provides criteria for reservoir design and storage volume. During the capital facilities planning process, systems typically apply these criteria to determine whether existing storage volume meets the needs of the system and satisfies regulatory criteria.

The WSDM provides an “Alternate Design Concept” (Section 9.1.3) which outlines circumstances under which systems may reduce or in some cases eliminate the standby and fire storage component requirements. Systems can substitute source capacity for storage volume provided certain requirements are satisfied.

Water systems substituting source capacity for storage volumes need to consider and provide appropriate justification for varying from the following:

- Exclude capacity of the largest producing source of supply from the calculations
- Each source of supply used in the calculations be equipped with on-site backup power facilities, promptly started by an automatic transfer switch upon loss of utility power.
- Incorporate provisions into the system design for pump protection during low demand periods.

The City elects to utilize the storage alternate design concept at its discretion where it is deemed cost effective and in the City’s best interest to do so.

3.4 Fire Flow Criteria

The City recognizes that for individual structures (existing and future) the International Fire Code, Local Fire District, and the recommendations of the Washington Surveying and Rating Bureau may differ from the City’s fire flow rate and duration criteria. However, the City feels that the fire flow criteria established herein provide a reasonable level of fire protection for the land use types within the City; the City will be working further with appropriate entities to further refine fire flow criteria in the near future. The adopted fire flows may not currently be available in all areas of every pressure zone.

As development occurs, the City requires developers to upgrade existing facilities and install new facilities with sufficient capacity to meet the City’s established fire flow criteria for the development type in the area proposed for development. The City requires developers to consult the City to determine the infrastructure upgrades a proposed development necessitates. Developers requesting water service must install the system upgrades needed to provide required fire flow; the improvements necessitated and implemented by development must follow the improvements laid out in this Water System Plan.

In general, the City sets the following fire flow criteria for each development type. The City will supply up to the following rates and durations:

Table 3-1 Fire Flow Criteria

Type	Flow Rate (gpm)	Duration (hours)
Single Family Residential	1,500	1
Multi-Family Residential	2,500	2
Schools	2,500	2
Commercial (general, tourist, and light industrial)	2,500	2
Downtown (central)	3,500	3

For new structures, the City may require water system facilities capable of supplying a higher fire flow than shown above if Chelan County, the International Fire Code, the local Fire District, or the WSRB requires it.

3.4.1 Fire Flow Rate and Duration Criteria by Pressure Zone

The City provides fire flow rates and durations for each pressure zone based on development types (as described in preceding sections). The City sets the largest fire flow criteria in each pressure zone based on existing structures and planned development types; some existing structures require greater fire flow than the City criteria established herein. The City plans to refine fire flow criteria in the future. The Table following shows the largest fire flow rate and duration criteria for each pressure zone.

Table 3-2 Fire Flow Rate and Duration Criteria by Pressure Zone

Pressure Zone	Fire Flow		Development Type or Structure Dictating Highest Fire Flow for Pressure Zone
	Rate (gpm)	Duration (hrs)	
Zone 1 (main zone)	3,500	3	Downtown area and structures
Zone 2 (existing Ski Hill)	2,500	2	Multi-family development
Zone 3 (future Ski Hill upper)	1,500	1	Single family residential
Zone 4 (future Ski Hill top)	1,500	1	Single family residential

In accordance with the DOH Water System Design Manual, the system shall meet all fire flow rates while concurrently supplying the system MDD with the largest source offline, with OS, ES, and FS depleted, while maintaining a minimum pressure of 20 psi throughout the system with pipeline flow velocities not to exceed 10 fps.

3.5 Distribution System

3.5.1 System Pressure

DOH establishes minimum service pressures for public water systems. Under peak hour demand (PHD) conditions, systems shall provide a minimum of 30 psi at the customer meter. Under max day demand (MDD) firefighting conditions (FS depleted, largest source out of service) systems shall provide a minimum pressure of 20 psi throughout the system. DOH does not dictate restrictions on maximum distribution system pressure, however in areas where system pressure exceeds 80 psi, the City recommends that customers install an individual pressure regulator, as required by most municipal building codes and the *Uniform Plumbing Code*. In some cases, topography may dictate that areas of the distribution system have pressure exceeding 80 psi. The City endeavors to provide service pressure between 40 psi and 80 psi at the customer meter whenever possible.

3.5.2 Main Sizes

The City requires a minimum main size of 8-inch for new and replacement mains unless an analysis by the City indicates a smaller diameter main will not adversely affect current or future system performance. DOH requires a minimum distribution system main size of 6-inch for any main that serves a fire hydrant.

3.5.3 Valve and Hydrant Spacing

City valve spacing requirements vary by project specifics; however, the City does not allow valve spacing to exceed 1,000 ft between valves and 300 ft between hydrants for urban and development mains. The local Fire District dictates hydrant spacing for specific projects.

3.5.4 Construction Standards

The City's municipal code adopts the Washington State Department of Transportation (WSDOT) Standard Specifications with the APWA Amendments to Division One as the City's construction standard [refer to **Appendix D** for City's Municipal Code 14.14.090(5) (a. and b.)]. The WSDOT Standard Specifications are available online at WSDOT's website. The City will provide a hard copy for DOH review if requested.

The City utilizes the following review procedures to ensure conformance with the City's water system facilities standards and Water System Plan when individuals, developers, or outside entities propose water system modifications/extensions:

- The Public Works Director reviews proposed plans and specs for general conformance with City standards and Water System Plan.
- If needed, the Public Works Director forwards plans and specs to the City's Engineer for input on conformance with the City's standards and Water System Plan.
- The City informs the submitter on changes necessary to bring the proposed plans and specs into conformance with the City's standards and Water System Plan.

4.0 SYSTEM ANALYSIS

4.1 Reported System Problems

A Water System Plan provides a detailed engineering analysis of a water system. However, this analysis is incomplete without input from the system's operator(s) and any other individuals or entities that have intimate knowledge of the day to day operations and problems of the system. The following Sections outline comments, concerns, and/or complaints raised by those individuals and/or entities with close working knowledge of the system.

4.1.1 *Comments from City Staff*

City Staff report the following issues with the water system:

- Existing galvanized service pipe is corroded and in poor condition causing leaks.
- Service meters in the system are nearly 30-years old and the City believes they may be inaccurate and under-reading water use.
- Locations of a number a valves throughout the system are unknown causing a few areas of the system that cannot be isolated. The City believes some may have been inadvertently paved over.
- The control system is slightly outdated. Some replacement parts are unavailable and the City receives phantom calls periodically.
- Lack of a booster pump for the WTP lab facilities tends to increase difficulty of operation.

Refer to **Section 4.2.3** for additional issues identified by the Operator related to the WTP.

4.2 Supply

The City supplies its water system from both surface water and ground water sources. The water treatment plant withdraws surface water from Icicle Creek and the wells withdraw ground water from a sand and gravel aquifer.

4.2.1 *Supply Facilities Capacity*

The pump in Well #1 has a capacity of 1,200 gpm, the pump in Well #2 has a capacity of 750 gpm, and the pump in Well #3 has a capacity of 1,300 gpm.

The WTP's capacity varies based on a number of factors which include:

- During spring, high silt load necessitates frequent filter backwashing; backwashing with dirty water makes backwash ineffective.
-

- Seasonal variations in raw water temperature affect the maximum flow rate at which the WTP can provide satisfactory treatment. The WTP can effectively treat 2.0 MGD under cold water conditions and 2.3 MGD under warm water conditions. Based on operating history and facility testing documented by the WTP Operator, it appears that during peak demand periods in the summer months, the WTP operates under a low silt load and with warm raw water temperature.
- IntegriTech performed a waterline assessment of the City’s gravity feed intake piping to the water treatment plant in 2015. Flow testing was done as part of the assessment in which the raw water intake capacity was recorded to be approximately 1,600 gpm (~2.3 MGD). Refer to **Appendix D** for excerpts from report.
- Hydraulic capacity to deliver water from WTP into the distribution system varies depending on system conditions. In 2017 the WTP operator recorded WTP flow near 1,000 gpm (~1.44 MGD) with the Icicle reservoir at approximately 12 feet (mostly full) and with Well #3 running. The hydraulic model estimates that with the reservoir level lower historical flows can be attained.

For the purposes of this Water System Plan, all calculations assume a maximum WTP capacity of 1,600 gpm (~2.3 MGD).

The City’s quantity of supply criterion calls for the City to have sufficient capacity to meet the MDD of the system. The Table following compares existing source capacity with current and projected system demands.

Table 4-1 Supply Facilities Capacity Evaluation

Attribute	Current		10-year		20-year		Ultimate	
	(gpm)	(MGD)	(gpm)	(MGD)	(gpm)	(MGD)	(gpm)	(MGD)
Total Existing Source Capacity ⁽¹⁾	4,850	6.98	4,850	6.98	4,850	6.98	4,850	6.98
Max Day Demand (MDD) ⁽²⁾	1,388	2.00	1,725	2.48	2,145	3.09	3,869	5.57
Surplus (Deficiency)	3,462	4.98	3,125	4.50	2,705	3.89	981	1.41

⁽¹⁾ Wells #1, #2 and #3 have a combined capacity of 3,250 gpm (4.68 MGD) and the WTP has a capacity of 1,600 gpm (~2.3 MGD). These capacities assume constant operation (24/7).

⁽²⁾ Refer to **Section 2** for development of current and projected demands.

As shown in the preceding table, Leavenworth has adequate supply facilities capacity to meet current, 6-year, and 20-year MDD with the largest producing supply facility (either Well #1 or the WTP) offline. The City has adequate supply facilities capacity to meet ultimate MDD but cannot with the largest producing supply facility offline. Supply facility redundancy will decrease as the City approaches ultimate demand levels at some point beyond the 20-year planning horizon.

At present, it appears Leavenworth will not require an expansion of the supply facilities to meet supply quantity criteria during the 20-year planning period. With the addition of Well #3 in 2014, the City has increased supply redundancy and utilized all current instantaneous groundwater rights. However, the City is currently in the process of obtaining additional water rights (currently pending). Refer to **Section 4.3** for details regarding current and pending water rights. This includes 1,594 gpm of instantaneous ground water rights. Once these pending water rights are finalized, the City may consider adding pumping capacity to the existing well field in order to increase supply redundancy and perfect unused instantaneous water rights.

4.2.2 *Condition of Wells & Pumps*

The City has experienced occasional problems with the wells including chlorine corrosion causing pipe failures in the pump house; none of the problems pose a regular threat to reliability. Wells #1 and #2 were constructed in the early 1990s and Well #3 was constructed in 2014. The City's wells and pumps are in good condition and the City has updated the electrical controls for the wells.

4.2.3 *Water Treatment Plant*

The WTP Operator has identified the following issues pertaining to the WTP. Some of these issues were identified in the 2011 WSP but have not been resolved and are therefore carried forward and updated in this WSP.

1. Fish screen on raw water intake pipe does not meet current standards (Fish and Wildlife is designing the screens).
2. During periods of high sediment loading in Icicle Creek (primarily during spring runoff), backwash is ineffective.
3. When the water plant is offline, there is a lack of sufficient potable water at the plant for filter washing and other domestic uses.
4. There is no backup power (i.e., the WTP cannot operate during power outages).
5. Office/Lab is too small and is in a very noisy location.
6. Lack of onsite chemical storage area. Shed needed with power and insulation for storing coagulant.
7. No fencing exists around the WTP which is near a public trail.
8. Other reported issues:
 - Calibration of Rortorek actuator valves on intake and effluent water needed; valves are set by a percentage valve is open and the resulting flow rates with these set percentages vary over time.
 - Intake pipe leaks and needs to be replaced.
 - Chlorine chamber valve to backwash pond leaks and needs to be replaced.
 - Online chlorine analyzer needed.
 - Backwash pipe leaks and needs to be replaced and a flapper gate needs to be added at backwash pond. A larger backwash pond is needed with a built in concrete ramp such that the City can easily remove sediment.
 - High air pressure scrub cleaning filter during backwash needed.
 - I-beams needed above filters for accessing filter bays.
 - Filter media needs replaced.
 - Filter sub-floor needs replaced.
 - Gates in chlorine contact chamber and on the filter cells leak and are failing; need to be replaced.
 - Chlorine contact chamber trusses need sandblasted and painted

- Sandblasting and epoxy finish needed on steel structures in WTP (flumes, channels, hoods, etc.) and a number of welding patches.
- Roof needs to be raised (not enough room to get ladder down into filter).
- New alarm callout system needed, surge protector needed for PLC, updated PLC and new SCADA program needed.
- Lift system needed for vacuum pumps near ceiling.
- Screen house demolition.
- Misc. items needed: scales for coagulant, and orthophosphate, additional storage space (remove old pumps and piping), automatic lights and fan for WTP chlorine room, GIS map on computer, raw and finished water faucets, better insulation in building, repair leaking roof, and various other smaller miscellaneous items not listed above.

Refer to **Section 5.2** for WTP improvements and associated costs.

4.2.4 Disinfection

The WTP provides continuous disinfection via a flow paced chlorine injection system and chlorine contact basin. The WTP Operator believes that replacing the existing flow paced chlorine disinfection system with a system controlled by the chlorine residual level in the chlorine contact basin would improve consistency of chlorine residuals in the system.

The City provides disinfection at Wells #1, #2 and #3 via a gas chlorine injection system. The system Operator indicated the chlorine chamber valve at the WTP needs to be replaced along with the gates on the chlorine chamber. The trusses in the chlorine contact chamber also need to be sandblasted and painted. The Operator would also like to look into other methods of chlorine disinfection as chlorine gas can be very dangerous. The City plans to consider various chlorine disinfection alternatives as part of an in-depth evaluation planned for the WTP (refer to **Section 5.2.1.2**).

4.2.5 Water Quality and Treatment

DOH generates a Water Quality Monitoring Schedule (WQMS) for water systems on an annual basis; the WQMR summarizes the system's water quality sampling requirements for the year. **Appendix B** contains a copy of the City's 2016 WQMS. The Table following summarizes the City's water quality monitoring requirements.

Table 4-2 Monitoring History and Requirements as Reported by DOH

Contaminant	Last Sampled	Next Sample Due	Comments
Asbestos	Distribution System – May 2015	Distribution System – every 9 years	One distribution sample between Jan 2011 – Dec 2019. Collect sample from a routine coliform sampling site in an area of distribution system that has asbestos cement concrete pipe.
Bacteriological (coliform)	Three Samples Monthly	Three Samples Monthly	Refer to the City's Coliform Monitoring Plan.
EDB (soil fumigants)	S01 – Aug 1998 S03 – Sep 2001	S01 – waived 2016 S03 – waived 2016	S01 – State Waiver through Dec 2016. S03 – State Waived through Dec 2016.
Gross Alpha	S01 – Oct 2010 S03 – Oct 2010	S01 – Oct 2016 S03 – Oct 2016	S01 – one sample between Jan 2014 – Dec 2019. S03 – one sample between Jan 2014 – Dec 2019.
Herbicides, Insecticides	S01 – Mar 2009 S03 – Nov 2012	S01 – Mar 2018 S03 – May 2021	S01 – one sample between Jan 2014 – Dec 2022. S03 – one sample between Jan 2014 – Dec 2022.
Inorganic Chemicals (IOC)	S01 – Jun 2011 S03 – Nov 2012	S01 – every 9 years S03 – every 9 years	S01 – one sample between Jan 2011 – Dec 2019. S03 – one sample between Jan 2011 – Dec 2019. All constituents within acceptable ranges.
Lead & Copper	Distribution System – Jun 2014	Distribution System – Jun 2017	Ten distribution samples required between Jan 2015 – Dec 2017. Samples have been within permissible limits.
Nitrates (part of IOC)	S01 – May 2016 S03 – Jun 2016	S01 – every year S03 – every year	One sample between Jan 2011 – Dec 2019. S01 – one sample every year. S03 – one sample every year.
Pesticides	S01 – Mar 2009 S03 – Nov 2012	S01 – waived 2016- S03 – waived 2016	S01 – State Waiver through Dec 2016. S03 – State Waiver through Dec 2016.
Volatile Organic Chemicals (VOC)	S03 – July 2016	S03 – every 6 years	S03 – one sample between Jan 2014 – Dec 2019. All constituents within acceptable ranges.
Radium 228	S01 – Oct 2010 S03 – Oct 2010	S01 – Oct 2016 S03 – Oct 2016	S01 – one sample between Jan 2014 – Dec 2019. S03 – one sample between Jan 2014 – Dec 2019.
Halo-Acetic Acids (HAA5)	Distribution System – Aug 2016	Distribution System – Nov 2016	Distribution System – one sample collected quarterly. Refer to the City's Disinfection Byproducts Monitoring Plan.
Trihalomethane (THM)	Distribution System – Aug 2016	Distribution System – Nov 2016	Distribution System – one sample collected quarterly. Refer to the City's Disinfection Byproducts Monitoring Plan.

It appears the City's water quality sampling meets existing regulatory requirements.

4.2.5.1 Groundwater Rule

The Environmental Protection Agency (EPA) finalized the Groundwater Rule in October 2006 and the Groundwater Rule went into effect in December 2009. The Groundwater Rule builds on the Total Coliform Rule by addressing the health risks of fecal contamination in groundwater sources used by a public water system. The basic requirements of the Groundwater Rule include source water monitoring (triggered and assessment), compliance monitoring, sanitary surveys, corrective actions, and public notification. The Table following provides an overview of the Groundwater Rule.

Table 4-3 Groundwater Rule Overview

Requirement		Comments
Sanitary survey by DOH every 3 years		May be every 5 years if certain conditions are met
Determination of hydrogeologic sensitivity		Gravel wells without hydrogeologic barrier are defined as sensitive setting (this is the case for Leavenworth's three wells)
Triggered source water monitoring: <ul style="list-style-type: none"> • Test source water for coliform within 24 hours of distribution system hit • Monthly source monitoring for coliform of sources in hydrogeologically sensitive areas 		-
If the above steps indicate a fecally contaminated source or one with significant deficiencies that can act as a potential pathway for contamination, the system must do one of the following: <ul style="list-style-type: none"> • eliminate the source of the contamination or correct the significant deficiency • provide alternate source water • provide treatment which achieves at least 99.99% (4-log) removal or inactivation of viruses and monitoring to verify same 		-
Several situations and violations require public notification. The following outlines these violations and the type of notification required.		Systems that receive an E. coli-positive result in a source water sample must notify their customers within 24 hours of result.
• E. coli-positive ground water source sample	Tier 1 PN, CCR, special notification	Consecutive systems served by the groundwater source must also notify the public.
• Failure to take corrective action within 120 days of notification	Tier 2 PN, CCR, special notification	-
• Failure to maintain at least 4-log treatment of viruses	Tier 2 PN, CCR	-
• Failure to meet monitoring requirements	Tier 3 PN, CCR	-
• Uncorrected significant deficiency	Special notice in CCR	-
	Special notice	Systems must continue to notify the public annually until they correct the significant deficiency.
• Unaddressed E. coli-positive groundwater source sample	Special notice in CCR	Community systems must put a notice in the CCR annually until they address the positive source water sample.

For those sources which are found to be contaminated and which cannot eliminate the source of contamination or provide alternate source water, treatment requires 4-log inactivation/removal which, at water temperature of 50F and pH of 6-9 results in a required CT of 6. Minimum residual entering distribution system is 0.2 mg/L. With Leavenworth's ±900' of 24" main, meeting a CT of 6 requires a chlorine residual of about 0.6 mg/L at the end of the 24" transmission main with Wells #1 and #2 operating (1,950 gpm). With all three wells running concurrently (3,250 gpm), contact time decreases from approximately 10 minutes to about 7 minutes, therefore to sustain a CT of 6 the chlorine residual would have to increase to about 0.9 mg/L. The maximum residual disinfectant level (MRDL) for chlorine is 4.0 mg/L (per WAC 246-290-300). If Leavenworth is required to provide 4-log inactivation treatment, the system has the ability to do so by increasing the chlorine residual to obtain a CT of 6. This may result in additional chlorine gas costs.

4.2.6 Corrosion Control

In 1995, the City elected to use orthophosphate to reduce the corrosivity of its water and thereby reduce the concentrations of lead and copper at customer taps. This allowed the City to comply with the requirements of the Lead and Copper Rule. The City continues to use zinc orthophosphate for corrosion control. In the past the City injected orthophosphate at the wells; the City has since moved the orthophosphate injection to the WTP which the operator believes provides a more

consistent concentration of orthophosphate in the distribution system. The City has had no issues with lead and copper concentrations exceeding regulatory maximums since the addition of orthophosphate injection.

4.3 Water Rights

The water rights information contained herein is based on available records, including those provided by the Washington State Department of Ecology (Ecology). The City consulted with water rights counsel in the preparation of this section and **Tables 4-4, 4-5, and 4-6**.

A 2008 water rights assessment for the City by water rights attorney Thomas Pors resulted in the discovery of errors in the Department of Ecology's previous assessments of the City's water rights. The City sought to clarify the scope and quantity of its water rights in the 2008 Amendment of the 2002 Water System Plan. That amendment was neither accepted nor rejected by DOH due a to disagreement between the City and Ecology. The City filed a declaratory judgment lawsuit to resolve those errors and determine existing quantity of the City's water rights, *City of Leavenworth v. Dep't of Ecology, Chelan County Superior Court cause number 09-2-00748-3*. On July 19, 2012, Chelan County Superior Court Judge Lesley A. Allan entered a final Order on Parties' Cross-Motions (final order), which contained the superior court's rulings in the case. Judge Allen's ruling is explained in the context of the discussion regarding Certificate 8105, below.

The City appealed the final order to the Washington Court of Appeals, Division III, (Case No. 312364). The appeal is currently subject to a March 11, 2013 Order Staying Further Proceedings, to allow the City and Ecology time to settle the appeal through replacement of the disputed water rights from another source in the Icicle Creek basin. The City and Ecology are actively participating in efforts with the Icicle Working Group to identify and fund projects that will result in water savings that can be transferred to the City for this purpose. Until a final resolution of the appeal, the City's water right dispute with Ecology is unresolved. The City has not revised its water right self-assessment pending resolution of the appeal, but is voluntarily complying with the conditions contained in the final order until the appeal is resolved. The final resolution of that case will prompt an amendment to this section of the City's water system plan and **Table 4-5** and **Table 4-6**, if necessary.

The City has a combination of interruptible and uninterruptible surface and ground water rights. The interruptible rights depend on in stream flows in Icicle Creek and the Wenatchee River for their availability; the uninterruptible rights are independent of instream flow levels in Icicle Creek and the Wenatchee River.

The City's most senior water right is Adjudicated Certificate No. 4 from the Icicle Creek Adjudication, issued by the Chelan County Superior Court on October 28, 1929 in the amount of 1.52 cfs for municipal supply year round with a priority date of 1912. No annual quantity was specified, but a continuous diversion of 1.52 cfs is equivalent to 1,100 acre-feet annually.

Ground Water Certificate No. 437-A, with a priority date of March 14, 1949, authorizes Leavenworth to withdraw 1,000 gpm, 1,100 acre-feet per year from an infiltration gallery near the Wenatchee River, It was issued as supplemental or "non-additive" for annual quantity based on

language in the original Report of Findings dated May 2, 1949 describing the City's existing Icicle Creek right (Certificate No. 4) "which is not to be used when well is proved and operating." See Department of Ecology Water Resources Program Policy POL-1040, dated 03-09-06. Thus, as of the issuance of Certificate 437-A, the City had total water rights of 1,000 gpm, 1,100 acre-feet. In 1990 Ecology approved a change application for Certificate 437-A, changing the place of use to the "service area of the City of Leavenworth" and adding a point of withdrawal for a new well in the SE1/4, NE ¼ of Section 14, T. 24N, R17 E.

Surface Water Certificate 8105, with a priority date of June 20, 1960, authorizes 1.50 cubic feet per second from an infiltration gallery adjacent to Icicle Creek for municipal supply. The application for this water right (Application No. 16124) clearly intended the diversion to be continuous, because it included 1085.5 acre-feet per year as the annual quantity of the applicant's intended use, continually, for municipal supply. The permit for this water right does not set forth any annual limitation or indicate any restriction of the water right to service a particular population or number of connections. Consistent with then-prevailing practices by the State Supervisor of Water Resources, the certificate was issued for the full instantaneous quantity of 1.50 cfs on April 25, 1961, less than 5 months after the permit. There was no limitation or condition in the certificate relating to annual quantity, nor any conditions relating to population or connection limits. An application to change the point of diversion for this water right to a point upstream for the intake to the City's water treatment plant was approved by Ecology on January 12, 1990. Ecology's Findings of Fact and Order regarding this decision (Docket No. DE 90-C114) did not in any way limit the annual quantity of this water right, and allowed the point of diversion change for the full instantaneous quantity of 1.50 cfs.

Certificate 8105 was issued based on a prior administrative policy of issuing certificates once works for diverting or withdrawing and distributing water for municipal supply purposes were constructed, rather than after the water had been put to actual beneficial use. In the 2003 Municipal Water Law, the Legislature described these so-called "pumps & pipes" certificates as "rights in good standing". With respect to such certificates, RCW 90.03.330 (2) and (3) provide:

(2) Except as provided for the issuance of certificates under RCW 90.03.240 and for the issuance of certificates following the approval of a change, transfer, or amendment under RCW 90.03.380 or 90.44.100, the department shall not revoke or diminish a certificate for a surface or ground water right for municipal water supply purposes as defined in RCW 90.03.015 unless the certificate was issued with ministerial errors or was obtained through misrepresentation. The department may adjust such a certificate under this subsection if ministerial errors are discovered, but only to the extent necessary to correct the ministerial errors. The department may diminish the right represented by such a certificate if the certificate was obtained through a misrepresentation on the part of the applicant or permit holder, but only to the extent of the misrepresentation. The authority provided by this subsection does not include revoking, diminishing, or adjusting a certificate based on any change in policy regarding the issuance of such certificates that has occurred since the certificate was issued. This subsection may not be construed as providing any authority to the department to revoke, diminish, or adjust any other water right.

(3) This subsection applies to the water right represented by a water right certificate issued prior to September 9, 2003, for municipal water supply purposes as defined in RCW 90.03.015 where the certificate was issued based on an administrative policy for issuing such certificates once works for diverting or withdrawing and distributing water for municipal supply purposes were constructed rather than after the water had been placed to actual beneficial use. Such a water right is a right in good standing.

Based on this section of the Municipal Water Law and case law, the City contends Ecology has no authority to revoke or diminish the quantity of Certificate 8105 because final determinations or adjudications of the scope and validity of existing water rights are the exclusive province of the

courts pursuant to RCW 90.03.110, et seq. *Rettkowski v. Ecology*, 122 Wn.2d 219, 858 P.2d 232 (1993). Ecology has limited authority to tentatively determine the scope and validity of a water right permit applicant's preexisting water rights when Ecology evaluates the applicant's permit application for an additional water right. That authority does not include the authority to reduce preexisting water rights, which was confirmed in Judge Allen's final order.

In 1995, Ecology made a characterization of the quantity of Certificate 8105 in two contemporaneous decisions involving two different water rights (see discussion of Ground Water Permit G4-29958 and Surface Water Permit S4-28122) which had the effect of reducing the annual quantity of Certificate 8105, which exceeded Ecology's authority as described above. Specifically, the Report of Examination for Groundwater Permit G4-29958, dated June 10, 1993 acknowledged that Certificate 8105 was issued without an annual volume limitation, but rather than interpret the upper limit of the quantity of Certificate 8105 as a continuous withdrawal for municipal purposes, Ecology calculated a "reasonable quantity" for Certificate 8105 "based upon the per capita demand used for Certificate 427-A and multiplying by the projected 2,500 population for 1980." The report of examination then characterized Certificate 8105 as having only 275 acre-feet and the total of the City's existing water rights as only 1375 acre-feet. Ecology had no authority to adjudicate the quantity of Certificate 8105, nor did they have authority to reduce its quantity with a tentative determination in the context of Applications G4-29958 or S4-28122. Based on advice from the City's legal counsel after review of Judge Allen's order, Ecology's characterization of Certificate 8105 is being disregarded.

Ground Water Permit G4-29958, with a priority date of April 14, 1989, was issued on August 11, 1995 for the City's well field in the NE ¼ of Section 14, T24N, R17E, in the amount of 2,000 gpm, 900 acre-feet, interruptible when the flows of Icicle Creek fall below the minimum flows set in WAC Chapter 173-545. All but 90 acre-feet of this annual quantity was issued as supplemental (non-additive) to existing rights, and that 90 acre-feet included the same 90 acre-feet of primary (additive) water rights issued under Surface Water Permit S4-28122. The 90 acre-feet of primary (additive) water rights was granted based on Ecology's assessment of the City's existing water rights, which as indicated above was erroneous.

Surface Water Permit S4-28122, with a priority date of January 28, 1983, was issued on August 11, 1995 for 3.18 cfs, 636 acre-feet, interruptible when the flows of Icicle Creek fall below the minimum flows set in WAC Chapter 173-545. The intent of this water right was to increase the City's diversion from Icicle Creek to equal the capacity of its water treatment plant. All but 90 acre-feet of this annual quantity was issued as supplemental (non-additive) to existing rights, and that 90 acre-feet included the same 90 acre-feet of primary (additive) water rights issued under Ground Water Permit G4-29958.

The Department of Ecology included what is known as an "aggregate cap condition" in its approvals of applications G4-29958 and S4-28812. The intent of these conditions was to limit the total annual quantity under all the City's water rights, including those being granted subject to this condition. Judge Allen's final order ruled that Ecology is authorized to approve an application for a new water right permit with a condition that limits the total annual quantity of water that may be used by the applicant under the applicant's entire portfolio of water rights, including the new permit and all preexisting water rights, however that authority does not include the authority to

reduce preexisting water rights such as Certificate 8105. Nevertheless, Judge Allen interpreted language in Permits G4-29958 and S4-28812 as a condition limiting the total annual quantity of water usage by the City to 1,465 acre-feet per year under the new permits and all preexisting water rights. In this respect, Judge Allen’s decision is inconsistent with itself because the City already possessed 2,185.95 acre-feet per year of preexisting water rights at the time of the decisions.

Judge Allen specifically ruled against the Department of Ecology’s argument that its tentative determination of the quantity of Certificate 8105 had *res judicata* effect and could not be challenged in a later action by the City. Judge Allen noted that *res judicata* is not applicable to Ecology’s tentative determinations because final determinations of the extent and validity of water rights can only be made through a general adjudication of water rights in superior court pursuant to RCW 90.03.105-.245. Judge Allen also ruled that Ecology’s tentative determinations regarding the quantity of Certificate 8105 are not binding in a future water-related dispute, litigation, or adjudication. However, Judge Allen also interpreted the City’s declaratory judgment action as a belated appeal of the amended ROEs for applications G4-29958 and S4-28812, which the City failed to timely appeal to the Pollution Control Hearings Board (PCHB) within thirty days, thus the City is “generally bound by the conditions in Permit Nos. G4-29958 and S4-28812 including the total quantity of water the City can use each year under its collective water rights (1,465 acre-feet per year)”. Due to the inconsistency of these rulings, the City appealed Judge Allen’s final order to the Court of Appeals, Division III, where it remains pending. A copy of the final order and the City’s Notice of Appeal are included in **Appendix C**. Because the final order ruled that the City is bound by the condition limiting the City to 1,465 acre-feet per year, that quantity is listed as a conditional limitation in Table 4-5, and the City is voluntarily complying with this limitation until this appeal is resolved, through settlement or litigation.

The Department of Ecology was also mistaken concerning the annual quantity of water rights already perfected by the City in the mid-1980s, which led to errors in Ecology’s Reports of Examination for applications G4-29958 and S4-28812 and errors by the City in its 2001-02 Water System Plan. **Table 4-4** summarizes the annual quantity of water rights beneficially used and perfected by the City from 1984 through 1993. The maximum annual quantity of water produced and beneficially used by the City during this period, 1,748 acre-feet in 1987, represents the City’s perfected total annual quantity of water rights. The difference between this quantity and 2185.95 acre-feet per year is an inchoate but valid water right in good standing that is available for future growth demands in the City’s water service area.

Refer to paragraphs following **Table 4-4** for available information regarding pending water right acquisition and attributes.

Table 4-4 Historical System Production Data Summary

Year	Infiltration Gallery ⁽²⁾ (MG)	Wells ⁽³⁾ (MG)	WTP ⁽³⁾ (MG)	Total Production		Notes	
				(MG)	(ac-ft) ⁽¹⁾		
1984	39.7	-	449.4	489.1	1,501	WTP production for 1984 -1989 is taken from operations data summarized and provided by City staff. Total system production figures for 1984-1989 are taken from the City's 1988 and 1991 Water System Plans. This infiltration gallery totals are calculated by subtracting WTP production from total production reported in the 1988 and 1991 WSPs.	
1985	75.9	-	468.0	543.9	1,669		
1986	129.5	-	407.1	536.6	1,647		
1987	84.3	-	485.1	569.4	1,748		
1988	143.2	-	338.6	481.8	1,479		
1989	114.6	-	370.9	485.5	1,490		
1990	-	110.6	206.2	316.8	972		WTP, well and total production figures for 1990 - 2009 are taken from operations data summarized in the water production table prepared by City staff dated 7/27/10 (see Note 3). Production for 1992, 1993 and 1995 was estimated by water system staff due to incomplete available data. The City installed water service meters throughout its water service area during 1989 and 1990, which corresponds with a significant reduction in system water demand reflected in the data for 1989 and 1990.
1991	-	71.1	243.7	314.8	966		
1992	-	89.0	176.7	327	1,004		
1993	-	80.1	236.5	344	1,056		
1994	-	110.7	278.0	388.7	1,193		
1995	-	164.5	168.9	377	1,157		
1996	-	189.0	144.0	333.0	1,022		
1997	-	214.0	126.0	340.0	1,043		
1998	-	180.2	162.3	342.5	1,051		
1999	-	196.7	147.8	344.5	1,057		
2000	-	107.7	202.4	310.1	952		
2001	-	82.0	227.3	309.3	949		
2002	-	125.3	207.1	332.4	1,020		
2003	-	138.2	199.4	337.6	1,036		
2004	-	190.1	137.2	327.3	1,005		
2005	-	170.9	138.4	309.3	949		
2006	-	193.9	117.6	311.5	956		
2007	-	249.1	79.5	328.6	1,008		
2008	-	304.9	41.9	346.8	1,064		
2009	-	256.0	74.8	330.8	1,015		
2010	-	117.1	181.9	299.0	918		
2011	-	97.0	222.5	319.5	980		
2012	-	144.7	166.3	311.0	955		
2013	-	74.4	207.1	281.5	864		
2014	-	99.0	280.6	379.6	1,165		
2015	-	135.3	169.8	305.1	936		
2016	-	119.0	156.9	275.9	847		

(1) Acre-feet values calculated in this table are rounded to the nearest acre-foot.

(2) The City stopped using the infiltration gallery (sometimes referred to as the collector well) and put two new wells online in 1990.

(3) WTP and well data summarized and provided by the City is based on original operation records for the WTP and wells.

The City is currently in the process of acquiring additional water rights and has been working with a number of local water providers since 2007 on the Wenatchee River Integrated Watershed Plan. These local providers include Chelan County, City of Cashmere, and Alpine Water District, among others. Part of the Watershed Plan was to establish a Wenatchee Reserve to allocate future water rights. In 2012, the City along with other local water providers established the Wenatchee Watershed Working Group (WWWG) to begin the process of working with Ecology on a Coordinated Cost Reimbursement Program. This process was suspended after a 2013 State Supreme Court ruling when Ecology determined that the Wenatchee Reserve may not be legally valid. The WWWG worked with legislative representatives of the district to have the Wenatchee River Integrated Watershed Plan reinstated and supported by the legislature. This was accomplished in 2016 when the legislature adopted RCW 90.54.210 validating the Wenatchee Reserve. Since then, the City has moved forward with the Coordinated Cost Reimbursement Program and members of the WWWG participating in the program have worked together to

acquire adequate water rights allocated to support projected growth in each member's water system over the next 50 years.

Current pending water rights allocated from the Wenatchee Reserve for the City of Leavenworth are anticipated to be in the amount of 2.82 cfs uninterruptible and 702 ac-ft annual. It is expected these water rights will be finalized by the end of 2017.

The following Table summarizes available information regarding the Leavenworth's existing and pending water rights.

Table 4-5 Summary of Existing and Pending Water Rights Information

Type of Right	Point of Diversion	Cert. No.	Year	Instantaneous (Q _i)		Annual (Q _a) (ac-ft)	Notes
				Interruptible	Uninterruptible		
Surface Water Rights	Icicle Creek WTP SE¼, SE¼ S28, T24N, R17E	Cert #4	1912	-	1.52 cfs 682 gpm 0.98 MGD	1,100 primary 0 supplemental	(1), (2)
		8105	1960	-	1.5 cfs 673 gpm 0.97 MGD	1,085.95 primary 0 supplemental	(6)
		S4-28122	1983	3.18 cfs 1,427 gpm 2.06 MGD	-	90 primary 546 supplemental	(3)
	Total Surface Water Rights			3.18 cfs 1,427 gpm 2.06 MGD	3.02 cfs 1,355 gpm 1.95 MGD	2275.95 primary 546 supplemental	-
Ground Water Rights	Well Field SW¼, SE¼, NE¼ S14, T24N, R17E	437-A	1949	-	2.23 cfs 1,001 gpm 1.44 MGD	0 primary 1,100 supplemental	(4)
		G4-29958	1989	4.46 cfs 2,000 gpm 2.88 MGD	-	90 primary 810 supplemental	(3)
	Total Ground Water Rights			4.46 cfs 2,000 gpm 2.88 MGD	2.23 cfs 1,000 gpm 1.44 MGD	90 primary 1,910 supplemental	-
Total Existing Water Rights				7.64 cfs 3,427 gpm 4.94 MGD	5.25 cfs 2,355 gpm 3.39 MGD	2,275.95 primary	(3), (5)
Temporary Conditional Limitation based on <i>Leavenworth v. Ecology</i>				7.64 cfs 3,427 gpm 4.94 MGD	5.25 cfs 2,355 gpm 3.39 MGD	1,465	(7)
Pending Ground Water Applications S4-33068(A) and G4-33068(B), for allocations from the Wenatchee Reserve (WAC 173-545-090)				-	2.82 cfs 1,266 gpm 1.82 MGD	702	-
Total Water Rights (incl. pending reserve allocations)				7.64 cfs 3,427 gpm 4.94 MGD	8.07 cfs 3,621 gpm 5.21 MGD	2,977.95	-

- (1) This right has been adjudicated by the Chelan County Superior Court in 1929 and confirmed the City's right. No annual quantity is specified, but a continuous withdrawal rate of 1.52 cfs equals 1,100 acre-feet annually.
- (2) The water right indicates that the point of diversion is within the NE¼ SE¼ of S28 T24N R17E. However, the City's diversion to the WTP is in the SE¼ SE¼ of the same section. A change application has been filed with DOE to correct this.
- (3) A total of 90 ac-ft/yr of new water right was granted between G4-29958 and S4-28122. Thus, the same 90 ac-ft can only be counted once in the City's total water right quantity.
- (4) Issued as "non-additive" for annual quantity based on language in the original Report of Findings. By Ecology's Findings of Fact and Report of Decision dated January 12, 1990, the City's request to add a point of withdrawal and change the place of use to Well #1 (from the old infiltration gallery) was approved. A superseding certificate was issued on Feb. 12, 2002.
- (5) **Table 4-5** does not list the City's surface water right (Wenatchee River) at the golf course (#9707 for 0.54 cfs and 106 ac-ft/yr). This water is pumped by the golf course independent of the City's drinking water sources and is not routed through the distribution system. The City owns the water right and the land but the golf course is separately operated in a long-term lease arrangement. Though it is not integrated into the City's distribution system, Certificate 9707 meets the definition of "municipal water supply purposes" under RCW 90.03.015(4).
- (6) Point of diversion changed in 1993 to match intake location for water treatment plant.
- (7) See discussion above and Order on Parties' Cross-Motions for Summary Judgement in **Appendix C**.

The following Table summarizes the City's existing and pending water right adequacy when compared with existing and projected demand.

Table 4-6 Comparison of Existing and Pending Water Rights with Existing and Projected Demands

Surface or Ground Water	Permit, Certificate or Claim #	Name of Right Holder or Claimant	Priority Date	Source Number	Primary or Suppl.	Water Rights		Water Use		Water Right Status (Excess/Deficiency) ⁽¹⁰⁾	
						Max Instant. Flow Rate (gpm)	Max Annual Volume (ac-ft/yr)	Max Instant. Flow Rate (gpm)	Max Annual Volume (ac-ft/yr)	Max Instant. Flow Rate (gpm)	Max Annual Volume (ac-ft/yr)
Surface ⁽¹⁾	Cert. #4	City of Leavenworth	1912	S01 WTP	Primary	682 continuous	1,100 primary	1,600 ⁽⁴⁾	361.24	1,182 ⁽⁶⁾	1,914.71
	8105		1960		Primary	673 continuous	1,085.95 primary				
	S4-28122		1983		Both	1,427 interruptible	90 primary 546 suppl.				
	Total Surface Water Rights					1,355 continuous <u>1,427 interruptible</u> 2,782 total	2,275.95 primary				
Ground ⁽¹⁾	437-A	City of Leavenworth	1949	S03 Well Field	Primary	1,000 continuous	1,100 suppl.	3,250 ⁽⁵⁾	621.21	-250 ⁽⁶⁾	⁽⁷⁾
	G4-29958		1989		Both	2,000 interruptible	90 primary 810 suppl.				
	Total Ground Water Rights					1,000 continuous <u>2,000 interruptible</u> 3,000 total	90 primary <u>1,910 suppl.</u> 2,000 total				
Both	Present Adequacy of Water Rights					2,355 total continuous <u>3,427 total interruptible</u> 5,782 total	1,465 ⁽²⁾⁽³⁾	4,850	982.65	932 ⁽⁹⁾ -2,495	482.35
	Projected 20-year Water Rights Adequacy						2,275.95 ⁽³⁾	4,850	1,519 ⁽⁸⁾	932 ⁽⁹⁾ -2,495	756.95
	Projected Ultimate-Water Rights Adequacy						2,275.95 ⁽³⁾	4,850	2,903 ⁽⁸⁾	932 ⁽⁹⁾ -2,495	-627.05
Pending Allocation of Wenatchee Reserve						1,266 continuous	702				
All Water Rights	Present Adequacy of Water Rights					3,621 total continuous <u>3,427 total interruptible</u> 7,048 total	2,167	4,850	982.65	2,198 ⁽⁹⁾ -1,229	1,184.35
	Projected 20-year Water Rights Adequacy						2,975.95	4,850	1,519 ⁽⁸⁾	2,198 ⁽⁹⁾ -1,229	1,368.95
	Projected Ultimate-Water Rights Adequacy						2,975.95	4,850	2,903 ⁽⁸⁾	2,198 ⁽⁹⁾ -1,229	72.95

⁽¹⁾ Refer to the preceding table for specific information regarding these water rights.

⁽²⁾ Based on temporary limitation pending resolution of litigation. Refer to **Appendix B** for copy Order on Parties' Cross-Motions for Summary Judgement.

⁽³⁾ See discussion in **Section 4.3** regarding water right annual quantities.

⁽⁴⁾ Based on flow test performed in 2015 waterline assessment done by IntergriTech. Refer to **Appendix B** for excerpt from waterline assessment report.

⁽⁵⁾ Reflects capacity of existing well pumps.

⁽⁶⁾ Excess/deficiency based on combined interruptible & uninterruptible.

⁽⁷⁾ Excess groundwater capacity of 1378.79 ac-ft/yr is reflected in the total excess capacity of 1,914.71 ac-ft/yr of surface water rights, because the groundwater rights are almost entirely supplemental to the surface water rights.

⁽⁸⁾ These figures are 20-year and ultimate total annual volume produced converted to ac-ft., refer to **Table 2-3** and **Table 2-11**.

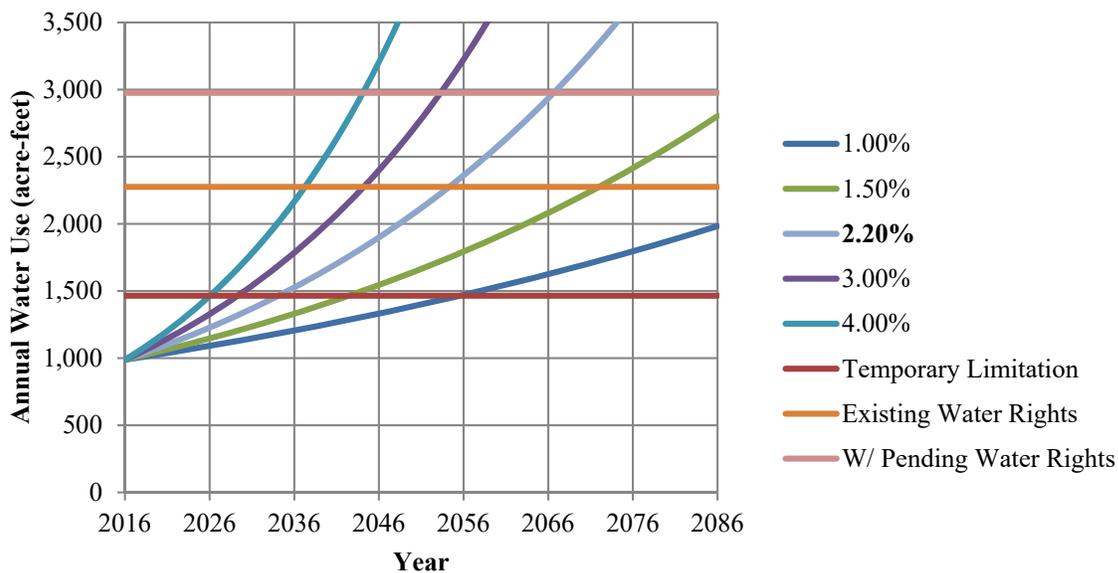
⁽⁹⁾ This figure includes interruptible water rights and represents years in which water withdrawals are not restricted (i.e., interrupted) due to minimum stream flows.

⁽¹⁰⁾ Refer to Conclusions following Table for additional discussion on water right status.

Conclusions

- The City cannot operate all sources of supply using only uninterrupted instantaneous water rights. The City is in the process of obtaining additional water rights (currently pending; refer to **Tables 4-5 and 4-6**). Assuming the City receives the pending water rights Leavenworth still needs approximately 1,229 gpm of additional uninterrupted water rights to operate all sources of supply without relying on interruptible water rights. However, the City can operate all sources of supply at full capacity by relying on existing interruptible water rights.
- The City currently relies on approximately 2,495 gpm of interruptible water rights (1,229 gpm if the City receives pending water rights) when all sources of supply operate concurrently. It is unlikely the City will need to operate all sources of supply concurrently since the City can meet 20-yr max day demand with the largest source (Water Treatment Plant-1,600 gpm) out of service.
- In the event Ecology interrupts the City’s water rights at a time the City requires all sources of supply to meet demand Leavenworth could implement its Water Shortage Response Plan (refer to **Section 10.4**). The lowest stream flows typically occur in September and the City’s peak demands typical occur in July or August. An interruption in water rights during peak demands is unlikely since lowest stream flows do not typically coincide with the City’s peak. Leavenworth’s September demands are generally 50-60% of the City’s peak month demands.
- Under the Temporary Conditional Limitation based on *Leavenworth v. Ecology* the City can meet current annual demand but cannot meet 20-year or ultimate annual demand. Assuming the City resolves the Temporary Conditional limitation and receives pending water rights (refer to **Table 4-5 and Table 4-6**) then Leavenworth will have adequate annual water rights to meet ultimate demand.
- This Water System Plan projects the annual growth rate of City water demand at 2.2% (refer to **Section 2.2** for growth rate rationale). The following Figure illustrates the affect growth rate has on determining how long the City’s existing and pending annual water rights remain adequate.

Figure B Affect of Growth Rate on Projected Water Rights Adequacy



4.4 Booster Zones

The City currently operates one booster station. The sections following assess the adequacy of City booster station facilities based on the criteria defined in **Section 3.2**.

4.4.1 Zone 2 (Existing Ski Hill)

The Zone 2 (existing Ski Hill) booster station pumps to the 700,000 gal Zone 2 reservoir; hence Zone 2 is an open system. Approximately 85 single family homes and a few multi-family connections receive service from Zone 2.

4.4.1.1 Zone 2 Booster Station Capacity Assessment

The Zone 2 booster station consists of two identical 10 HP pumps with individual capacity of 200 gpm and combined capacity of 400 gpm. The water level in the Zone 2 reservoir turns the pumps on and off. Based on the demand projections developed in **Section 2.2.5** the existing pumps have adequate capacity to meet existing and projected 20-year max day demand of Zone 2. The existing pumps also have adequate capacity to meet present and projected 20-year average day demand of Zone 2 with the largest pump out of service.

However, as growth occurs in the Ski Hill area, the City will eventually need additional booster stations to serve areas above elevation 1,300. The future booster stations (Zone 3 and Zone 4) will rely on Zone 2 for supply. Hence, the City may need additional pumping capacity in the Zone 2 booster when it constructs additional pressure zones for the Ski Hill area.

4.4.1.2 Zone 2 Storage Capacity Assessment

The 700,000 gallon Zone 2 reservoir provides gravity storage to Zone 2. The table following contains current and projected storage volume requirements for Zone 2 (all storage components are calculated in accordance with the criteria and equations defined in **Section 3.3** and demands in **Table 2-11**).

Table 4-7 Zone 2 Storage Capacity Assessment

Storage Component	Present (gal)	10-year (gal)	20-year (gal)
Operational ⁽¹⁾	97,800	97,800	97,800
Equalizing ⁽²⁾	0	1,500	42,000
Standby ⁽³⁾	17,000	88,200	167,000
Fire Suppression ⁽⁴⁾	300,000	300,000	300,000
Dead Storage ⁽⁵⁾	0	0	0
Total Required	414,800	487,500	607,300
Total Required (SB + FS nested)	397,800	399,300	440,300
Existing Storage	700,000	700,000	700,000
Surplus (Deficit)	285,200	212,500	92,700
Surplus (Deficit) (SB +FS nested)	302,200	300,700	259,700

⁽¹⁾ Assumes top 3.25' of existing 23.25' tall 700,000 gal Zone 2 reservoir

⁽²⁾ Calculated using DOH Eqn. 9-1 as follows: $ES = (PHD - Q_s) * (150min)$, but in no case less than zero.

⁽³⁾ Calculated using the larger of DOH Eqn. 9-3: $SB_{TMS} = (2 \text{ days}) * [(ADD) * (N) - t_m * (Q_s - Q_L)]$ and DOH minimum, SB = 200 gal/ERU.

⁽⁴⁾ Multi-family development in Zone 2 necessitates the 2,500 gpm for 2 hrs fire flow criterion.

⁽⁵⁾ Assumes all services in zone below elevation 1,300.

As shown in the preceding table, Zone 2 has adequate storage to meet present and projected 20-year storage needs. Two pressure reducing valves (PRV) between Zone 2 and Zone 1 make the Zone 2 reservoir available to Zone 1 in the event that Zone 1 pressure in the vicinity of the PRVs drops below a set point; the City has chosen the PRVs' set points such that the valves only operate in emergency situations (rather than acting as equalizing storage during normal peak demands).

4.4.1.3 Zone 2 Distribution Capacity Assessment

The Zone 2 distribution system consists primarily of 8" and 12" mains with the exception of the 16 inch main on Ski Hill Drive from Bergestrass to the reservoir. The City intends Zone 2 to serve the portion of Ski Hill between elevations 1,200 to 1,300. The zone can theoretically serve connections up to elevation 1,340 and still meet the DOH 30 psi minimum pressure criterion. However, the City will eventually implement Zone 3 to serve connections between elevations 1,300 to 1,400.

The hydraulic model estimates that existing mains can supply current and 20-yr PHD to service connections between elevation 1,200 to 1,300 with service pressures meeting the City's 40 psi goal. The hydraulic model estimates that all existing service nodes in Zone 2 meet or exceed the 1,500 gpm residential fire flow requirement; where applicable, Zone 2 also meets the 2,500 gpm multi-family fire flow requirement. Zone 2 distribution capacity meets City criteria and appears adequate to meet current and projected 20-year demands.

4.5 Storage

This Section contains the analysis of Zone 1 (main zone) storage needs. Refer to **Section 4.4** for Zone 2 storage analysis.

4.5.1 Zone 1 (Main Zone) Storage Capacity Assessment

Zone 1 has 800,000 gallons of storage available from the Icicle reservoir; Zone 1 also benefits from storage in Zone 2 due to PRVs between the Zones (refer to **Section 4.4.1.2**). The table following contains current and projected storage volume requirements for Zone 1 (all storage components are calculated in accordance with criteria and equations defined in **Section 3.3** and demands from **Table 2-11**).

Table 4-8 Zone 1 Storage Capacity Assessment

Storage Component	Present (gal)	10-year (gal)	20-year (gal)
Operational ⁽¹⁾	108,100	108,100	108,100
Equalizing ⁽²⁾	0	0	0
Standby ⁽³⁾	634,400	721,400	770,600
Fire Suppression ⁽⁴⁾	630,000	630,000	630,000
Dead Storage ⁽⁵⁾	0	0	0
Total Required	1,372,500	1,459,500	1,508,700
Total Required (SB + FS nested)	742,500	829,500	878,700
Existing Storage ⁽⁶⁾	1,100,000	1,100,000	1,100,000
Surplus (Deficit)	(272,500)	(359,500)	(408,700)
Surplus (Deficit) (SB +FS nested)	357,500	270,500	221,300

- (1) Assumes top 2.5' of existing 18.5' tall 800,000 gal Zone 1 reservoir.
- (2) Calculated using DOH Eqn. 9-1 as follows: $ES = (PHD - Q_s) * (150min)$, but in no case less than zero.
- (3) Calculated using the larger of DOH Eqn. 9-3: $SB_{TMS} = (2 \text{ days}) * [(ADD) * (N) - t_m * (Q_s - Q_L)]$ and DOH minimum, SB = 200 gal/ERU.
- (4) Downtown commercial area in Zone 1 necessitates the 3,500 gpm for 3 hrs fire flow criterion.
- (5) Assumes all services below elevation 1,200.
- (6) Includes 800,000 gal Icicle reservoir and 300,000 gal of SB/FS storage available in Zone 2 reservoir via PRVs between Zone 2 and Zone 1 (refer to **Section 4.4.1.2** for Zone 2 storage calculations).

As shown in the preceding Table, Zone 1 has adequate storage to meet present and projected 20-year storage needs provided the City nests the standby and fire storage components (refer to **Appendix A** for letter of coordination with CCFD #3). Two pressure reducing valves (PRV) between Zone 2 and Zone 1 make the Zone 2 reservoir available to Zone 1 in the event that Zone 1 pressure in the vicinity of the PRVs drops below a set point; the City has chosen the PRVs' set points such that the valves only operate in emergency situations (rather than acting as equalizing storage during normal peak demands).

4.5.2 Condition of Existing Reservoirs

The City fully demolished and reconstructed the Zone 1 (Icicle) reservoir in 2008; the City chose a cast in place concrete reservoir reconstruction that requires virtually no maintenance. The Icicle reservoir remains in good condition. The City had a diver inspection of the reservoir conducted in July of 2017. Refer to **Appendix D** for copy of inspection report.

The Zone 2 (Ski Hill) steel reservoir received a full coating (inside and out) when constructed in 2005. The Ski Hill reservoir is currently in good condition. The City had a diver inspection of the reservoir conducted in March of 2017. Refer to **Appendix D** for copy of inspection report.

4.6 Distribution System

This Section evaluates the adequacy of the City's distribution system facilities under current and projected demands. **Section 3.5** outlines the criteria for evaluating the distribution system.

The City performed a buildable land capacity analysis which contains analyses to determine the City's transmission needs when the future service area reaches build-out (herein referred to as ultimate demands). Refer to **Section 2.2.3** for additional information regarding buildable land capacity analysis. This Water System Plan integrates the results of that analysis and in some cases substitutes the ultimate improvement sizing in lieu of 20-year improvement sizing to increase the likelihood that distribution system improvements live out their full useful service life.

4.6.1 *Hydraulic Model Setup*

The hydraulic model utilizes WaterCAD V8i by Bentley Systems as the analysis environment.

Hydraulic model node elevation data comes from a variety of sources and may not share a consistent datum. Design surveys of the City's Zone 1 (Icicle) and Zone 2 (Ski Hill) reservoirs provide the basis of elevation for calculating theoretical pressure zone boundaries. The City intends the hydraulic analysis to assess local distribution system performance within preset pressure zone elevation boundaries. Due to the uncertainty associated with area topography, pressure zone boundaries shown on the Figures are approximate.

Reservoir water levels for the various scenarios were set in accordance with DOH requirements:

- Operational and equalizing storage depleted for peak hour scenarios.
- Operational, equalizing and fire/standby storage depleted for max day scenarios.
- The largest single source of supply (WTP for Zone 1 and one booster pump for Zone 2) neglected for max day (fire flow) scenarios.
- Refer to **Appendix E** for a table of hydraulic model boundary conditions for scenarios.

The following sources provided input in distributing demand and growth to the hydraulic model: customer water use data, aerial photography, judgments of City staff and the City's Engineer, and the City's buildable land capacity analysis. Refer to the **Section 2.2.3** for additional details on Future Service Area build-out (ultimate) demands distribution.

The City plans to regularly update the system hydraulic model to reflect additions, replacements, and/or changes to the distribution system. During the intervening years between Water System Plan Updates the City will use the model to design planned capital improvements as system growth occurs. The hydraulic model helps the City understand the system's capacity and limitations. **Appendix E** contains a copy of the hydraulic model node map and sample outputs.

4.6.2 *Hydraulic Model Findings*

The City has numerous supply scenarios under which the water system can operate (wells only, WTP only, a combination of wells and WTP). The City generally operates the WTP as the lead source at a constant flow rate and uses the wells to equalize peak demands throughout the day. However, due to all four sources geographic locations southwest of the City, the various possible combinations of sources only marginally affect distribution system pressures. Water supplied by the WTP and wells flows to the City through mains along Icicle Rd and East Leavenworth Rd. The Icicle Rd main conveys approximately 80% of the City's supply, while the East Leavenworth Rd main conveys approximately 20%. The Icicle reservoir tends to provide a constant hydraulic grade line (HGL) for Zone 1.

The table following summarizes pressures estimated by the hydraulic model under static, max day, and peak hour conditions for current and projected demands with the existing distribution system.

Table 4-9 Estimated Water System Service Pressures (Existing Distribution System)

General Area	Predicted Pressure (psi)				
	Static	Current		20-year	
		Max Day	Peak Hour	Max Day	Peak Hour
Northwest residential (Pine St & Ski Hill Dr)	55-60	50-55	40-45	45-50	40-45
West residential (West & Mine St)	55-60	50-55	45-50	45-50	40-45
West residential (Park Ave & Mountain View Dr)	40-45	35-40	30-35	30-35	29-30 ⁽²⁾
High school (Titus Rd / Chumstick Highway)	70-75	60-70	55-65	55-65	50-60
Highway 2 & Icicle Rd	65-70	60-65	60-65	55-60	60-65
Downtown	70-80	65-75	55-65	65-75	55-65
Safeway (Hwy 2 & Riverbend Dr)	65-70	60-65	50-55	55-60	45-50
East Leavenworth Rd & Dye Rd	80-85	70-75	60-65	65-70	60-65
East Leavenworth Rd & Dempsey Rd	85-90	90-95	85-90	85-90	80-85
East Leavenworth Rd & Icicle Rd ⁽¹⁾	80-85	95-100	90-95	90-95	90-95
Icicle Rd at wells ⁽¹⁾	80-85	100-105	100-105	100-105	100-105
Icicle Rd & Fish Hatchery Rd ⁽¹⁾	75-80	90-95	90-95	90-95	90-95

- ⁽¹⁾ Nodes in the vicinity of the WTP and wells experience some pressure fluctuation depending on which sources of supply operate. Max Day scenarios assume the WTP offline and all wells online; Peak Hour scenarios assume the WTP and all wells online. With existing transmission capacity, the capacity of the WTP substantially decreases when all wells operate.
- ⁽²⁾ The hydraulic model estimates some pressures in this area will drop slightly below 30 psi between the 10-yr and 20-yr planning periods; hence improvements related to pressures in this area are planned during the 20-yr planning period.

As shown in the preceding Table, the majority of the system meets the City’s minimum pressure goal of 40 psi during current and 20-year PHD with the exception of the west residential area in the vicinity of Mountain View Dr. It appears some services in this area are currently at the DOH required 30 psi minimum pressure during existing PHD and will drop slightly below 30 psi toward the end of the 20-yr planning period; hence improvements related to pressures in this area are planning during the 20-year planning period. Zone 2 will eventually serve the Mountain View Dr vicinity because it sits above elevation 1,200; hence the low pressure when served from Zone 1.

Under 20-year PHD the area near Pine St and Ski Hill Dr near the Zone 2 booster station will experience pressure in the 40-45 psi range which meets the DOH requirement, and is near the City goal of 40 psi.

The hydraulic model estimates available fire flow throughout the system. The Table following summarizes estimated available fire flow rates. Estimated flows assume max day demand conditions with the existing distribution system and maintaining 20 psi at all services.

Table 4-10 Model Estimated Available Fire Flows (Existing Distribution System)

General Area	Criteria (gpm)	Predicted Available Fire Flow with 20 psi Residual			
		Current (gpm)	Meets Criteria?	20-year (gpm)	Meets Criteria?
Northwest residential (Pine St & Ski Hill Dr)	1,500	>4,000	Yes	>4,000	Yes
West residential (West St & Mine St)	1,500	1,000-1,200	No	1,000-1,200	No
West residential (Park Ave & Mountain View Dr)	2,500 ⁽¹⁾	1,000-1,300	No	1,000-1,300	No
High school (Titus Rd / Chumstick Highway)	2,500	1,800-3,600	No	1,700-3,500	No
Highway 2 & Icicle Rd	2,500	>4,000	Yes	>4,000	Yes
Downtown	3,500	1,500-3,700	No	1,500-3,400	No
Safeway (Highway 2 & Riverbend Dr)	2,500	2,300-2,400	No	2,200-2,300	No
East Leavenworth Rd & Dye Rd	1,500	2,600-2,700	Yes	2,400-2,500	Yes
East Leavenworth Rd & Dempsey Rd	1,500	2,500-2,700	Yes	2,500-2,600	Yes
East Leavenworth Rd & Icicle Rd ⁽¹⁾	1,500	3,300-3,400	Yes	3,200-3,300	Yes
Icicle Rd at wells ⁽¹⁾	1,500	>4,000	Yes	>4,000	Yes
Icicle Rd & Fish Hatchery Rd ⁽¹⁾	1,500	3,100-3,200	Yes	3,000-3,100	Yes

⁽¹⁾ The City's land use allows for multi-family development in this area.

As shown in the preceding Table, several areas in the City do not meet fire flow criteria presently; several more areas will not meet criteria under 20-year demands. The multi-family area near Mountain View Dr has significant fire flow deficiency. The east end of the City near Safeway does not meet the City's commercial fire flow requirement. One area next to the high school near the Chumstick Highway falls short of the school fire flow criteria. Some downtown areas in the vicinity of the hospital currently meet the 3,500 gpm criteria; however, the downtown area will require improvements to allow the full central business district to meet fire flow criteria under present and 20-year demands.

4.6.3 Conclusions of Hydraulic Analysis

According to the system Operator and the hydraulic model, the system experiences satisfactory service pressure and pressure variations under average present day demand conditions; likewise, service pressures and pressure variations are generally within acceptable limits during present MDD and PHD. The existing system has several areas that do not meet fire flow criteria; these deficiencies will increase if system growth continues to occur without major transmission improvements. Likewise, system service pressures will continue to decrease as system growth occurs unless the City implements transmission main improvements.

The Leavenworth distribution system lacks a continuous backbone trunk water main adequately sized to convey water through and/or around the distribution system for delivery to the smaller diameter local distribution lines and to the future growth areas on the north side of the system. The system presently relies on smaller diameter mains to convey water through the grid. These mains act as both local distribution and transmission mains. A trunk water main would provide high capacity transmission through and/or around the perimeter of the distribution system and utilize existing smaller diameter mains for distribution and service. A trunk main would also provide transmission capacity for fire protection, reduce pressure fluctuations throughout the system, and provide the ability to serve future growth in areas to the north.

With existing distribution system capacity, the main zone HGL does not provide adequate pressure during peak demands to customers connected above elevation 1,200. Future improvements to the Zone 1 distribution system could theoretically allow connections in Zone 1 above elevation 1,200;

however, connecting services above elevation 1,200 to Zone 2 will provide them with higher service pressures.

In general, the existing transmission and distribution system meets current non-emergency demands, but does not meet fire flow requirements in certain areas. As demands increase in the future, the system will strain to meet pressure requirements in some areas and fire flow deficiencies will increase. As discussed previously, the lack of a trunk transmission main in and/or around the City contributes to the identified deficiencies. In addition, a few localized distribution grid inadequacies restrict fire flows in some areas.

4.6.4 Water Treatment Plant Transmission Main Hydraulics

Water from the WTP flows to the City through approximately 12,600 LF of 16" main on Icicle Rd which branches into 12" and 10" mains on Icicle Rd and E Leavenworth Rd respectively. The 12" main on Icicle Rd runs approximately 10,000 LF until it reaches the edge of the City at Highway 2. The 10" main in East Leavenworth Rd runs approximately 12,500 LF at which point it increases to 16" for approximately 3,700 LF then decreases to 12" for about 2,200 LF where it tees into Highway 2 near Safeway at the east end of the City. Water travels roughly four miles along the Icicle Rd route and six miles along the East Leavenworth Rd route. The WTP has a treatment capacity of approximately 1,600 gpm (~2.3 MG), however, gravity flow out of the WTP is limited due to transmission capacity which causes water in the transmission main to back up into the chlorine contact basin during high flows. The WTP transmission capacity is approximately 1,000 gpm (~1.44 MGD) which limits the usable WTP treatment capacity.

The 12" rough old steel main between the wells and the City substantially limits transmission from the WTP and wells. The City cannot operate both the wells and WTP simultaneously at full capacity due in part to this transmission limitation. Using pumps at the WTP (rather than relying solely on gravity) would allow the City to fully utilize existing sources, but would elevate pressures along Icicle Rd and East Leavenworth Rd; at present, the WTP piping and finished water pumps are not set up to provide the additional head required.

Due to the fact that the wells and Icicle reservoir are located relatively close to the central part of the City on Icicle Rd, the E Leavenworth Rd main is a secondary transmission route carrying a smaller portion of the water from WTP than does the Icicle Rd main. For this reason, its relatively small size (10") does not present an immediate problem although when, at some future point it is replaced due to age, it should be upsized. If the City wishes to consider a site for additional storage in the vicinity of E Leavenworth Rd and Dye Rd, then the remaining 10" main will need to be replaced with something significantly larger.

4.6.5 Residences near Water Treatment Plant

The City serves approximately 20 connections near the WTP. These connections are mostly vacation homes occupied seasonally. These connections receive service pressure that does not meet DOH's 30 psi minimum requirement. Some of these connections utilize individual booster pumps (refer to **Section 5.9.1**). The City has served these connections for over a decade and does not receive complaints from customers on the level of service provided. Due to the small number

of connections and the lack of discontent on the part of the customers, the City does not plan to modify service to these connections.

4.6.6 Old River Crossing

The City has closed the valves at both ends of the old 10” steel main that crosses the Wenatchee River from E Leavenworth Rd to the vicinity of Division St. and no longer uses the main. This WSP and the improvements developed herein assume this river crossing to be abandoned. The river crossing main only played a relatively minor role in meeting system peak hour demands (PHD).

4.6.7 Condition of Distribution System

Aside from the pipe size and capacity issues discussed previously, the principle concerns with the existing pipe system relate to the age and condition of the pipe. The age and condition of City mains varies substantially.

The City believes the 16” Icicle Rd transmission main will not present an unmanageable maintenance problem in the near term. However, in addition to limiting the available capacity of the WTP and wells (see preceding discussion), the 12” steel main on Icicle Rd is old and will eventually need to be replaced. The City has reported a recent increase in the number a leaks encountered on this main, particularly between E. Leavenworth Rd and Shore St, causing its replacement to become a higher priority.

The City installed the 10” steel transmission main on East Leavenworth Rd in the 1930’s. City personnel report that the 10” steel main has heavy internal encrustation, and that pinhole leaks occur periodically; installation of a polyphosphate system substantially reduced the frequency of pinhole leaks. Neglecting capacity concerns, the City may need to consider replacement of this main due to excessive maintenance requirements; the older the main gets, the more it will leak. The City replaced a portion of the main on E Leavenworth Rd near Highway 2 with 12” ductile iron during a Chelan County road project. In 2013 the City replaced another portion of the east end of E Leavenworth Rd near the Urban Growth Area boundary with 16” ductile iron. The Icicle Rd transmission main is newer than the 10” steel main in E Leavenworth Rd. As maintenance requirements become excessive over time, the City will eventually need to replace the 10” steel main in East Leavenworth Rd; it is unclear whether maintenance or hydraulic issues (discussed previously) will first prompt the City to replace the 10” main.

The City serves the Icicle Valley area with numerous individual privately owned service lines tapped directly to the Icicle and E Leavenworth Rd transmission mains. In some cases the City has extended water service to additional residences by connection to the end of an existing service pipe. Service pipe size, material, and installation quality varies widely in this area. The City has limited control of these services by way of shut-offs (where available) at the transmission main, and at meter boxes. In many cases long runs of privately owned service pipe exist between the transmission main and a city meter. This area has a few fire hydrants, but due to the limited distribution system, the transmission mains on Icicle Rd and E Leavenworth Rd provide the only meaningful access to fire flow in the area.

In the Duncan Orchards area east of the City (at the northerly end of E Leavenworth Rd), the existing water distribution system consists of a combination of individual service extensions and developer installed PVC pipe of varying sizes. The City owns none of these pipes. Few fire hydrants exist in this area.

During the meter installation project completed in 1990, crews observed corrosion and encrustation of old iron services; the buildup did not appear excessive. In no case did the internal encrustation render the line unusable. Many older service lines utilize a “seamed” galvanized iron pipe. Leaks that occur on “seamed” galvanized service lines usually occur along the pipe seam.

City Staff report that the system has satisfactory valving in most areas with the exception of several stretches on the Icicle Rd and E Leavenworth Rd transmission mains. The City has also been unable to locate a number of valves within the system and suspect the valve boxes have been inadvertently paved over. This results in a few areas of the system that cannot currently be isolated. Fire hydrants generally have adequate valving; City Staff estimate approximately 20% of fire hydrants have no shut-off on the hydrant lead. In the early 1990s, City crews encountered a wood stave hydrant lead, indicating the possibility that others may exist in the system.

In general, the City Limits have good fire hydrant coverage. The service area south of the City along the Icicle Rd and E Leavenworth Rd transmission mains has sparse hydrant coverage due to the lack of distribution capacity extending out from the transmission mains; the lack of transmission capacity and distribution mains limit the fire flow that could be withdrawn from hydrants on E Leavenworth Rd. In order to reduce demand for urban services in this area outside the UGA the City will only install a fire hydrant in this area when the City has determined that a hydrant serves the best interests of the City. Applicants for hydrants in this area are responsible for all costs associated with its installation.

The City’s 2011 WSP reported average annual unaccounted for/non-revenue/distribution system leakage (DSL) of approximately 4%. In 2016 the City calculated DSL to be approximately 15% (refer to **Table 2-5**). The City attributes increased DSL primarily to a combination of meter inaccuracies (30-year old service meter system; refer to following Section) and old leaking mains. Other contributing factors possibly include water used but not recorded for flushing/hydrant testing/street washing, unauthorized unmetered uses and reservoir overflows (Refer to **Section 8.4**).

4.6.8 Water Service Meters

Leavenworth’s current water service meter system is nearly 30 years old. In recent years the City’s distribution system leakage (DSL) has increased considerably (Refer to **Tables 2-4, Table 2-5, and Section 8.4**). The City believes the primary reason for increased DSL is failing service meters causing them to under read water sold. The City is currently working to obtain funding through the Bureau of Reclamation WaterSMART program to assist in funding new service meters throughout the City. The City plans to replace all service meters citywide within the next few years.

4.7 Control System

The existing domestic water control system consists of Programmable Logic Controllers (PLC's) at 5 locations: Water Treatment Plant (WTP), well pumping station (wells), Icicle reservoir, Booster pump station, and Ski Hill reservoir. All sites communicate over an FCC licensed radio network. Historically, the licensed radio communications system has been problematic due to the low frequency required to enable transmission up the Icicle canyon from the wells to the WTP.

The City has the capability to automatically control the WTP and wells based on the level of the Icicle reservoir. The City generally operates the WTP at a constant flow rate rather than varying the flow rate with the reservoir level. The operator sets the WTP flow rate at approximately the average day demand flow rate (adjusted seasonally based on operator experience) and then the wells equalize peak demands in excess of the WTP flow rate. The WTP serves as the lead source, and the wells function as needed to meet demand.

The PLC's at the wells were upgraded to a modern Allen Bradley Compact Logix series with Ethernet during construction of Well #3 in 2014. The other existing PLCs are Allen Bradley SLC and Micrologix 1500 series, which are now considered legacy equipment and are due for an upgrade. These PLC's only have serial communications, while newer PLC's use Ethernet communications. The existing hardware also has limited support from the manufacturer, resulting in higher maintenance costs and lower availability of spare parts.

A SCADA computer running a custom Wonderware application is installed at the WTP to monitor the entire water system and call out alarms via voice modem. The SCADA interface allows the system operator to view all water system data, alarms, and make set point changes for control of the equipment. The system also includes provisions for the operator to access the SCADA computer via remote desktop to reduce travel time to the WTP. This system is currently up to date.

The City plans to move forward with PLC and communications upgrades at all sites (except the wells) within the next 3 to 5 years.

4.8 Overall Water System Reliability

Leavenworth has a certain amount of supply redundancy due to its four sources of supply (Wells #1, #2, #3 and WTP). However, various system characteristics could threaten reliability under certain circumstances as shown in the Table following.

Table 4-11 Water System Reliability

Reliability Vulnerability	Effect on Water System
Interruptible Water Rights	Nearly half of the City’s existing instantaneous water rights are subject to interruption depending on the flows in Icicle Creek and/or the Wenatchee River. In the past this has not presented a problem; however, as demand increase with growth, water rights interruption could pose a threat to water system reliability.
Loss of Electrical Power	The City has equipped the wells with a backup power generator. At present, the wells have sufficient capacity to meet system demands. The WTP cannot function without electrical power. Under most conceivable situations, customers would not lose water service during a power interruption.
WTP or Well Out of Service	<ul style="list-style-type: none"> • <u>Current ADD</u> – minimal effect because the City has four independent sources, each of which has capacity exceeding current ADD (standby storage is also available) • <u>Current MDD</u> – minimal effect because any two of the City’s four sources has capacity exceeding current MDD (standby storage is also available) • <u>20-year ADD</u> – minimal effect because any two of the City’s four sources has sufficient capacity to meet 20-year ADD (standby storage is also available) • <u>20-year MDD</u> – minimal effect provided two sources do not go down simultaneously; any three of the City’s four sources will meet projected 20-year MDD (standby storage is also available)
Main Break	Minimal effect because the distribution system is well looped in most areas and generally has adequate valves to isolate sections of main requiring repair

4.9 Summary of System Deficiencies

The Table following summarizes the deficiencies identified in this Section.

Table 4-12 Summary of Water System Deficiencies

Area of System	System Component	Description of Deficiency(ies)
Supply	Quantity of Supply	No deficiency identified or anticipated.
	Wells and Pumps	No deficiency identified or anticipated.
	Water Treatment Plant	<ul style="list-style-type: none"> • Fish screen on raw water intake pipe does not meet current standards. • During periods of high sediment loading in Icicle Creek (primarily during spring runoff), WTP filters require backwashing at 8-10 hour intervals. • When the water plant is off-line, there is a lack of sufficient potable water at the plant for filter washing and other domestic uses. • There is no backup power (i.e., the WTP cannot operate during power outages). • Office/Lab is too small and is in a very noisy location. • Lack of indoor chemical storage area. • No fencing exists around the backwash pond area which is near a public trail. • Other miscellaneous WTP deficiencies. Refer to Section 4.2.3.
	Disinfection	No deficiency identified or anticipated.
	Water Quality Testing	No deficiency identified or anticipated.
Water Rights	Quantity of Rights	<ul style="list-style-type: none"> • The City has adequate annual water rights to meet projected 20-year demand; the City does not have adequate rights to meet projected ultimate demands without the additional water rights currently pending. • The City does not currently have adequate instantaneous water rights to operate all sources of supply concurrently without relying on interruptible water rights.
Booster Zones	Zone 2 (existing Ski Hill)	No booster pump, storage, or distribution system deficiencies identified or anticipated; however when the City implements additional booster zones to serve the Ski Hill area, additional booster pump capacity may become necessary.
	Future Zones	Will need additional pressure zones to serve Ski Hill Area above elevation 1,300.
Storage	Zone 1 (Main Zone)	No storage deficiencies identified or anticipated.
Distribution	PHD Pressure	<p>Some areas do not meet City minimum pressure goal (40 psi) under current and projected 20-year PHD.</p> <ul style="list-style-type: none"> • West residential area in the vicinity of Mountain View Dr. • Northwest residential area in the vicinity of Pine St and Ski Hill Dr (existing Zone 2 booster station).
	MDD Fire Flow	<p>Several areas do not meet City fire flow criteria under either current or projected demands:</p> <ul style="list-style-type: none"> • West residential (West St & Mine St). • West residential (Park Ave & Mountain View Dr). • Downtown areas. • Safeway (Highway 2 & Riverbend Dr). • East Leavenworth Rd & Dye Rd. • East Leavenworth Rd & Dempsey Rd.
	Service Meters	Service meters inaccurate and failing.
Control System	Adequacy of Control	Outdated PLCs, phantom calls, spare parts unavailable.
Reliability	Threats to System	No unmanageable threats to reliability identified or anticipated.

5.0 IMPROVEMENTS

5.1 Introduction

This section identifies a system improvement or a range of system improvement alternatives for each deficiency listed in **Section 4**. Where applicable, **Figure 3** shows the geographical location of system improvements.

The cost estimates included in this section represent planning level estimates based on preliminary evaluations and assumptions; the cost estimates provide a basis for comparing alternatives and allow the City to approximate financing needs for preparation of a capital improvements plan (CIP). Estimated costs were derived from other similar projects in central and eastern Washington constructed in the past 10 years; cost have been modified depending on actual project design specifics, the cost of labor and materials, and market conditions at the time of project implementation.

When the City prepares to implement the capital projects identified herein, the City will prepare a more detailed evaluation and cost estimate in a preliminary engineering report. In some cases DOH may require a Project Report in accordance with WAC 246-290-110 to address project specifics prior to project approval. In most cases, DOH does not require a Project Report for distribution system improvements identified in a WSP. However, for a new reservoir, pressure zone, or WTP upgrades, DOH would likely require the City to define in greater detail the improvement(s) identified in this WSP in the form of a Project Report.

5.2 Supply

The supply analysis indicates that the City will not need supply capacity improvements during the 20-year planning period provided system water demand does not grow at a higher rate than projected. The City increased pumping capacity at the existing well field in 2014 by adding Well #3 to increase supply capacity and redundancy. The City may consider eventually expanding capacity of the WTP to provide additional supply capacity and redundancy. As the City approaches ultimate demand levels, an expansion of supply facilities will become necessary as the City does not have sufficient supply capacity to meet ultimate max day demand with the largest producing source facility (water treatment plant) offline. No improvements to water supply with respect to capacity are planned during the 20-year planning period.

5.2.1 *Water Treatment Plant*

The following Table contains the Water Treatment Plant (WTP) issues identified in **Section 4.2.3** and a conceptual overview of the improvement alternatives. The Table indicates the City's chosen alternative for issues where the City considered multiple improvements. The Sections following **Table 5-1** contain detailed descriptions of the selected WTP improvements along with estimated costs.

Table 5-1 Summary of WTP Problems and Improvement Alternatives

Problem	Improvement Alternatives	Advantages and Disadvantages	Key Issues
<p>1. Fish screen on raw water intake pipe does not meet current standards.</p>	<p><u>Screen that prevents fish passage and provides pre-screening to reduce sediment load</u></p>	<p>-</p>	<ul style="list-style-type: none"> • Screen ideally will prevent fish passage, provide pre-screening, be self cleaning, and meet the requirements of WDFW for velocity and size • Screen ideally will not be susceptible to freezing or result in high head loss
<p>2. During periods of high sediment loading in Icicle Creek (primarily spring run off), WTP filters must be backwashed at 8-10 hour intervals</p>	<p><u>Make O&M adjustments, no capital improvements</u> - shutdown WTP during spring runoff and perform annual plant maintenance</p> <p>Based on the advantages and disadvantages of this and the other alternatives, the City has selected this alternative for dealing with high sediment loading</p>	<p>Advantages</p> <ul style="list-style-type: none"> • No capital costs • During high turbidity periods, demand is low enough that wells can meet system demand • No new unit process <p>Disadvantages</p> <ul style="list-style-type: none"> • Intermittent filter operation may not be practical (reduced treatment effectiveness, etc.) • As system demand grows, wells may not have sufficient capacity to supply system without WTP. • Does not address turbidity due to landslides, rainstorms or other unforeseeable events (as opposed to predictable spring runoff) 	<p>-</p>
	<p><u>VAF2000 prefilter</u> – compact mechanical prefilter with automatic backwash; City personnel initially identified this alternative and have done some pilot testing. VAF2000 is manufactured by the Valve and Filter Corp.</p>	<p>Advantages</p> <ul style="list-style-type: none"> • Would increase filter run times between backwash • Compact size • Automatic backwash <p>Disadvantages</p> <ul style="list-style-type: none"> • Water from intake would need to be pumped through prefilter (no pumping currently required) • Additional backwash water would be created which would contribute the already overloaded backwash process, thus increasing backwash improvement costs • Prefilter backwash may not settle as readily as coagulated/flocculated water from sand filters • Requires a separate unit process to operate • Backwash water counts against water right 	<ul style="list-style-type: none"> • Additional treatment of prefilter backwash water (in addition to settling) may be required to meet NPDES permit requirements since this water would not see a coagulant as is currently the case • Additional backwash water would be added to the already overloaded backwash water system. However, this additional backwash water should be offset at least partially by a reduction in required frequency of backwashing the sand filters. • Where to locate this equipment (including pumps, building, etc.) • Costs would include filters, pumps, electrical, building to house this equipment, piping modifications • May not be as simple or inexpensive as advertised by filter manufacturer • Desired/required control and automation features

Problem	Improvement Alternatives	Advantages and Disadvantages	Key Issues
<p>(continued from previous page)</p> <p>2. During periods of high sediment loading in Icicle Creek (primarily spring run off), WTP filters must be backwashed at 8-10 hour intervals</p>	<p><u>Clarification/sedimentation</u> – either conventional process (i.e., separate flocculation and clarification), or solids contact process (flocculation and clarification combined), requires new basin</p>	<p>Advantages</p> <ul style="list-style-type: none"> • Would increase filter run times between backwash • Would reduce total backwash water volume <p>Disadvantages</p> <ul style="list-style-type: none"> • Requires separate basin, limited site availability • Substantial cost but would reduce backwash improvement costs • Requires a separate unit process to operate • Likely most costly alternative; also most significant process change 	<ul style="list-style-type: none"> • Addition of a clarifier represents a significant process modification and would impact routine O&M requirements • Uncertainty of available room while still leaving space for future plant modification or replacement – depending on type may require an area as small as 50'x50' to as large as 100'x100' • Costs would include concrete basin and related equipment (settled solids removal) and significant piping revisions if existing coagulation equipment and flocculation basin is to be used.
<p>3. When the water plant is off-line, there is a lack of sufficient potable water at the plant for filter washing and other domestic uses</p>	<p><u>Infiltration gallery</u> – existing intake replaced by well screen installed horizontally below water level adjacent to Icicle Cr., backfill with a uniformly graded fine gravel</p>	<p>Advantages</p> <ul style="list-style-type: none"> • Would increase filter run times between backwash • Would eliminate much of the sediment at the source which would eliminate sediment handling at downstream processes • Would resolve intake screen problems (fish, freezing) • Would reduce backwash water volume • Additional O&M requirements would be minimal as compared to the other alternatives, no new unit process <p>Disadvantages</p> <ul style="list-style-type: none"> • Not certain if existing terrain is suitable (rock, etc.) • Due to possible headloss across the screen, pumping water from the infiltration gallery may be required. 	<ul style="list-style-type: none"> • Site feasibility • Consistency of groundwater levels adjacent to Creek over the course of the year • Costs would involve excavation and screen installation, potentially pumping equipment and related electrical, piping modifications
	<p><u>Utilize existing chemical storage tank onsite (3,000 gallon)</u> – related improvements would include piping and pumping equipment to reservoir</p>	<p>Advantages</p> <ul style="list-style-type: none"> • Lower capital expense • Utilizes existing double walled insulated and heated chemical storage tank <p>Disadvantages</p> <ul style="list-style-type: none"> • May not be feasible due to condition and specifics of tank • Volume of chemical storage tank is relatively small 	<ul style="list-style-type: none"> • Whether the existing chemical storage tank should be preserved or converted to the water storage reservoir
	<p><u>Construct storage of a size suitable for plant needs (10K-30K gallons)</u> – related improvements would include piping and pumping equipment to reservoir</p> <p>The City selects this alternative for implementation</p>	<p>Advantages</p> <ul style="list-style-type: none"> • Larger volume available <p>Disadvantages</p> <ul style="list-style-type: none"> • Significant capital expense 	<ul style="list-style-type: none"> • Location of new tank

Problem	Improvement Alternatives	Advantages and Disadvantages	Key Issues
4. There is no backup power, therefore, the WTP cannot operate during power outages.	<u>Provide backup power generator at WTP</u>	Advantages <ul style="list-style-type: none"> • Continued plant operation during power outages Disadvantages <ul style="list-style-type: none"> • Backup power does not provide complete source reliability. That is, the WTP may be off-line for a number of other reasons 	<ul style="list-style-type: none"> • Water reservoir is intended to provide water during source outages. If this is acceptable relative to the expected power outage duration, backup power for WTP is not necessary • Wells already have backup power; additional supply redundancy reliability may not be justifiable
5. Smaller than ideal lab area in a very noisy location	<u>Construct larger lab by adding onto existing office area</u>	Advantages <ul style="list-style-type: none"> • Reduce potential for long term operator hearing loss Disadvantages <ul style="list-style-type: none"> • Limited area available 	<ul style="list-style-type: none"> • Building footprint has been field approximated. Building expansion may require a pier type foundation due to site topography
6. Lack of onsite chemical storage area	<u>Construct onsite shed with power and insulation for storing coagulant</u>	See comments at right	<ul style="list-style-type: none"> • Chemicals currently stored offsite • Available area is limited. This improvement must be coordinated with other improvements which affect site layout • May be best addressed in conjunction with future WTP replacement.
7. No fencing around WTP which is near a public trailhead	<u>Fence around the WTP</u>	Advantages <ul style="list-style-type: none"> • Secure the WTP perimeter 	-
8. Other Reported Issues:	<u>Refer to Section 5.2.1.1 for other reported issues improvements</u>	-	-

5.2.1.1 Improvement Alternatives Development

The following Sections describe the WTP improvement alternatives considered and the estimated cost.

1. Raw Water Intake Fish Screen

The City's raw water intake screen does not meet current Department of Fish and Wildlife (DFW) requirements. If and when the City decides to modify the existing raw water intake screen (or if compelled by DFW at some later date) the City will use the following process:

- DFW will provide the City with specific criteria and requirements for the screen.
- The City and its engineer will perform an evaluation if multiple alternatives exist that will achieve the desired outcome (feasibility, cost, pros and cons of each alternative).
- After selecting an alternative, the City will submit the proposed solution to DFW and the National Marine Fisheries Service (NMFS) for review and concurrence with the City's decision.
- The City will then investigate the permits associated with the proposed solution and begin the application process. At this time the City cannot predict which permits will apply. JARPA, SEPA and NEPA may or may not be required depending on the selected alternative.
- Either in conjunction with or following the permit process, the City will begin design of the facilities and construction will follow thereafter.

The City chooses to delay action on the raw water intake screen indefinitely. If compelled by DFW, the City will modify the WTP intake screen. The City plans to explore funding sources to determine whether grant money exists that does not carry with it a prohibitive administrative effort.

2. High Sediment Loading

The City takes the WTP offline during the spring runoff when raw water turbidity reaches its peak; while offline the Operator performs routine maintenance on the WTP facilities. The wells supply the system during this period; the Operator reports that the capacity of the City's wells significantly exceeds demand during spring runoff. Several alternatives exist that would allow the City to operate the WTP through the spring runoff period, but they require significant additions and/or modifications to the WTP. At this time, the City does not feel the benefits of operating the WTP through high sediment loading to justify the cost of such an upgrade. The City plans to continue to operate the WTP as described previously.

3. On-Site Water Storage

The City plans to construct a new water storage cistern and install a booster pumping system and piping to provide water for cleaning the plant (filters or chlorine contact chamber) when the plant is offline as well as to provide for domestic needs (toilets, etc.). The following table estimates the cost of the system.

Table 5-2 On-Site Water Storage

Item Description	Estimated Cost
New water storage cistern (10,000 gal)	\$25,000
Trenching for additional pipes	6,000
Site piping, pressure tank, pumps, electrical, installation	20,000
Subtotal	\$51,000
Taxes (8.4%)	4,284
Engineering – design, inspection, construction admin (25%)	12,750
Contingencies (20%)	10,200
Total (rounded to nearest \$10,000)	\$80,000

4. Backup Power

The City installed a backup power generator for the wells which supplies the City with water during a power outage. A preliminary analysis indicates the WTP would require approximately a 75KW generator based on the following assumptions: need to operate the following major system components plus an allotment for smaller system components not specifically called out (lighting, etc.): 20 HP pump to distribution system, two 5 HP vacuum pumps, 5 HP wash pump, 1.5 HP service pump, inlet/outlet valves, chemical feed pumps, chlorination and water quality monitoring equipment. Assuming a diesel generator with in-base fuel tank, weatherproof outdoor enclosure, exhaust silencer, automatic transfer switch, and electrical panel modifications, the estimated cost is \$100,000 including tax, contingency and engineering.

At this time, the City feels that the supply redundancy provided by the backup generator at the City’s wells site adequately protects against interruptions in water service due to power failure. The City may consider backup power for the WTP if/when the City renovates or expands the WTP.

5. Small, Noisy Lab

A building extension will be constructed to the west of the existing lab building measuring approximately 15’ x 20’. To work around the steeply sloped back side of the existing building, a pier type foundation may be required for part or all of the building. Such a foundation may necessitate a wood frame building rather than matching the existing concrete block. The estimated cost is approximately \$75,000.

6. Lack of Onsite Storage Chemical Storage Area

The City currently stores chemicals offsite and transports them to the WTP as needed. This inconvenience does not significantly disrupt operation of the WTP, however the City would like to consider construction of an onsite chemical storage shed with power and insulation. Based on the results of in-depth evaluation and analysis regarding the ultimate plan for the WSP (refer to **Section 5.2.1.2**), the City will determine whether to construct an onsite chemical storage shed. The estimated cost is approximately \$25,000.

7. Fencing around WTP Perimeter

Total distance is approximately 1,000 LF which at \$19/LF plus a gate and miscellaneous appurtenances results in an estimated cost of approximately \$25,000.

8. Other Reported Issues

The following Table outlines other WTP issues reported by the Operator and the corresponding cost.

Table 5-3 Other Reported WTP Issues – Improvements

Improvements for Reported Issues	Estimated Cost ⁽¹⁾
<ul style="list-style-type: none"> • Calibrate Rortorek actuator valves on intake and effluent 	\$1,000-3,000 allowance
<ul style="list-style-type: none"> • Replace intake pipe 	\$0 ⁽²⁾
<ul style="list-style-type: none"> • Replace leaking chlorine chamber valve to backwash pond • Online chlorine analyzer 	\$5,000 allowance \$5,000
<ul style="list-style-type: none"> • Replace backwash pipe and add flapper gate at backwash pond • Larger backwash pond with a built in concrete ramp 	\$3,000 \$30,000
<ul style="list-style-type: none"> • High air pressure scrub cleaning filter during backwash 	\$1,000-3,000 allowance
<ul style="list-style-type: none"> • New I-beams above filters for accessing filter bays • Replace filter media • Replace sub-floor • Replace leaking and failing gates in chlorine chamber and on the filter cells • Sandblast and paint trusses in chlorine contact chamber; spot repair concrete and seal • Sandblasting and epoxy finish needed on flumes, channels, hoods and a number of welding patches • Raise roof (not enough room in WTP to get ladders down into filter) 	\$500,000 ^{(3) (4)}
<ul style="list-style-type: none"> • New alarm callout system • Surge protector for PLC • Update PLC • New SCADA program 	(5)
<ul style="list-style-type: none"> • Lift system for vacuum pumps near ceiling 	\$10,000
<ul style="list-style-type: none"> • Screen house improvements (flow gates, concrete cracks and drain system) or demolition 	\$0 ⁽²⁾
<ul style="list-style-type: none"> • Misc. items needed: scales for coagulant, and orthophosphate, additional storage space (remove old abandoned inoperable pumps and piping), automatic lights and fan in chlorine room, GIS map on computer, raw and finished water faucets, better insulation in building, repair leaking roof, and other smaller miscellaneous items not listed above. 	\$50,000
Total (rounded to nearest \$10,000)	\$610,000

(1) Estimated costs include tax (8.4%), engineering (25%), and contingency (20%).

(2) Trout Unlimited organized a Waterline Assessment completed by IntegriTech regarding the gravity-feed intake piping to the water treatment plant. Refer to **Appendix D** for excerpts from assessment. The City plans to demolish WTP screen house as part of intake main replacement project. Costs assume Trout Unlimited acquires all construction funding to replace intake pipe and demolish screen house.

(3) Addressing some of the issues reported with the WTP would require significant modifications to and/or investment in the facility which Leavenworth may not want to undertake without assessing the longer-term plan for the WTP; refer to discussion in **Section 5.2.1.2**.

(4) The cost associated with these improvements is difficult to estimate individually because they would likely be implemented as a part of a more comprehensive update of the WTP. For the purpose of this Plan an order of magnitude cost of \$500K is used for these improvements; the City plans to conduct a feasibility analysis to refine these costs and to contrast them with other future alternative for the WTP (refer to **Section 5.2.1.2**).

(5) Refer to **Section 5.8** for control system upgrades and improvement costs for entire system (including WTP).

5.2.1.2 Water Treatment Plant Ultimate Planning

The City’s Water Treatment Plant (WTP) is nearly 50 years old and was constructed before the Safe Drinking Water Act was implemented. The WTP currently has a growing number of deficiencies outlined in previous Sections. Unforeseeable regulatory changes could also add to the list of plant deficiencies. Due to the age of the plant and the increasing number of issues, the City would like to consider ultimate planning alternatives for the WTP.

The Table following summarizes the WTP ultimate planning alternatives with advantages and disadvantages for each.

Table 5-4 Summary of Considerations for Water Treatment Plant Alternatives

Alternative	Advantages	Disadvantages	Key Issues
1. WTP Rehabilitation/ Expansion	<ul style="list-style-type: none"> • Makes use of existing facilities. • Would retain a preferred (surface) water source. 	<ul style="list-style-type: none"> • May not be feasible/economical. • Would require an in-depth evaluation of the plant. 	<ul style="list-style-type: none"> • May be enough unit processes requiring replacement that a new WTP would be preferred.
2. WTP Replacement	<ul style="list-style-type: none"> • WTP deficiencies would be resolved by new plant construction. • New WTP would reduce O&M related to surface water treatment. • Would retain a preferred (surface) water source. 	<ul style="list-style-type: none"> • May be significantly more expensive than rehabilitation of WTP. • Permitting may have significant effect on feasibility. 	<ul style="list-style-type: none"> • Site adequacy (i.e. constructability while keeping existing facility in service).
3. Abandon WTP	<ul style="list-style-type: none"> • WTP issues become irrelevant. • Simplifies water supply system. 	<ul style="list-style-type: none"> • The City currently has surface water rights and would need to transfer them to groundwater which may not be feasible. 	<ul style="list-style-type: none"> • Water rights issues

The City would like to perform an in-depth evaluation and analysis to determine the long-term plan for the WTP. The in-depth evaluation and analysis is needed to help the City determine whether ultimately rehabilitation, replacement, or abandonment of WTP is more practical, economical, and feasible. The cost of the WTP evaluation and analysis is estimated at approximately \$30,000-60,000.

5.3 Water Rights

The water rights analysis indicates the City will not need additional annual water rights within the 20-year planning horizon. However, the City will eventually need additional water rights to meet projected ultimate system demands. The City is currently in the process of obtaining additional water rights (refer to **Section 4.3**). With these additional water rights it is projected the City can meet ultimate annual demand. However, the City will rely on approximately 1,229 gpm of interruptible water rights when all sources of supply operate concurrently. It is unlikely the City will need to operate all sources of supply concurrently for some time as the City can meet 20-year max day demand with the largest source (Water Treatment Plant-1,600 gpm) out of service. To meet ultimate demand, it will become necessary for the City to utilize all sources of supply except Well #2 (750 gpm) and rely on approximately 479 gpm of interruptible water rights (1,229 gpm if all sources of supply operating concurrently).

The following Table contains possible solutions to the City’s eventual instantaneous flow rate water rights shortfall once all sources of supply except Well #2 will be required to run to meet projected demand. The Table ranks the alternatives in order of probable feasibility taking into account the current regulatory environment. These alternatives will only be needed if the City does not feel comfortable with relying on interruptible instantaneous water rights.

Table 5-5 Preliminary Alternatives for Addressing Ultimate Water Rights Needs

Rank of Feasibility	Description	Comments/Key Issues
1	Buy existing water rights	<ul style="list-style-type: none"> • Feasibility dependent on a willing seller and ability to transfer rights • Could be expensive
2	Increase conservation	<ul style="list-style-type: none"> • Existing residential usage is low; it is unclear whether the City can significantly reduce consumption through conservation. • Commercial conservation potential exists where existing buildings have not been retrofitted with low use plumbing fixtures and where large base water allotments exist. • A conservation oriented rate structure may encourage conservation; this would involve implementing a rate structure with a small base volume allotment, higher overage rates, and adding customer water use history to monthly water bills.
3	Restrict future growth (moratorium on new connections)	<ul style="list-style-type: none"> • Significant political and economic issues accompany this approach.
4	Reuse wastewater	<ul style="list-style-type: none"> • Very high initial and on-going costs
5	Obtain additional water rights from the State	<ul style="list-style-type: none"> • Unlikely in the current regulatory environment

The City will reassess the adequacy of water rights on a routine basis in conjunction with updating its WSP. The City will implement one or a combination of the alternatives from the preceding Table if system growth makes it necessary.

5.4 Booster Zones

The analysis of the existing Ski Hill booster zone (Zone 2) indicates the zone will not require improvements within the 20-year planning horizon. However, the City will need additional booster zones to serve the Ski Hill area above elevation 1,300. The following Sections outline the City’s plan for additional booster zones.

5.4.1 Existing and Future Pressure Zones

The City intends Zone 1 to serve connections up to elevation 1,200. In most cases service from Zone 1 to connections at or below elevation 1,200 results in static pressures of at least 50 psi and pressures during PHD of at least 40 psi. At present, Zone 1 serves the Mountain View Dr area which has connections as high as elevation 1,230. Eventually the City will connect the Mountain View Dr area to Zone 2.

The City plans for existing Zone 2 to serve connections up to elevation 1,300. The City may eventually wish to provide service to the highest portion of the UGA in the northwest corner above elevation 1,300 and possibly as high as 1,440; this will require two additional booster zones. The table following contains the details of the City’s pressure zone plans.

Table 5-6 Existing and Future Pressure Zone Details

Attribute	Zone 1 (existing)	Zone 2 (existing)	Zone 3 (proposed)	Zone 4 (proposed) ⁽¹⁾
Existing Highest Service Elevation	1,230	1,330	-	-
Planned Highest Service Elevation	1,200	1,300	1,400	≈ 1,440
Planned System HGL ⁽¹⁾	1,341	1,424	1,520	1,620

⁽¹⁾ Zones 1, 2, and 3 the system HGL is an existing or planned reservoir overflow elevation; Zone 4 will most likely be a closed booster system and not have a reservoir.

5.4.2 Zone 2 (Existing Ski Hill)

As the City adds pressure zones to serve the Ski Hill area, the new zones will withdraw water from Zone 2. The growth in Zone 2 and the additional demands of new booster stations will eventually necessitate an upgrade of the Zone 2 booster pumps. The City designed the Zone 2 booster station such that the building and piping will support larger booster pumps than currently exist. The Zone 2 booster station will eventually need capacity to simultaneously supply Zone 2 20-year MDD (356 gpm), Zone 3 20-year MDD (72 gpm) and Zone 4 20-year PHD (102 gpm). As growth dictates during the 20-year planning period, the City plans to eventually upgrade the pumping capacity of the Zone 2 booster station with a minimum of two pumps each with capacity of 550 gpm. System growth will ultimately dictate the timing of expanding the Zone 2 booster station pumping capacity. The City estimates the total cost of the upgrade at \$40,000.

The Zone 2 booster station may require additional expansion beyond the 20-year planning period. The City plans to address booster pump capacity expansion incrementally as necessitated by growth within and beyond the 20-year planning period.

5.4.3 Zone 3 (Future Upper Ski Hill)

The City plans the following improvements to serve customers in the Ski Hill area between elevations 1,300 and 1,400.

As growth pressures dictate, the City will construct a booster station that withdraws from Zone 2 and supplies Zone 3. **Table 2-11** contains projected demands for Zones 1, 2, 3, and 4.

The Zone 3 booster station will need to supply the 20-year MDD of Zone 3 (72 gpm) plus the 20-year PHD of Zone 4 (102 gpm). In the interest of redundancy, the City plans to initially construct the booster with two pumps, each capable of supplying 180 gpm (assume a combined capacity of 340 gpm). The City will construct the booster station such that the building, piping, and electrical systems will allow eventual expansion to meet ultimate demands for Zone 3; ultimate capacity of the Zone 3 booster will include the ultimate MDD of Zone 3 (269 gpm) and the ultimate PHD of Zone 4 (205 gpm). The City plans an ultimate capacity for the Zone 3 booster of at least two pumps each capable of 475 gpm (assume combined capacity of 900 gpm).

The City plans to construct a reservoir to provide reliability for Zone 3. The reservoir will have an approximate overflow elevation of 1,520. The City will make the Zone 3 reservoir available to Zone 2 and Zone 1 via pressure reducing valves located at the Zone 2/3 boundary. The following calculations estimate the required volume for the Zone 3 reservoir based on ultimate demands and ultimate Zone 3 booster capacity:

Operational Storage = 40,000 gal (allowance)
 Equalizing Storage = [(559 gpm + 205 gpm) – (900 gpm)] x (150 min) = 0 gal
 Standby Storage = (200 gpd/ERU) x (545 ERUs) = 109,000 gal (DOH minimum)
 Fire Storage = (1,500 gpm) x (60 min) = 90,000 gal

Assume nesting of fire and standby storage
 Required Storage = 40,000 gal + 109,000 gal ≈ 150,000 gal

Zone 3 will need a transmission main to connect the Zone 3 booster to the Zone 3 reservoir. For planning purposes, the City assumes that sufficient property exists at (or can be acquired adjacent to) the existing Ski Hill reservoir site to allow construction of the Zone 3 booster station. **Figure 3** shows the assumed location and layout of Zone 3 facilities.

The Table following estimates the cost of constructing the Zone 3 facilities.

Table 5-7 Estimated Cost of Future Zone 3 Facilities

Item Description	Estimated Cost
Booster Station	
Site grading and access road	\$15,000
Building (assume 18' x 25' CMU block)	110,000
Site and building piping (PRV & limit switch, fittings)	60,000
Pumps, electrical, and controls	60,000
Property acquisition (if required)	25,000
Booster Station Subtotal	\$270,000
Reservoir	
Ground level steel 150,000 gal reservoir ⁽¹⁾	370,000
Telemetry system tied into SCADA	25,000
Site piping	50,000
Property acquisition (if required)	30,000
Gravel access road ⁽²⁾	20,000
Reservoir Subtotal	\$495,000
Transmission/Distribution Improvements	
≈ 1,000 LF of 12" main from booster to reservoir ⁽³⁾	92,000
Subtotal (rounded to the nearest \$10,000)	\$770,000
Taxes (8.4%)	64,260
Engineering – design, inspection, construction admin (25%)	193,000
Contingencies (20%)	154,000
Total (rounded to nearest \$100,000)	\$1,200,000

⁽¹⁾ Includes site work, excavation, foundation, and fencing.
⁽²⁾ Assume 1,000 LF, with 6" crushed rock, 12 ft wide, and \$15/SY.
⁽³⁾ Assume \$92/LF per **Table 5-9** for 12" main without asphalt replacement.

Growth in the Ski Hill area will dictate the timing of Zone 3 implementation. At this point the City cannot predict whether the Zone 3 improvements will become necessary during the 10-year or 20-year planning horizon.

5.4.4 Zone 4 (Future Top Ski Hill)

The City plans the following improvements to serve customers in the Ski Hill area from elevation 1,500 to approximately 1,550.

As growth pressures dictate, the City will construct a booster station that withdraws from future Zone 3 and supplies Zone 4. **Table 2-11** contains projected demands for Zones 1, 2, 3, and 4.

Because the City’s ultimate projections show a relatively modest population for Zone 4, the City plans to serve the area using a closed pressure zone (no gravity reservoir). The Zone 4 booster station will need to supply the PHD of Zone 4 with the largest booster pump out of service (also excluding a fire pump); the booster will also need capacity to supply MDD plus fire flow.

Water systems usually fulfill the requirements of a closed system booster station with two pumps capable of the zone PHD and an additional fire pump capable of supplying the fire flow rate for the zone. However, some systems use different pump configurations to fulfill the closed system requirements (e.g. a three pump arrangement where three equally sized pumps have a combined capacity that meets MDD plus fire flow of the zone). Due to uncertainty associated with when growth will prompt implementation of Zone 4, the City will determine the initial capacity and pumping arrangement for the Zone 4 booster station at the time of implementation. The Zone 4 booster station building, piping, and electrical systems will have sufficient capacity to meet projected ultimate Zone 4 PHD (205 gpm) with the largest booster pump out of service (also excluding a fire pump if used) and it will have capacity to meet Zone 4 MDD (75 gpm) plus fire flow (1,500 gpm).

The City assumes that sufficient property exists at or can be acquired adjacent to the existing Ski Hill reservoir site to allow construction of the Zone 4 booster station. **Figure 3** shows the assumed location and layout of Zone 4 facilities. The Table following estimates the cost of constructing the Zone 4 facilities.

Table 5-8 Estimated Cost of Future Zone 4 Facilities

Item Description	Estimated Cost
Booster Station	
Site grading and access road	\$15,000
Building (assume 18' x 25' CMU block)	110,000
Site and building piping	60,000
Pumps, electrical, and controls	60,000
Backup power generator and automatic transfer switch	60,000
Property acquisition (if required)	25,000
Subtotal (rounded to the nearest \$10,000)	\$330,000
Taxes (8.4%)	27,720
Engineering – design, inspection, construction admin (25%)	83,000
Contingencies (20%)	66,000
Total (rounded to nearest \$10,000)	\$510,000

Growth in the Ski Hill area will dictate the timing of Zone 4 implementation. At this point the City cannot predict whether the Zone 4 improvements will become necessary during the 10-year or 20-year planning horizon.

5.5 Storage

The storage analysis indicates the main zone has adequate storage to meet 20-year needs. The City will add storage when growth causes the City to implement Zone 3 to serve the upper Ski Hill area; **Section 5.4.3** contains the storage improvements associate with Zone 3.

5.6 Distribution System

5.6.1 Water Service Meters

Leavenworth plans to replace the City’s water service meters citywide over the next few years. The City is currently working to obtain funding through the Bureau of Reclamation WaterSMART program to assist in funding the new service meters. The estimated cost for new meters is approximately \$900,000. The City hopes to obtain funding for half of that cost and fund the remaining portion through reserves. A city wide service meter replacement will consist of approximately 1,400 new service meters. The City estimates once funding is obtained all meters will be replaced in approximately two years.

5.6.2 Estimated Unit Costs of Distribution System Improvements

The Table following lists the estimated cost of construction for water mains with and without the cost of asphalt replacement. The Table does not include tax, contingencies, and engineering; subsequent tables for specific improvement projects include these items.

Table 5-9 Estimated Distribution System Unit Costs

Diameter (in)	Cost per LF (\$)					Total for Construction	
	Main and Install ⁽¹⁾	Valves, Fittings, Restraints ⁽²⁾	Fire Hydrants ⁽³⁾	Service Connections ⁽⁴⁾	Asphalt Replacement ⁽⁵⁾	without asphalt	with asphalt
8	41	8	16	20	20	85	105
10	48	10	16	20	20	94	114
12	52	10	10	20	20	92	112
14	64	13	10	20	20	107	127
16	77	15	10	20	20	122	142
18	87	17	10	20	20	134	154
20	100	20	10	20	20	150	170
24	126	25	10	20	20	181	201

(1) Based on recent bid tabulations and pipe material costs – assumes PVC C900/905 mains.

(2) Assumes 20% of cost of main and install.

(3) Assumes one hydrant every 500 ft for mains 12” and greater as the majority of these mains are rural transmission mains. For mains less than 12”, assumes one hydrant every 300 ft as the majority of these mains are urban and development mains.

(4) Assumes one service every 100 ft.

(5) Assume 8’ wide restoration.

The distribution system unit costs contained in the preceding Table provide the basis for planning level cost estimates throughout **Section 5**.

5.6.3 Addressing Existing Distribution System Deficiencies

The hydraulic analysis of water system facilities identified some deficiencies with the City’s distribution system relating to meeting minimum pressure goal of 40 psi under PHD and meeting fire flow criteria under MDD. When considering improvements to address distribution system deficiencies, the City feels it prudent to plan for facilities to meet projected ultimate demands because water mains generally have service lives of 50 years or more (rather than the 20-year planning period generally used for WSPs).

The City’s ultimate planning improvements lay out the water system facilities needed to serve the City’s estimated ultimate demands. The City plans to address the system deficiencies identified in this WSP by implementing these improvements. The table following contains the distribution system deficiencies and associated ultimate planning improvement.

Table 5-10 Distribution System Improvements

Type	Locale of Deficiency	Associated Improvement	Ultimate Planning Improvement Designation ⁽¹⁾
PHD Pressure	<ul style="list-style-type: none"> West residential area in the vicinity of Mountain View Dr 	<ul style="list-style-type: none"> Connect this area to Zone 2 	3 & 4
	<ul style="list-style-type: none"> Northwest residential area in the vicinity of Pine St and Ski Hill Dr (existing Zone 2 booster station) 	<ul style="list-style-type: none"> Replace and upsize transmission main from well field and Icicle reservoir (see Figure 3 for sizes and location) 	1B
MDD Fire Flow	<ul style="list-style-type: none"> West residential (West St & Mine St) West residential (Park Ave & Mountain View Dr) 	<ul style="list-style-type: none"> Connect these areas to Zone 2 	3 & 4
	<ul style="list-style-type: none"> Downtown areas 	<ul style="list-style-type: none"> Provide parallel 12” mains on Front St and Commercial St from 8th St to 14th St 	2
	<ul style="list-style-type: none"> Safeway (Highway 2 & Riverbend Dr) 	<ul style="list-style-type: none"> Replace and upsize East Leavenworth Rd transmission main (see Figure 3 for sizes and location) 	1C
	<ul style="list-style-type: none"> East Leavenworth Rd & Dye Rd 		
	<ul style="list-style-type: none"> East Leavenworth Rd & Dempsey Rd 	<ul style="list-style-type: none"> PRV from Titus Rd in Zone 2 to provide supplemental fire flow to Chumstick Highway area 	5
	<ul style="list-style-type: none"> Chumstick Highway & County Shop Rd 		

⁽¹⁾ Refer to **Tables 5-11 and 5-12** for descriptions of ultimate planning improvements, prioritization and planning level cost estimates. Refer to **Figure 3** for location of improvements.

The City plans to address the distribution system deficiencies identified in the preceding table in the context of implementing the City’s ultimate planning improvements for the water system. The Section following reiterates these improvements and lays out the City’s implementation plan.

5.7 Ultimate Planning Improvements

The City’s ultimate planning improvements lay out the water system facilities needed to serve the City’s Future Service Area at build-out. The schematic layout of improvements shown on **Figure 3** illustrates the minimum looping and transmission required within the system to meet the minimum criteria defined herein. In some cases, actual layout and pipe alignments can vary from those shown on **Figure 3**; however, variation from the schematic must satisfy the looping and total transmission capacity intended by **Figure 3**.

As the City begins to implement the improvements identified herein, more detailed evaluations and cost estimates should be prepared during pre-design of specific projects. In some cases DOH may require a Project Report per WAC 246-290-110 to address project specifics for DOH review and approval; projects such as reservoirs and booster stations will likely require a Project Report.

5.7.1 *Ultimate Planning Improvements Schedule*

Each ultimate planning improvement has a schedule trigger that makes the improvement necessary to meet the City’s water system level of service criteria. The Table following summarizes the ultimate planning improvements and provides a general description of the various schedule triggers for the improvements which will help the City determine phasing of improvements projects (refer to **Figure 3** for corresponding schematic map of improvements):

Table 5-11 Ultimate Planning Improvements

Category	Improvement Designation	Location	Purpose & Description	Schedule Trigger
Supply Transmission	1A	Icicle Rd	Main upgrades on Icicle Rd from East Leavenworth Rd to well T-main to prevent excessive pressures when WTP operates: <ul style="list-style-type: none"> Replace 5,800 LF of existing 12" main with 16" from East Leavenworth Rd to the connection with the 24" well field transmission main. 	<ul style="list-style-type: none"> If/when the City upgrades the capacity of the water treatment plant (WTP) this transmission upgrade will prevent excessive pressures on Icicle Rd and East Leavenworth Road when the WTP operates. Maintenance and/or reliability issues due to failures or leakage in this key aging main may also affect prioritization and timing.
	1B	Icicle Rd	Main upgrades from well field T-main to Commercial St & Mill St to allow the City to fully utilize existing supply capacity of wells & WTP: <ul style="list-style-type: none"> Replace 3,400 LF of existing 12" main with 18" from connection with the 24" well transmission main to the Icicle reservoir. Replace 2,000 LF of existing 12" main with 20" from Icicle reservoir to Commercial St & Mill St. 	<ul style="list-style-type: none"> The City needs these main upgrades to address current PHD deficiencies (refer to Table 5-10). The upgrades increase the City's ability to fully utilize the existing supply capacity of the wells and WTP. Maintenance and/or reliability issues due to failures or leakage in this key aging main may also affect prioritization and timing.
	1C	East Leavenworth Rd	Replace aging, deteriorated steel main on East Leavenworth Rd: <ul style="list-style-type: none"> Replace 12,000 LF of existing 10" main with 12" or 16" from Icicle Rd to 2013 E. Leavenworth Rd 16" replacement main. 	<ul style="list-style-type: none"> The City will need these improvements when maintenance of the existing steel main becomes burdensome or if the City constructs storage at the east end of town. Coordinating this improvement with County road projects would allow the City to save money on asphalt restoration.
Downtown Transmission	2	Commercial St	Main upgrades mostly along Commercial St and Front St to provide fire flow to downtown and transmission to east end of system: <ul style="list-style-type: none"> Replace 1,400 LF of 6" main from Mill St to 3rd St with 18". Replace 1,300 LF of 4" and 6" main from Division St to 14th St with 12". 	<ul style="list-style-type: none"> The system needs these improvements to address existing fire flow deficiencies in the downtown area and in the Safeway area (refer to Table 5-10). Maintenance and/or reliability issues due to failures or leakage in this key aging main may also affect prioritization and timing.
		Front St	<ul style="list-style-type: none"> Replace 800 LF of 6" main of on from 8th St to halfway between 9th St and 10th St with 12" 	
Zone 1 Transmission to Zone 2 Booster Station	3	Ski Hill Dr	Main upgrades from the future downtown trunk main to the Pine St / Ski Hill Dr area to bolster suction pressures at Ski Hill booster station #1: <ul style="list-style-type: none"> These improvements stiffen transmission capacity to the Zone 2 booster station; the existing system appears to have adequate capacity for the existing pumps. Replace approximately 3,300 LF of main with 12" from future downtown transmission main to Zone 2 booster station. 	<ul style="list-style-type: none"> The rate of growth in Zones 2, 3, and 4 will determine when it becomes necessary to upgrade transmission capacity to the Zone 2 booster station when growth in Zones 2, 3, and 4 prompt an upgrade of the Zone 2 booster station pumps. The existing pumps in the Zone 2 booster station have capacity of approximately 400 gpm (0.576 MGD); with an assumed MDD ERU of 710 gpd/ERU it has capacity to serve approximately 810 ERUs. Once the population of Zones 2, 3, and 4 exceed approximately 810 ERUs, the Zone 1 transmission improvements to Ski Hill Dr will become necessary to allow larger pumps at the Zone 2 booster. Assuming approximately 40 new ERUs in Zones 2, 3, and 4 per year will allow nearly 20 years of growth.
		Pine St	<ul style="list-style-type: none"> Install 1,400 LF of 12" main from Central Ave to Burke Ave to finish Pine St loop. 	

Category	Improvement Designation	Location	Purpose & Description	Schedule Trigger
Pressure Zones (present and future)	4	Zone 2	<ul style="list-style-type: none"> Upgrade Ski Hill booster station #1 to 1,100 gpm capacity. 12" main needed from Ski Hill Dr to Titus Rd in order to provide fire protection to multi-family development. When Mountain View Dr area is eventually connected to Zone 2 a 14" main is required part way and 12" the rest of the way in order to provide fire protection to multi-family development. In general, 8" looped mains are sufficient to provide service to customers within Zone 2 (except in the areas discussed above). 	<ul style="list-style-type: none"> These upgrades become necessary as development in the pressure zone begins to request water service. Time frames will depend on which areas request water service first. Figure 3 shows schematic layout of mains and looping necessary to meet minimum criteria in all pressure zones; actual layout at implementation may vary from that show on Figure 3.
		Zone 3	<ul style="list-style-type: none"> Construct Ski Hill Booster Station #2 with approximate capacity of 340 gpm. Construct Ski Hill Reservoir #2 at approximate HGL of 1,520. In general, 8" looped mains are sufficient to provide service to customers within Zone 3 (no multi-family fire flow provided in Zone 3). 	
		Zone 4	<ul style="list-style-type: none"> Construct Ski Hill Booster Station #4 with approximate capacity of 210 gpm for normal supply and 1,500 gpm fire flow. In general, 8" looped or 10" dead end mains are sufficient to provide service to customers within Zone 4 (no multi-family fire flow provided in Zone 4). 	
Pressure Reducing Stations	5	Zone 1 / Zone 2	<ul style="list-style-type: none"> Pressure reducing valves between zones make the storage of upper zones available to lower zones. Two PRVs already exist (Ski Hill Dr and Titus Rd); the system needs connecting main and third PRV that connects to the Chumstick Highway near MEND development at pressure zone boundary (elev 1,200); minimum HGL setting of 1,270. This provides fire protection along the Chumstick Hwy and augments downtown & Riverbend fire flows. 	<ul style="list-style-type: none"> These improvements are needed to address current deficiencies (refer to Table 5-10). The PRV between Zone 2 and Zone 1 for Chumstick Highway is needed currently to make Zone 2 fire storage available to Zone 1 for fire suppression.
	6	Zone 2 / Zone 3	<ul style="list-style-type: none"> Install PRVs in Ski Hill Dr and Titus Rd at pressure zone boundary (elev 1,300); minimum HGL setting of 1,370. 	<ul style="list-style-type: none"> Needed when the City constructs storage for Zone 3 and for interim fire protection before full distribution grid is constructed.
Supply Transmission	7	Icicle Rd	<ul style="list-style-type: none"> Replace deteriorated 16" main in and along Icicle Rd. from WTP to East Leavenworth Rd. with 18" main. 	<ul style="list-style-type: none"> Maintenance issues will determine the timing of this improvement.
Distribution System	-	System Wide	<ul style="list-style-type: none"> Small diameter mains restrict distribution system. Replace existing 4" mains with 8" mains. 	<ul style="list-style-type: none"> As necessary due to maintenance issues or as development requires.

5.7.2 Organization and Timing of Ultimate Planning Improvements

The preceding Table summarizes the City’s water system ultimate planning improvements; **Figure 3** shows the layout of the City’s ultimate planning facilities. The City will only need to implement portions of the ultimate planning improvements during the 20-year planning period considered in this WSP; the remainder of the ultimate planning improvements will be implemented beyond the 20-year planning horizon. The Table following contains the City’s organization of ultimate planning improvements.

Table 5-12 Organization and Planning Level Cost Estimate of Ultimate Planning Improvements

Group	Category	Improvement Designation ⁽¹⁾ (see Figure 3)	Location	Improvement	Approximate Cost ⁽²⁾
Improvements Required to meet Current Deficiencies and Critical Deteriorating Mains	Supply Transmission	1B	Icicle Rd	• 3,400 LF of 18" main from connection with the 24" well t-main to Icicle reservoir.	\$700,000
				• 2,000 LF of 20" main from Icicle reservoir to Commercial St & Mill St.	\$520,000
	Downtown Transmission	2	Commercial St	• 1,400 LF of 18" main from Mill St to 3 rd St.	\$330,000
				• 1,300 LF of 12" main from Division St to 14 th St.	\$140,000
	Mains and PRV	5	Zone 1 / Zone 2	• 800 LF of 12" main from 8 th St to between 9 th and 10 th St.	\$220,000
			• Mains and PRV connecting Zone 2 to Zone 1 at Chumstick Highway.	\$530,000	
Subtotal					\$2.44M
Improvements Required when Existing Facilities Deteriorate or to Meet Regulatory Requirements	Supply Transmission	1A	Icicle Rd	• Replace 5,800 LF of existing 12" main with 16" from East Leavenworth Rd to the connection with the 24" well field transmission main.	\$1,090,000
		1C	East Leavenworth Rd	• Replace 12,000 LF of existing 10" main with 12" or 16" from Icicle Rd to existing 16".	\$1,700,000 or \$2,200,000
		7	Icicle Rd	• Replace 12,400 LF of deteriorated 16" main in and along Icicle Rd from WTP to East Leavenworth Rd with 18" main.	\$2,500,000
	Distribution System	N/A	System Wide	• Replace existing 4" mains with 8" mains.	\$1,480,000
Subtotal					\$6.77-7.27M
Improvements Needed Solely to Serve Growth	Zone 1 Transmission to Zone 2 Booster Station	3	Ski Hill Dr	• Replace approximately 3,300 LF of main with 12" from future downtown transmission main to Zone 2 booster station.	\$570,000
			Pine St	• Install 1,400 LF of 12" main from Central Ave to Burke Ave; finish Pine St loop.	\$240,000
	Pressure Zones (present and future)	4	Zone 2	• Upgrade Ski Hill booster station #1 to 1,100 gpm capacity. • Distribution grid (assumed funded by development).	\$40,000
			Zone 3	• Construct Ski Hill Booster Station #2 with approximate capacity of 340 gpm. • Construct Ski Hill Reservoir #2 at approximate HGL of 1,520. • Distribution grid (assume funded by development).	\$1,200,000
			Zone 4	• Construct Ski Hill booster station #4 with approximate capacity of 210 gpm for normal supply and 1,500 gpm fire pump supply. • Distribution grid (assume funded by development).	\$510,000
PRV Stations	6	Zone 2 / Zone 3	• Install PRVs on Ski Hill Dr and Titus Rd at Zone 2/3 boundary.	\$100,000	
Subtotal					\$2.62M
Total Ultimate Planning Improvements					\$12-13M

(1) Refer to **Table 5-11** for additional information on improvements and to **Figure 3** for location of improvements.

(2) Including taxes, engineering, and contingencies; refer to preceding Sections for cost estimates and **Appendix F** for detailed cost estimates for distribution system improvements.

As shown in the **Table 5-10**, the City does not need to implement all ultimate planning improvements to meet current and 20-year system deficiencies. System growth and maintenance needs of existing facilities will determine the implementation schedule for many of the ultimate planning improvements. The Tables following estimate the improved performance of the water system after implementing the ultimate planning improvements identified in **Table 5-10** and detailed in **Tables 5-11** and **5-12**.

Table 5-13 Estimated Water System Pressures with Distribution System Improvements

General Area	Static Pressure (psi)	Predicted Peak Hour Pressure (psi)			
		Current		20-year	
		w/o Imp.	w/ Imp.	w/o Imp.	w/ Imp.
Northwest residential (Pine St & Ski Hill Dr)	55-60	40-45	50-60	40-45	50-55
West residential (West & Mine St) ⁽¹⁾	55-60	45-50	90-95	40-45	90-95
West residential (Park Ave & Mountain View Dr) ⁽¹⁾	40-45	30-35	80-85	29-30	80-85
High school (Titus Rd / Chumstick Highway)	70-75	55-65	70-80	50-60	65-75
Highway 2 & Icicle Rd	65-70	60-65	65-70	60-65	65-70
Downtown	70-80	55-65	75-85	55-65	75-85
Safeway (Hwy 2 & Riverbend Dr)	65-70	50-55	65-70	45-50	60-70
East Leavenworth Rd & Dye Rd	80-85	60-65	75-80	60-65	75-80
East Leavenworth Rd & Dempsey Rd	85-90	85-90	90-95	80-85	90-95
East Leavenworth Rd & Icicle Rd	80-85	90-95	85-90	90-95	80-90
Icicle Rd at wells ⁽²⁾	80-85	100-105	90-95	100-105	90-95
Icicle Rd & Fish Hatchery Rd ⁽²⁾	75-80	90-95	85-90	90-95	85-90

⁽¹⁾ At present Zone 1 serves these areas; eventually the City will connect these areas to Zone 2. The improvement pressures assume the City has connected these areas to Zone 2.

⁽²⁾ Nodes in the vicinity of the WTP and wells experience some pressure fluctuation depending on which sources of supply operate. Max Day scenarios assume the WTP offline and all wells online; Peak Hour scenarios assume the WTP and all wells online. With existing transmission capacity the capacity of the WTP substantially decreases when all wells operate.

Table 5-14 Estimated Available Fire Flows with Distribution System Improvements

General Area	Criteria (gpm)	Predicted Available Fire Flow with 20 psi Residual			
		Current (gpm)		20-year (gpm)	
		w/o Imp.	w/ Imp.	w/o Imp.	w/ Imp.
Northwest residential (Pine St & Ski Hill Dr)	1,500	>4,000	>4,000	>4,000	>4,000
West residential (West St & Mine St)	1,500	1,000-1,200	2,500- >4,000	1,000-1,200	2,200-3,000
West residential (Park Ave & Mountain View Dr)	2,500	1,000-1,300	2,500-3700	1,000-1,300	2,500-3,700
High school (Titus Rd / Chumstick Highway)	2,500	3,000-3,600	3,800 - >4,000	2,900-3,500	3,800 - >4,000
Highway 2 & Icicle Rd	2,500	>4,000	>4,000	>4,000	>4,000
Downtown	3,500	1,500-3,700	>4,000	1,500-3,400	>4,000
Safeway (Highway 2 & Riverbend Dr)	2,500	2,300-2,400	3,400-3,600	2,200-2,300	3,300-3,400
East Leavenworth Rd & Dye Rd	1,500	2,600-2700	>4,000	2,400-2,500	>4,000
East Leavenworth Rd & Dempsey Rd	1,500	2,500-2,700	2,800-2,900	2,500-2,600	2,800-2,900
East Leavenworth Rd & Icicle Rd	1,500	3,300-3,400	3,400-3,500	3,200-3,300	3,400-3,500
Icicle Rd at wells	1,500	>4,000	>4,000	>4,000	>4,000
Icicle Rd & Fish Hatchery Rd	1,500	3,100-3,200	3,200-3,300	3,000-3,100	3,200-3,300

As shown in the preceding Tables, as the City implements the improvements required to meet current deficiencies and critical deteriorating mains contained in **Table 5-12** (shaded red) will correct the service pressure and fire flow deficiencies identified in the system analysis.

5.8 Control System

PLC and communications upgrades at all sites (except the wells) are recommended. The upgraded PLCs should be modern Allen Bradley PLCs, so the existing PLC programs can be maintained.

The communications should be updated as well. A communications study should be conducted to evaluate options to upgrade to an Ethernet-based communications system. This may include a VPN or fiber optic connection between the WTP and wells, and faster Ethernet communications between the wells, booster and reservoirs. Upgraded PLCs and resulting components would increase communication speed between system components and reduce maintenance, as updated PLCs can be programmed remotely.

The estimated cost for PLC upgrades is approximately \$20,000 for each reservoir site (\$40,000 for both) and \$20,000 for the booster station site. Dependent on the scope of work the City would like to invest into the existing WTP, an allotted \$150,000 is estimated for the PLC and control system upgrades (includes electrical and MCC replacement) at the WTP. Communications upgrades and updated radios at each site is estimated at \$50,000 total. The estimated total cost for all control system improvements mentioned above is approximately \$260,000.

5.9 Plan for Providing Service

5.9.1 *Interim Management and Control of Individual Booster Pumps*

As required by WAC 246-290-230(8) the City maintains management and control of two existing individual booster pumps located near the WTP. The City's management and control of the booster pumps includes the following:

- Annual inspection of booster pumps for proper plumbing and cross connection control; observation of pump operation and notifying the owner if problems are observed.
- Provision of troubleshooting assistance to owners (by phone or in some cases site visits) and assisting owners with locating reputable repair shops when the need arises.
- Ownership and costs associated with the operation, maintenance, and repair of the booster pumps remains the responsibility of the property owner.

5.10 Summary of Planned Improvements

Table 5-12 summarizes the City's ultimate planning improvements and prioritization. **Table 6-1** in the Section following contains the City's 10-year and 20-year improvements implementation plan. **Section 6** discusses potential financing of improvements and **Section 7** discusses the City's operating budget.

6.0 IMPLEMENTATION

6.1 Introduction

This Section summarizes planned improvements and prioritization, describes financing alternatives, and presents this information in the form of a draft Capital Improvements Plan (CIP).

6.2 Improvement Implementation

As shown in **Table 6-1**, the majority of improvements planned for the 10-year horizon consist of distribution system upgrades. The improvements planned for implementation during the 10-year planning period address existing system deficiencies. In most cases development pressures will dictate the implementation schedule of improvements planned for the 20-year planning horizon.

6.3 Implementation Issues

6.3.1 *WTP Improvements*

Modifications to the WTP have potential to disrupt the City's ability to use it as a source. The Section following discuss issues the City will need to consider when implementing improvements to WTP facilities.

6.3.1.1 Onsite water storage system

Adding an onsite water storage system should not significantly disrupt the City's ability to utilize the WTP for supply. Depending on the sequence used for connecting the auxiliary water system to existing plumbing, the lab should not be without running water for more than a couple of hours unless complications occur.

6.3.1.2 New Lab

Expanding the existing lab will likely disrupt the City's ability to use the WTP as a source of supply. The City may lose the WTP for up to two months depending on the size and complexity of the addition to the existing lab. Because the WTP generally functions as the City's primary water supply, the City will time the construction of the lab expansion such that it occurs in either early spring or late fall so that system demand is not at peak levels.

6.3.1.3 Fencing of WTP Perimeter

Fencing of the WTP should not affect operation of the WTP.

6.3.1.4 Other Miscellaneous WTP Improvements

Addressing some of the miscellaneous issues reported with the WTP would require significant modifications to and/or investment in the facility which Leavenworth may not want to undertake without assessing the longer-term plan for the WTP; refer to discussion in **Section 5.2.1.2**. Depending on the specific improvement, implementation of a number of these improvements have potential to disrupt the City's ability to use the WTP as a source.

6.3.2 Zone 2 Booster Pump Replacement

Replacing the booster pumps in the Zone 2 booster will require temporary interruption of booster pump operation. The City plans to make these modifications during low demand periods (October-February) when the Zone 2 reservoir can provide several days worth of storage.

6.3.3 Establishing Zone 3

If/When growth pressures warrant establishment of Zone 3 to serve new customers above elevation 1,300, the City will implement the Zone 3 improvements. The City will outline all pertinent details in a Project Report to DOH. Major details of the Project Report will include the following:

- Site of Reservoir – select site based on ability to acquire land, topography, accessibility, constructability, and ability to obtain lease or purchase agreement.
- Reservoir Construction Type – evaluate the advantages and disadvantages of available reservoir construction type alternatives (steel, concrete, etc.) based on the selected site. Select reservoir type.
- Site of Booster Station – select site based on ability to acquire land, topography, accessibility, constructability, and ability to obtain lease or purchase agreement.
- Transmission Main Route – select route such that main can function both as transmission and distribution main if possible.

6.3.4 Establishing Zone 4

If/When growth pressures warrant establishment of Zone 4 to serve new customers above elevation 1,400, the City will implement the Zone 4 improvements. The City will outline all pertinent details in a Project Report to DOH. Major details of the Project Report will include the following:

- Site of Booster Station – select site based on ability to acquire land, topography, accessibility, constructability, and ability to obtain lease or purchase agreement.
- Distribution Grid – mains will need sufficient capacity to supply residential fire flow.
- Backup power supply – required for a closed system booster zone.

6.3.5 Distribution System Improvements

The majority of high priority improvements consist of large diameter mains with the exception of the pressure reducing station between Titus Rd and the Chumstick Highway. Generally speaking, water main replacements and upgrades require careful planning to make service interruptions as brief as possible. Most of the medium-high priority main upgrades occur on busy thoroughfares or in the downtown area. Careful planning will help mitigate the disruption to traffic and businesses during these projects.

6.3.5.1 Service Meter Replacement

Replacing service meters citywide will require temporary interruption of individual services throughout the system. Service interruptions will likely be brief and the City plans to make these replacements during low demand periods when possible and notify the customer prior to replacement.

6.3.6 *Permits/Approvals*

Prior to implementation of the planned improvements, the Department of Health (DOH) must approve this Water System Plan and the Construction Documents for a specific project. In addition, DOH may require a Project Report (per WAC 246-290-110) for certain planned improvements such as for the establishment of future Zones 3 and 4. Depending on the source of funding for the proposed improvements, environmental reviews will also be needed.

6.4 Capital Improvements Plan

The Table following presents the City's Capital Improvements Plan. The schedule for improvements is contingent upon the City's ability to acquire funding. If the City is unable to acquire grant and/or low interest loan funding for the projects identified herein, the City will reschedule those improvements following an analysis of the project(s). This analysis will include investigation of how to maximize potential funding combinations, phasing of the project to accomplish only the most necessary items first, review of alternate construction approaches or methodologies, and a variety of other approaches. It is likely that if an emergency arises that the City has not anticipated, the City will utilize reserve funds and bonding capacity (as determined necessary) to fund the project. If the emergency involves a private development need, the City may also choose to utilize approaches which include, but are not limited to, local improvement district financing and developer contributions.

Table 6-1 City of Leavenworth Capital Improvements Plan

Category	Component	Project	2017-2026	2027-2036
Supply	WTP	Conduct in-depth evaluation and analysis of WTP ⁽¹⁾	\$30,000-60,000	
		Onsite water storage and pump system for maintenance	80,000	
		Expand lab/office	75,000	
		Onsite chemical storage shed	25,000	
		Fence perimeter of WTP	25,000	
		Other reported WTP issues	610,000	
Booster Zones	Zone 2	Upgrade booster pump capacity in Zone 2 booster station		\$40,000
	Zone 3	New booster station, reservoir, and transmission main to serve Zone 3		1,200,000
	Zone 4	New closed system booster station to serve Zone 4		510,000
	Supply Transmission	3,400 LF of 18" main on Icicle Rd from wells t-main to Icicle Reservoir	700,000	
		2,000 LF of 20" main from Icicle Reservoir to Commercial St & Mill St	520,000	
	Downtown Transmission	5,800 LF of 16" main on Icicle Rd from E. Leavenworth Rd to well field transmission main.	1,090,000	
		1,400 LF of 18" main on Commercial St from Mill St to 3rd St	330,000	
		1,300 LF of 12" main on Commercial St from Division St to 14th St	140,000	
	Deteriorating Mains	800 LF of 12" main on Front St from 8th St to between 9 th and 10 th St	220,000	
		12,000 LF of 16" main on East Leavenworth Rd ⁽²⁾		2,200,000
	PRV	12,400 LF of 18" main from WTP to East Leavenworth Rd		2,500,000
		PRV between Zone 2 (Titus Rd) and Zone 1 (Chumstick Hwy)	50,000	
Service Meters	Replace all service meters citywide	450,000 ⁽³⁾		
Control System	PLC	PLC upgrades at WTP, reservoirs and booster station	260,000	
Total			\$4,635,000	\$6,450,000

(1) The City plans to move forward with the in-depth evaluation and analysis of WTP prior to implementing other WTP improvements identified in this WSP.

(2) The City's ultimate planning analysis calls for 12" or 16" main depending on location of future storage; this CIP assumes the City will install the 16" main.

(3) Total cost of meter replacement is estimated at \$900,000. The City anticipates half (\$450,000) of that cost will be funded by the WaterSMART funding program and half the City plans to fund through reserves. Only the City's portion is shown.

7.0 SYSTEM FINANCES

7.1 Revenue and Expenditure Overview

The following Table presents an overview of the City's water system budget and summarizes water system expenses and revenue between 2014 and 2017.

Table 7-1 Water System Budget Summary

Category	Description	2014 Actual ⁽¹⁾	2015 Actual ⁽¹⁾	2016 Actual ⁽¹⁾	2017 Budget
Expenditures	Legal Services / Pro Svs	\$20,202	\$19,667	\$21,725	\$37,125
	Water Rights Planning	0	0	21,400	0
	Salaries, Wages, Benefits and Overtime	495,198	408,723	470,281	390,767
	Total Supplies (Distribution System and WTP)	45,507	26,169	37,666	41,000
	Total Other Services and Charges	79,367	104,761	128,591	133,105
	WTP NPDES, Testing, WUE measures, WLCAP	9,223	8,930	15,244	14,000
	Taxes	177,763	194,015	199,979	199,822
	Interfund Rentals and Leases	44,918	58,524	62,673	70,728
	Debt Repayment	330,880	330,358	338,763	339,628
	Capital Expenses	342,952	294,535	214,780	175,000
	Other Financing / Transfers To Water Bond Res.	42,542	43,000	45,528	120,000
		Total	\$1,588,552	\$1,488,682	\$1,555,230
Revenue	Net Cash Invest	\$123,552	\$93,835	\$78,732	\$655
	Intergovernmental (Grants / Loans / Non Rev)	0	0	864	0
	Rates	1,190,108	1,312,566	1,346,836	1,362,566
	Taps	168,722	52,277	108,659	50,000
	Fines & Penalties	6,801	7,049	6,227	7,000
	Misc. Revenues / Refunds	2,200	6,677	5,550	21,000
	URA Reimbursement Area	42,542	0	2,528	0
	Local Land Purchase Reimbursement	18,398	40,000	0	0
	Interfund Transfers In From PW Cap. Imp.	0	50,000	0	0
	Interfund Transfers In From Reserves	130,000	0	6,000	76,000
	Meadowlark LID Contribution	0	0	0	225,000
	Investment Interest	64	10	490	400
	Total	\$1,682,387	\$1,567,414	\$1,555,886	\$1,742,621
Balance	Surplus/Deficit ⁽²⁾	\$93,835	\$78,732	\$656	\$221,446

⁽¹⁾ Figures rounded to the nearest whole dollar.

⁽²⁾ Refer to discussion below regarding low surplus in 2016.

The water system operating budget summarized in the Table above includes all water system related revenue and expenditures. The beginning of year balance of the Water Fund is reflected under the 'Net Cash Invest' description under Revenue. The City uses the existing balance to make up the difference if expenditures exceed revenue. In the event the Water Fund is diminished the City can pull from the Water Bond Reserve Fund. The low amount of surplus recorded in 2016 is due to the City finalizing an LID Bond for the Meadowlark development (refer to **Section 7.3**). In 2017, revenue from this development is estimated at approximately \$225,000. This will contribute to building back the Water Fund balance and continue to cause revenue to exceed expenditures. Additionally, the City is currently conducting a utility rate study and plans to address water rates as needed in 2018 based on the results of the study.

The City's Water Bond Reserve Fund is primarily for the purpose of covering debt payments if/when the water fund cannot make a debt payment. At the beginning of 2017 this fund contained an additional \$88,024. The City projects an end of year fund balance of \$132,024. Water fund reserves may only be utilized by a vote of the Council, with exception to temporary loans to the water fund.

The City has wanted to build a Water System Capital Reserve for many years; however, unplanned maintenance expenses and implementation of needed capital projects has prevented the City from growing a reserve. The current City Council is aware of this and is taking steps including a recent rate study and water rates increase to ensure that the City can build a Water System Capital Reserve to fund capital improvements for the water system as needs arise. The Council has not yet established a Water System Capital Reserve fund minimum balance goal; the Council may choose to establish a minimum fund balance goal in the future. **Table 7-2** shows the City's 10-year projected Water System Capital Reserve annual balance as a result of water rate increases. The City currently plans to fund approximately half of a citywide water service meter replacement project (refer to **Section 5.6.1**) using Water System Capital Reserves once adequate funds have accrued and funding for the remaining project costs are obtained.

The following table estimates the City's 10-year projected budget.

Table 7-2 Water System 10-Year Budget Projection

Category/Description	2018 ⁽²⁾	2019	2020	2021	2022	2023	2024	2025	2026	2027
Expenditures ⁽¹⁾										
Legal Services / Pro Svs ⁽³⁾	\$38,239	\$39,386	\$40,567	\$41,785	\$43,038	\$44,329	\$45,659	\$47,029	\$48,440	\$49,893
Salaries, Wages, Benefits and Overtime ⁽³⁾	402,490	414,565	427,002	439,812	453,006	466,596	480,594	495,012	509,862	525,158
Total Supplies (Distribution System & WTP) ⁽³⁾	42,230	43,497	44,802	46,146	47,530	48,596	50,425	51,938	53,496	55,101
Total Other Services and Charges ⁽³⁾	137,098	141,211	145,447	149,811	154,305	158,934	163,702	168,613	173,672	178,882
WTP NPDES, Testing, WUE meas., WLCAP ⁽³⁾	14,420	14,853	15,298	15,757	16,230	16,717	17,218	17,735	18,267	18,815
Taxes ⁽³⁾	205,817	211,991	218,351	224,901	231,648	238,598	245,756	253,129	260,722	268,544
Interfund Rentals and Leases ⁽³⁾	72,850	75,035	77,286	79,605	81,993	84,453	86,987	89,596	92,284	95,053
Debt Repayment ⁽⁴⁾	340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000
Misc. System Expenses/Improvements ⁽⁴⁾	100,000	100,000	see below	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Capital Improvements	-	-	450,000 ⁽⁵⁾	-	-	-	-	-	-	-
Total	\$1,353,143	\$1,380,538	\$1,758,754	\$1,437,816	\$1,467,751	\$1,498,583	\$1,530,341	\$1,563,051	\$1,596,743	\$1,631,445
Revenue ⁽¹⁾										
Net Cash Invest	\$221,446	\$351,120	\$481,196	\$261,408	\$391,477	\$521,109	\$649,996	\$777,815	\$904,227	\$1,028,887
Rates ⁽⁶⁾	1,389,817	1,417,614	1,445,966	1,474,885	1,504,383	1,534,471	1,565,160	1,596,463	1,628,393	1,660,960
Taps ⁽⁴⁾	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
Fines & Penalties ⁽⁴⁾	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
Misc. Revenues / Refunds	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Investment Interest ⁽⁴⁾	500	500	500	500	500	500	500	500	500	500
Total	\$1,704,263	\$1,861,734	\$2,020,162	\$1,829,293	\$1,988,860	\$2,148,579	\$2,308,156	\$2,467,278	\$2,625,619	\$2,782,837
Balance – Water System Capital Reserve	\$351,120	\$481,196	\$261,408	\$391,477	\$521,109	\$649,996	\$777,815	\$904,227	\$1,028,877	\$1,151,392

(1) Figures rounded to the nearest whole dollar.

(2) Based on 2017 budget (refer to **Table 7-1**) and adjusted as indicated by other footnotes.

(3) Based on 3% annual inflation.

(4) Assumed to remain constant over the planning period.

(5) Planned citywide water service meter replacement Capital Improvement project. Actual timeline of project dependent on when and if additional funding can be obtained.

(6) Assumes an average annual rate increase of 2%. Actual annual rate increases may vary.

7.2 Water Rates

The following Sections summarize the City’s water rates that went into effect in February 2016.

7.2.1 Residential

Residential services are charged according to the following schedule. The base charge per month for residential services includes a base volume of 7,500 gallons. Residential meters are read monthly April through October in approximately the 3rd week of the month.

7

Inside City Limits

¾” meter	\$59.24
Qualified low income seniors or disabled	\$29.01
Additional hardship low income seniors or disabled	\$15.11
1” meter	\$61.77
1½” meter	\$74.39

Outside City Limits (25% higher than inside City Limits)

¾” meter	\$74.05
Qualified low income seniors or disabled	\$36.26
Additional hardship low income seniors or disabled	\$18.88
1” meter	\$77.21
1½” meter	\$92.98

Residential Overage Rates (inside and outside City Limits)

0 - 7,500 (base allotment volume)	\$0.00 per 1,000 gallons
7,501 – 15,000	\$0.85 per 1,000 gallons
15,001 - 25,000	\$1.86 per 1,000 gallons
Above 25,000	\$2.31 per 1,000 gallons

7.2.2 Commercial

Commercial rates are charged according to the following schedule. As with residential customers, the base charge per month includes the base volume of 7,500 gallons. Commercial meters are read monthly year round in approximately the 3rd week of the month.

Inside City Limits

¾" meter	\$59.24
1" meter	\$61.77
1½" meter	\$74.39
2" meter	\$76.92
3" meter	\$228.16
2" x 6" fire service	\$369.42

Outside City Limits

¾" meter	\$74.05
1" meter	\$77.21
1½" meter	\$92.98
2" meter	\$96.15
3" meter	\$285.20
2" x 6" fire service	\$461.78

Commercial Overage Rates

0 - 7,500 (base allotment volume)	\$0.00 per 1,000 gallons
Above 7,500 (inside City Limits)	\$1.55 per 1,000 gallons
Above 7,500 (outside City Limits)	\$1.94 per 1,000 gallons

7.2.3 Potential Zone 3 and 4 Connection Surcharges

If/When the City implements Zone 3, the new reservoir for that zone will be available to Zones 1 and 2 via PRV. As such, the reservoir benefits the entire system which justifies the rest of the system sharing in the cost. The Zone 3 booster station and t-main necessary to pump to this elevation benefit primarily future Zone 3 customers. Hence, new water system customers in Zone 3 should be responsible for booster station and t-main costs. Because these customers do not yet exist, the way to collect these costs would be in the form of a connection surcharge for new connections in Zone 3.

The Zone 4 booster station will only benefit Zone 4 customers. The City can justifiably collect connection charges from future residents of Zone 4 to recoup the cost of constructing the booster station to serve the area.

The City will develop a rationale for connection charges at a time close to project implementation when the actual cost of facilities can be better estimated.

7.2.4 Connection Fees and Charges

Charges that each property owner must pay to the City for access to the City water main include a system buy-in charge, a charge to cover the cost of labor, equipment, and materials to install the meter, Utility Reimbursement Agreement charge if applicable to the property location, and a surcharge for customers located outside City limits. The following summarizes charges to be paid by new customers to receive service (applicable to all customer classes).

System Development Charge (SDC) for Residential and Commercial
(Meter Size based on ERU)

5/8" or 3/4" (1.0 ERU)	\$3,898.80
1" (1.7 ERU)	\$6,510.75
1 1/2" (3.3 ERU)	\$12,983.30
2" (5.3 ERU)	\$20,780.90
3" (11.7 ERU)	\$45,498.80
4" (20 ERU)	\$77,976.15
6" (41.7 ERU)	\$162,424.80

Meter Charge (not including installation)

3/4" meter	\$550.00
1" meter	\$700.00
1 1/2" meter	\$1,000.00
2" meter	\$1,500.00
3" meter	\$2,840.00
4" meter	\$5,530.00
6" meter	\$8,625.00

Water Service Connection Charge

Labor, equipment, patching and admin. charges	\$1,172.30
Titus Rd. connection charge	\$225.00

(Note: Beginning at north property line of lot 2, SS 3264 to north end of Aldea Village)

Utility Reimbursement Agreements

- a) Leavenworth 24, LLC Utility Reimbursement Agreement (refer to Leavenworth 24, LLC agreement) flat fee includes the 10% administrative fee as defined in the URA:
For each water service hookup (1.0 ERU) \$2,781.27
- b) DNR, LLC Utility Reimbursement Agreement (refer to DNR, LLC agreement for flat fee as identified for various parcels; flat fee includes the 10% administrative fee as defined in the URA).
- c) Cascade Medical Center (CMC) Utility Reimbursement Agreement (refer to CMC agreement for flat fee as identified for various parcels; flat fee includes the 10% administrative fee as defined in the URA).

Irrigation Meter

An irrigation meter fee is the same as a meter charge. No additional buy-in fee will be charged if the property already has a meter, and the irrigation represents no increase in water used based on billing.

Water rates and fee schedule values taken from City Resolution No. 03-2016. Refer to **Appendix D** for additional information regarding water rates and a copy of water rates and fee schedule resolution.

7.2.5 Rate History

Leavenworth steadily increases water rates each year to avoid substantial increases. Annual base rate increases are typically between \$1 to \$2 each year, which is reflective of about a 2-3% increase. Leavenworth did not increase water rates in 2017 because the City had plans to conduct a rate study in 2016 which was not completed. The City is currently conducting a utility rate study and once the study is complete, the City plans to address water rates as needed at the beginning of 2018 based on the results.

7.3 Description of Existing Debt

The City has eight debts associated with its water system as described in the following table.

Table 7-3 Summary of Water System Related Debt

Description	Interest Rate	Annual Payment (2017)	Year Debt Will Be Retired	Remaining Principal
2003 (2002) DWSRF – Reservoir/Booster Station	1%	\$85,433.69	2023	\$558,912
2007 (2005) PWTF – West Reservoir / Telemetry	.5%	\$28,906.34	2025	\$248,955
2009 (2004) DWSRF – West Reservoir /Telemetry	1%	\$94,975.29	2025	\$784,200
2009 PWTF Loan – Downtown Road Rehab. Engr. ≈ 25% water	.5%	\$10,509.87 ⁽³⁾	2029	\$128,290 ⁽³⁾
2011 LTGO Bond – Water Rights	Avg. 2.91%	\$62,975 (2017) \$66,850 (2018) ⁽¹⁾ \$65,288 (2019)	2026	\$510,000
2013 PWTF Loan – Front/Division St. Constr. ≈ 11% water	.5%	\$6,026.85 ⁽³⁾	2037	\$114,538 ⁽³⁾
2013 Water PWTF Loan – E. Leavenworth Rd. Main	.5%	\$38,555.32	2032	\$571,190
2015 Local Funding G.O. Bond – Chumstick Trail ≈ 14% water	Avg. 1.61%	\$8,260.00 ⁽³⁾	2020	\$28,700 ⁽³⁾
2017 LID Bond ≈ 26% water ⁽²⁾	TBD	Est. 18,000.00 ⁽³⁾	Est. 2032	\$221,000 ⁽³⁾
Total		≈ \$335,645	2023-2032	≈ \$3,165,785

⁽¹⁾ Because of loan terms, annual payments increase starting in 2018 and again in 2024.

⁽²⁾ The City is currently working to finalize 2017 LID bond for the Meadowlark development therefore bond details have not been finalized. The City anticipates bond to be finalized in 2017.

⁽³⁾ Includes only water portion of total.

7.4 Funding Sources

Financing presents the most significant hurdle for implementing improvements. While the City has reserve funds, outside funding will also be needed. The Sections following discuss potential funding sources for system improvements.

7.4.1 RD Loans and Grants

USDA Rural Development funds a wide variety of public works projects in small communities through its Environmental Water/Waste Program. RD offers grant and/or loan packages. Applications are accepted on an on-going basis with funds available 9 – 18 months following submittal.

RD will award grant funds when the cost of a proposed project will cause rates to be too high relative to other similar systems and/or too high relative to a jurisdiction’s MHI as determined by the US Census or valid income survey. However, RD also has to have grant funds available to give. Thus, it is advisable to submit RD applications at the on-set of the RD fiscal year in January

if funding is desired for the current fiscal year; or August for the following fiscal year (funds for current fiscal years are typically exhausted by each August). A disadvantage of RD funding includes significant administrative costs as compared to other funding programs.

7.4.2 Washington State Public Works Trust Fund

The Public Works Trust Fund (PWTF) program was established by the state legislature in 1985 to provide a long-term source of funds for local governments for the repair and reconstruction of public works facilities. This program, which is administered by the Washington State Department of Commerce, provides construction loans for up to \$7 million per biennium, per jurisdiction for 20-year terms. No match is required. Construction loan applications are generally due in March with funds available 12-14 months later, provided the State Legislature funds the PWTF program.

The PWTF program has offered Pre-Construction funding in previous years, although it has not been available for several years. Loan terms and details, potential subsidy, eligibility and application guidelines will be provided if/when PWTF preconstruction funding becomes available.

To be eligible for PWTF funding applicants must meet three requirements:

1. Adoption of the local real estate excise tax on the sale of real property within the jurisdiction (per RCW 82.46.010(1) and RCW 82.46.030(2)).
2. Adoption of a Capital Facilities Plan in compliance with the Growth Management Act, if applicable (water, sewer, and street/storm drainage plan).
3. Sanitary sewer and drinking water projects that are eligible for the clean water state revolving fund loan program (CWSRF) or the drinking water state revolving fund loan program (DWSRF) are not eligible for public works board construction loans.

This funding source is probably the best source of loan funds for municipal public works programs due to the low interest rates and minimal administrative costs. The Washington State Legislature has not funded this program for several years; future availability appears doubtful.

7.4.3 Community Development Block Grant (CDBG)

The Department of Commerce (Commerce) administers the CDBG program. CDBG funds are federal Housing & Urban Development (HUD) funds, and are available for public works projects in low to moderate income areas with limited financial resources, public health and safety concerns, and need for economic growth/revitalization. The maximum General Purpose grant amount available ranges from \$750,000 to \$1,000,000 depending on the circumstances and type of project. Application workshops are held prior to the application due date; for 2017 applications were due June 1st. Applications are lengthy, require detailed information, and significant documentation. CDBG is generally the most competitive funding program for municipal public works projects.

7.4.4 Drinking Water State Revolving Fund (DWSRF)

Jointly administered through Washington State Department of Health and the Washington State Public Works Board, these federal loan funds are available primarily for projects which address Safe Drinking Water Act (SDWA) health standards that have been exceeded or to prevent future violations (i.e., water quality related projects), although other projects, such as construction of new reservoirs and water main replacements receive secondary consideration.

The maximum DWSRF loan available for the 2016 funding year is \$3 million, or \$6 million for jointly-owned projects. Interest rates are 1.5% over a 20-year term with reduced interest rates available to systems with higher affordability indexes. No local match is required, although a 1% loan fee applies in some cases; the 1% fee is typically rolled into the loan. Applications for 2017 are due at the end of November. Eligibility requirements include a current, approved Water System Plan at the time of application.

7.4.5 Capital Contributions

Capital contributions, variously known as impact fees, system development charges, facility charges, or connection charges are one-time charges assessed against developers or individual new customers to recover all or a part of the cost of the additional system capacity constructed for their use or benefit (or to buy in to reserve capacity of existing facilities). Capital contributions improve financial equity because they require new customers to: 1) repay users who have invested in facilities through prior monthly service charges or fees, and/or 2) finance new facilities required to serve them.

Capital contributions are generally assessed against the developer (in the case of new service areas) as opposed to the homeowner or property owner. The City's present general facility and site facility charges are defined in the City of Leavenworth Municipal Code and Resolution No. 03-2016. Refer to **Section 7.2.4** for a summary of the City's current water rates and capitalization fee schedule. Refer also to **Appendix D** for a copy of the City's 2016 water rates and fee schedule resolution.

7.4.6 Reserve Funds

Most funding agencies want to see a financial commitment on the part of a system toward the project the funding agency is being asked to fund. A reserve fund allows a system to contribute funds to a project and demonstrate commitment to the project to funding agencies.

The City has wanted to build a sustainable Water System Capital Reserve. The City is taking steps including a recent rate study and water rates increase to ensure Leavenworth can build a Water System Capital Reserve to fund capital improvements. Refer to **Section 7.1** for additional details and **Table 7-2** for the City's water system 10-year budget projection and Water System Capital Reserve balance projection.

7.4.7 *Developer Financing*

The City has policies that require developers pay the cost of water system expansions needed to serve a new development.

7.4.8 *Revenue Bonds*

Revenue bonds issued by the City provide a means of borrowing funds to finance capital improvements to the water system. These bonds constitute a lien against the earnings of the utility, in this case water revenues. The City may issue bonds for varying terms and interest rates depending on the needs of the City and the bond market at the time of issuance. Interest earned by bondholders is generally not taxable income, reducing the interest rate required by bond purchasers. Debt service is paid out of system revenues. The issuer is usually required to maintain utility rates at a sufficient level to pay the annual debt service plus 25% to 50%, which often goes into a reserve fund.

7.4.9 *Utility Local Improvement District (LID) Bonds*

Using ULID financing allows specifically benefited properties to pay for the improvements. A resolution or a petition of the majority of property owners can form an ULID. Under certain circumstances where the jurisdiction declares the improvements necessary for the public health and safety (and with other criteria being met), an ULID formed by System resolution is immune to protest; otherwise a 3/5 majority of property owners may prevent its formation by submission of a protest petition. Properties within the ULID are assessed annually a total amount adequate to service bonds which are issued with the ULID assessments as security. In essence, ULID financing provides a method for developers and property owners to make appropriate capital contributions to new facilities required to support service to their properties.

The City could use ULID financing for improvements benefiting presently served properties or newly developed properties. Disadvantages of ULID financing in fully developed areas of the City include the significant time and costs associated with the formation and assessment determination process.

7.5 **Funding for Planned Improvements**

As shown in **Table 5-12**, the City has approximately \$12-13M in water system infrastructure improvements that will eventually become necessary. The improvements identified in **Section 5.7.2** to address existing system deficiencies primarily involve constructing transmission mains. The improvements the City preliminarily plans to implement during the next ten years will cost approximately \$4-\$5M.

The ability of the City to construct improvements hinges on securing funding. The City may have to delay planned improvements if the City cannot secure funding on terms that maintain rate affordability.

The following table contains potential funding scenarios and associated rate effects. For water system work Rural Development offers the only likely source of grant funding available to the City. The

Table estimates approximate rate impacts for several funding scenarios. Note that the City will not likely implement all planned improvements simultaneously; the following Table provides funding scenarios that will help the City plan how to phase proposed projects. The City could implement some projects on a pay as you go basis over several years rather than rolling several improvements into large projects.

Table 7-4 Potential Funding Scenarios and Resulting Rate Impacts

Summary of Rate Impacts ⁽¹⁾					
Description		First Priority ⁽²⁾	Second Priority ⁽³⁾	Third Priority ⁽⁴⁾	Total
Total Cost of Improvements ⁽⁵⁾		\$ 2,440,000	\$ 7,270,000	\$ 2,620,000	\$ 12,330,000
Increase in Monthly Bill per Rate ERU ⁽⁶⁾	Scenario 1 - Revenue Bond (5.5%, 20-yr)	\$10	\$30	\$11	\$51
	Scenario 2 - RD Loan (3.0%, 30-yr)	\$5	\$16	\$6	\$27
	Scenario 3 - DWSRF (1.5%, 20-yr)	\$6	\$17	\$6	\$28
	Scenario 4 - RD 75:25 Loan/Grant (3.0%, 40-yr)	\$3	\$10	\$4	\$17
Existing Average Monthly Bill		\$67	\$67	\$67	\$67
Total Monthly Bill	Scenario 1 - Revenue Bond (5.5%, 20-yr)	\$77	\$97	\$78	\$118
	Scenario 2 - RD Loan (3.0%, 30-yr)	\$72	\$83	\$73	\$94
	Scenario 3 - DWSRF (1.5%, 20-yr)	\$73	\$84	\$73	\$95
	Scenario 4 - RD 75:25 Loan/Grant (3.0%, 40-yr)	\$70	\$77	\$71	\$84

⁽¹⁾ The estimates do not include increases that may be needed for O&M costs (for example, for capital reserves, inflation, emergency reserves etc.).

⁽²⁾ Improvements required to address current deficiencies and critical deteriorating mains; refer to **Table 5-12**.

⁽³⁾ Improvements required when existing facilities deteriorate or to meet regulatory requirements; refer to **Table 5-12**.

⁽⁴⁾ Improvements needed solely to serve growth; refer to **Table 5-12**.

⁽⁵⁾ The total cost of improvements are planning level estimates for the purpose of evaluation and funding acquisition.

⁽⁶⁾ Assumes existing in-city residential customers pay an average monthly bill of \$67 and that the City currently receives approximately \$1,300,000 in revenue from rates.

The feasibility of the preceding funding scenarios depends on the maximum water rates the City believes its residents can afford, availability of funds in the identified programs, and success of the applications submitted to the various funding agencies.

8.0 WATER USE EFFICIENCY

WAC 246-290-810 requires that water system plans and small water system management programs must describe the municipal water supplier's existing Water Use Efficiency (WUE) Program. The municipal water supplier must continue existing levels of water use efficiency.

8.1 Metering Requirements

8.1.1 Source Meters

WAC 246-290-496(1) requires systems to measure volume of water produced or purchased using a source meter or other meter installed upstream of the distribution system. Requirements of this section of the WAC do not apply to volumes of water delivered to a public water system through an emergency intertie; however, interties used as permanent or seasonal sources must have meters.

The City currently meters production at all City sources of supply (WTP and wells). The City wells are each equipped with 8” Siemens magnetic flow meters. The flow meters for Wells #1 and #2 were installed in 2012 and the flow meter for Well #3 was installed in 2014 when Well #3 was put online. The WTP influent and effluent are each equipped with 12” Sparling magnetic flow meters that are approximately 20 years old.

8.1.2 Service Meters

WAC 246-290-496(2) requires systems to measure the volume of water delivered to consumers by installing meters on all direct service connections. Systems may serve certain clustered entities through a single meter (e.g. campgrounds, RV parks, mobile home parks, buildings with multiple units, and complexes with multiple buildings served as a single connection).

The City currently meters all service connections.

As required by WAC 246-290-496(3), the City selects, installs, operates, calibrates, and maintains customer service meters according to generally accepted industry standards and information from the manufacturer. The City is seeking funding from the Bureau of Reclamation WaterSMART program to replace service meters citywide.

8.2 Data Collection

The Water Use Efficiency (WUE) Rule requires systems to collect production and consumption data on a regular basis and report that information in the annual performance report. Water production and consumption data has numerous uses including: calculating system leakage, forecasting demand, identifying areas for more efficient use of water, and evaluating the effectiveness of the WUE program.

8.2.1 Source and Service Meter Data

The City collects and records daily totals from all source meters. Residential service meter data is collected and recorded on a monthly basis from April through October while commercial meter data is collected on a monthly basis year round. The City uses this data to calculate distribution system losses. Refer to **Sections 2.1.4** and **2.1.5** for the City's source and service meter data.

8.3 Water Supply Characteristics

8.3.1 Surface Water Supply – Icicle Creek

The City's water treatment plant (WTP) withdraws water from Icicle Creek. The WTP is located on Icicle Creek approximately three miles south of town. During peak demand in summer irrigation season, the WTP treats approximately 2.0 MGD. Icicle Creek experiences heavy sediment loading during spring snow melt and runoff; the City typically shuts down the WTP during the peak sediment loads. The City's water rights constrain the instantaneous and annual quantities of water available for withdrawal (refer to **Section 4.3**). The City foresees no significant changes in its planned use of this resource that would adversely impact the quantity and quality of water in Icicle Creek.

8.3.2 Ground Water Supply – Well Field

The City's well field withdraws water from a sand and gravel aquifer. Icicle Creek and the Wenatchee River recharge the aquifer. The wells are located adjacent to the City golf course south of town. The three wells have a combined pumping capacity of 3,250 gpm. The City uses the wells year round to augment supply provided by the Icicle Creek surface water supply. The City's water rights constrain the instantaneous and annual quantities of water available for withdrawal (refer to **Section 4.3**). The City foresees no significant changes in its planned use of this resource that would adversely impact the quantity and quality of water in the aquifer.

8.4 Distribution System Leakage Standard

The Water Use Efficiency Rule divides system water use into two categories: authorized consumption and distribution system leakage (DSL). DOH defines authorized consumption as the volume of water authorized for use by the water system. In addition to normal water sales metering records, systems can track and estimate other types of authorized water uses such as: maintenance flushing of the water system, firefighting and hydrant testing, and cleaning of reservoirs or streets.

DOH considers DSL all water use not authorized by a water system; this includes both apparent losses and real losses such as: leakage, theft, meter inaccuracies, meter reading errors, data collection errors, calculation errors and water main breaks.

The City calculates DSL by comparing source production meters with water sales from customer meters. **Table 2-5** contains the City's current calculated DSL. The City's DSL does not currently meet the standard of less than 10% and therefore needs to provide a Water Loss Control Action Plan (WLCAP) (refer to **Section 8.4.1**).

Leavenworth believes the 2014-2016 average DSL of 25% is primarily due an inaccurate and the failing service metering system that needs replacement citywide. The City is currently in the process of obtaining funding through the Bureau of Reclamation WaterSMART program to assist in funding new service meters throughout the City. Once new meters are installed annual comparison of water sold versus water produced will show the effect the new service metering system has on DSL.

8.4.1 Water Loss Control Action Plan (WLCAP)

DOH has defined three categories of water loss control action plans:

For water systems greater than 10 and less than 20 percent DSL, systems must:

1. Assess data accuracy.
2. Assess data collection methods and errors.

For water systems between 20-29 percent DSL, within 12 months systems must:

3. Complete 1 and 2 above.
4. Implement field activities to reduce leakage.

For water systems with 30 percent or greater DSL, within 6 months systems must:

5. Complete steps 1, 2, and 4 above.
6. Implement additional water loss control methods to reduce leakage.

Leavenworth's current level of DSL (average of 25%, 2014-2016) requires a water loss control action plan to address items 1 & 2 in the preceding list. The City's control methods currently implemented include examined data accuracy and data collection methods for possible errors or inaccuracies. It appears possible that a portion of the calculated DSL is due in part to service meters under reading the amount of water used. The City is currently working to obtain funding for a citywide replacement of all service meters. Leavenworth believes replacement of these meters may be substantial enough to decrease DSL substantially in future years.

In addition, the Leavenworth actively searches for and fixes leaks in the distribution system. The City expects DSL in 2017 to be less than in previous years. Leavenworth expects DSL to reduce within or near the 10% range once service meters are replaced. The City's ability to secure funding for service meter replacement affect the City's ability to move forward with the WLCAP and comply with the standard. WLCAP related costs (other than additional funding needed for new meters) are included in the City's budget expenses shown in **Table 7-1** and **Table 7-2**. The City plans to fund half of the meter replacement costs through reserves and half is being sought through funding sources (Bureau of Reclamation WaterSMART program). Total service meter replacement will consist of approximately 1,400 new meters. Once funding is obtained, the City estimates all meters will be replaced in approximately 2 years.

8.5 WUE Program

The primary purpose of WUE Program is to provide present and future system officials with a plan for using water efficiently. A WUE program assists in setting system priorities and selecting goals and measures that best meet a system's needs.

8.5.1 *Current WUE Program*

The City's existing WUE program seeks to gradually and permanently reduce average per-capita demand. Short-term voluntary or mandatory reductions in water use to overcome temporary water shortages associated with drought, transmission line failures, or emergency conditions are not considered elements of a WUE program. Rather, WUE program elements constitute a long-term voluntary reduction in customer demand through education, improved technology, and water rate structure.

As a part of the existing WUE program the City trains employees to perform water use efficiency oriented public outreach in the normal course of their duties.

8.5.2 *Estimated Conservation Savings to Date*

The City's 2011 WSP calculated the City's ERU usage at 304 gpd. As shown in **Section 2.1.6** the City has reduced ERU usage to 269 gpd. The City has saved approximately 35 gpd/ERU.

8.5.3 *Goal Setting and the Public Forum*

Setting goals that can be measured is an important step in helping systems encourage customers to use water more efficiently. The Water Use Efficiency Rule requires systems to set goals through a public process. Involving the public allows water users and interested members of the public to participate in the goal setting process. This allows the public an opportunity to provide input and understand the need to use water more efficiently such that a reasonable, attainable goal can be set. The City conducts public forums when establishing or revising the WUE goals in accordance with the requirements of WAC 246-290-830(4).

8.5.4 *WUE Goal*

Leavenworth plans to adopt a WUE goal in 2017 of reducing annual water use by 1,030,000 gallons annually. The City utilizes WUE measures to achieve this WUE goal (refer to following Section and **Table 8-2** for breakdown of WUE measures and estimated water savings).

8.5.5 *WUE Measures*

According to the City's 2016 Water Facility Inventory (WFI) form, the City serves approximately 1,398 connections which includes approximately 84 multi-family connections serving approximately 1,028 dwelling units (refer to **Appendix B** for WFI). This equates to 2,342 DOH calculated connections as reported on the 2016 WFI.

As required by the Water Use Efficiency Rule, the Table following contains the number of measures systems of must either implement or evaluate for cost effectiveness based on the number of connections served. The City must either implement or evaluate for cost effectiveness at least five measures.

Table 8-1 Required Number of WUE Measures

Number of Connections	Less than 500	500 – 999	1,000 – 2,499	2,500 – 9,999	10,000 – 49,999	50,000 or more
Number of WUE Measures Required	1	4	5	6	9	12

The following Sections list the five WUE measures evaluated by the City. Each section contains a description of the measure, whether or not the City chose to implement the measure, and an analysis of the measure’s cost efficacy (if not implemented).

Leavenworth selects the following measures to achieve its WUE goal.

8.5.5.1 Measure #1: Customer Education

WAC 246-290-810(4)(f) requires systems to educate customers annually on water use efficiency; the City accomplishes this through placing educational material once per year in their quarterly newsletter (The Leavenworth Courier). In addition to the customer education requirements of WAC 246-290-810(4)(f) the City will host a booth at a City Festival to further educate customers on merits of using water more efficiently. The City chooses to implement customer education to help achieve the WUE goal.

8.5.5.2 Measure #2: Customer Leaks

The City will attempt to use customer monthly meter reading data to identify water use patterns that suggest a customer leak may exist. The City will inform customers when their water use pattern suggests a leak may exist. The City chooses to implement customer leak information to help achieve the WUE goal.

8.5.5.3 Measure #3: Workshop for Landscape Professionals

The City will host (possibly in cooperation with neighboring water systems) a workshop for landscape professionals to promote water use efficient landscaping such as xeriscaping, drip irrigation, soil moisture sensors, rain sensors, etc. The City chooses to implement a workshop for landscape professionals to help achieve the WUE goal.

8.5.5.4 Measure #4: Xeriscape Promotion to Customers

The City will send out information to customers about local resale outlets for xeriscape products and local outdoor exhibits of xeriscaping. The City chooses to implement xeriscape promotion to customers to help achieve the WUE goal.

8.5.5.5 Measure #5: Shower Head Rebate

The City chooses to offer 10 rebates annually if customers purchase a low flow shower head and provides a sales receipt as proof of purchase. The City will award the rebates on a first come first served basis. These low flow shower heads can substantially reduce indoor water use.

8.5.5.6 Projected Water Savings and Budget for WUE Measures

The water savings figures shown in the following table were estimated using a variety of resources such as the book by Amy Vickers titled “Water Use and Conservation”. Vickers’s book contains detailed information on average water savings from a variety of conservation measures. The footnotes on the table following contain the assumptions for each water savings projection. Actual water savings realized by individual customers may vary. The City estimates the selected WUE measures will cost approximately \$1,000 annually and is included in the water system budget summarized in **Table 7-1**.

Table 8-2 Projected Annual Water Savings and Cost of WUE Measures

Measure Number	Description	Estimated Participants (per year)	Estimated Savings per Participant (gal/year)	Estimated Annual Savings (gal)	Estimated Annual Cost
1	Customer Outdoor Efficiency Education ⁽¹⁾	700	100	70,000	\$200
2	Customer Leak Education ⁽²⁾	10	50,000	500,000	\$200
3	Workshop for Landscape Professionals ⁽³⁾	5	60,000	300,000	\$200
4	Xeriscape Promotion ⁽⁴⁾	1	50,000	50,000	\$200
5	Low Flow Shower Heads ⁽⁵⁾	10	11,000	110,000	\$200
Water Use Efficiency Savings Goal (Total) =				1,030,000	\$1,000

- (1) Assumes that approximately half of total number of customers will save 100 gal/year due to educational booth at City Festival.
- (2) Assumes that all customers receive mailers and that customers listed as participants in the table find and fix leaks of 0.1 gpm (≈ 50,000 gal/yr).
- (3) Assumes an average lawn has approximately 6,000 SF irrigated area and that the soil moisture sensor reduces annual irrigation from 66 inches to 50 inches. Assumes five customers per year install drip irrigation, soil moisture sensors or rain sensors,
- (4) Assumes one customer per year will completely eliminate outdoor irrigation through xeriscaping; Leavenworth estimates that an average residential customer uses approximately 50,000 gal per year on outdoor irrigation.
- (5) Assumes each shower head installed provides 2.6 showers per day at 5 min per shower; assumes reduction in flow rate from an average of 4.0 gpm to 1.7 gpm. Based on information in “Water Use and Conservation” by Amy Vickers.

8.6 Evaluating Efficacy of WUE Measures

The City will monitor total system annual water use and average customer water use to determine whether WUE measures reduce actual water use. The number of rebates issued for low flow shower heads will also provide the City with insight into the amount of water the WUE program saves; each rebate issued theoretically carries with it a guaranteed savings (see preceding calculations).

8.7 Demand Forecasting – Projected WUE

The Demand projections developed in **Section 2** do not take into account WUE efforts that might reduce future demand. With planned WUE measures the City believes it possible 1.03MG annually. If the City implemented all available WUE measures annual growth could conceivably reduce ERU water use to 220 gpd (eliminate most outdoor water use). The Table following illustrates potential water savings due to more efficient use of water.

Table 8-3 Projected Effect of WUE on System Demand

Time Frame	Description	Annual System Demand (MG/year)
Current	Current level of WUE ⁽¹⁾	320
10-year	Without WUE ⁽¹⁾	398
	With planned WUE	397
	Max WUE ⁽²⁾	325
20-year	Without WUE ⁽¹⁾	495
	With planned WUE	494
	Max WUE ⁽²⁾	404

⁽¹⁾ Current, projected 10-year and projected 20-year annual system demand as detailed in **Table 2-11**.

⁽²⁾ Eliminate virtually all outdoor water use to reduce ERU demand to 220 gpd.

The City plans to review water consumption annually to determine success of WUE efforts. The City also plans to review its WUE program annually to evaluate future water saving targets, and assess program benefits versus costs.

8.8 Evaluation of Rate Structure to Encourage WUE

An inclining block type rate structure encourages conservation by directly linking a customer’s increased consumption to higher water bills. Implementing an inclining block rate structure is relatively simple and inexpensive (to the water system) to implement.

Leavenworth continues to make changes to the City’s rate structure to promote efficient use of water. The City utilizes an inclining block rate structure (refer to **Section 7.2**) for the majority of its customers which encourages water use efficiency. The City has recently decreased the base allotment volume for all users inside and outside the City Limits. Base charges for all customers increase as meter size increases. The four tiered overage blocks for residential users have also been reduced and spaced at smaller intervals. The inclining block overage rates do not apply to commercial customers; these users are charged a fixed overage rate.

The following change to the City’s water rates structure would further orient the City’s water rates towards water use efficiency:

- Apply inclining block overage rates to commercial customers.

Price elasticity of water demand describes the sensitivity of customer water use to changes in the price of water; it measures the responsiveness of water use to price change (e.g. for a system with a price elasticity of -0.3, a 10% increase in price will result in a 3% reduction in demand). In order to estimate the volume of water that would be conserved by a rate increase a system must estimate

the elasticity of water demand. The AWWA estimates that typical price elasticity values for systems consisting primarily of residential customers range from -0.1 to -0.3. At present, the City estimates demand elasticity to be approximately -0.1 (relatively inelastic). As such, the City would likely need to increase rates substantially (30-40%) to noticeably affect system demand. At present, the City feels that raising water rates 30-40% as a means to achieve WUE would place undue financial hardship on its customers.

8.9 Evaluation of Reclaimed Water Opportunities

Utilizing treated wastewater to satisfy non-potable water demands, such as irrigation of parks or golf courses, can reduce demand on a system’s potable water supply. The Municipal Water Law requires systems with over 1,000 connections to evaluate opportunities for reclaimed water use when completing a Water System Plan.

8.9.1.1 Inventory of Large Water Users as Potential Reclaimed Water Users

The table following contains a list of the City’s 20 largest water users:

Table 8-4 Inventory of Large Water Users

Rank	Customer Name	Potential Reclaimed Water User? ⁽¹⁾	Customer Address
1	City Of Leavenworth	Yes	1402 Commercial St
2	Enzian Inn	Yes	590 Hwy 2
3	Enzian Falls	Yes	311 Hwy 2 Irr
4	Icicle Junction	Yes	565 W Hwy 2 Irr
5	Cascade Medical Center	No	817 Commercial St
6	Sleeping Lady Retreat	No	7375 Icicle Rd
7	Cascade School District	No	10190 Chumstick Hwy
8	Cascade School District	Yes	225 Central Ave Irr
9	U.S. Fish Hatchery	No	12790 Fish Hatchery Rd
10	Boyd Management LLC	No	810 Hwy 2
11	Worldmark The Club	Yes	100 Enchantment Park Wy Irr
12	Der Ritterhof Motor Inn	No	190 W Hwy 2
13	LDS Church	Yes	10170 Titus Rd
14	Icicle Inn Best Western	No	505 W Hwy 2
15	Icicle Junction	No	565 W Hwy 2
16	Cascade School District	No	10195 Titus Rd
17	Bavarian Village Apts	No	330 Prospect St
18	Alpine Village Condos	No	525 Alpine Pl
19	Mountain Meadows	No	320 Park Ave
20	Village At Leavenworth	Yes	200 Joseph St Irr

⁽¹⁾ Potential reclaimed water users in this table were not consulted on their desire to use reclaimed water. This list is purely for a rough estimate of irrigated area visible from an aerial photograph.

As shown in the preceding table, several of the large water users in the City have the potential to use reclaimed water if it becomes available. Customers with large irrigated areas could potentially use reclaimed water.

8.9.2 Availability of Reclaimed Water

At present, the City does not have access to reclaimed water nor regulations requiring the use of reclaimed water. In the future the City would be willing to consider upgrading its waste water treatment plant to produce reclaimed water if the upgrades made financial sense. At present, the modest income available from selling reclaimed water does not justify the high cost of modifying the WWTP.

8.9.3 Financial and Operational Feasibility of Using Reclaimed Water

Producing reclaimed water for non-potable uses generally costs more than producing water from existing sources (provided there is sufficient quantity available from existing sources). A partial list of the costs associated with producing reclaimed water includes:

- Additional treatment facilities for the wastewater (as compared to what is otherwise required per the City's existing NPDES permit).
- Storage facilities for the reclaimed water.
- Pumping facilities.
- Transmission and distribution mains from the treatment, storage, and pumping site to the sites which would utilize the reclaimed water.
- Additional operational expenditures related to operating the expanded wastewater treatment facility and the reclaimed water storage, pumping, and transmission facilities.

Until a source of reclaimed water becomes available to the City it is difficult to quantify the capital cost to supply reclaimed water. In general, use of reclaimed water requires installation of distribution facilities from the source of reclaimed water to the point of use. Depending on the distance between the source of reclaimed water and point of use, costs will vary significantly and affect financial and operational feasibility.

8.10 Water Shortage Response Plan

The City utilizes two relatively secure sources of water supply (surface water and ground water). The City's WTP provides consistent, high quality water for approximately 11 months out of the year; the City takes the WTP offline during spring snow melt and runoff. City wells withdraw water from a high quality aquifer that has consistently produced water without problems for decades. Therefore, in both the short term (e.g. power interruptions, redundancy) and long term (e.g. aquifer capacity, redundancy), water shortages do not present a major concern to the City. Nevertheless, a catastrophic failure of one or more of the City's sources of the supply could require the City to respond to short or long term water shortages. The following paragraphs and Table lay out the City's plan for dealing with water shortages.

The likely duration of the water shortage, which sources are affected and the time of year the shortage occurs largely determine which response steps are required.

- Supply interruptions affecting only the wells or the WTP during non-summer months are not likely to have a severe effect since demand is significantly reduced. With the WTP offline the remaining sources can supply at least twice max day demand.
- Power outages no longer threaten the City's ability to supply water due to the backup power generators at the well field. In addition the City has storage that would allow the system to operate for short periods of time in the event of supply interruption.
- In the event that the existing sources' capacity was reduced due to dramatically reduced aquifer or Icicle Creek levels or for some other reason, a use reduction plan for customers is needed and is laid out in the following table.

Table 8-5 Water Shortage Response Plan

Stage 1 Minor Shortage Voluntary Measures 5% – 10% reduction goal	Stage 2 Moderate Shortage Mandatory Program 10% – 20% reduction goal	Stage 3 Severe Shortage Rationing Program 20% – 30% reduction goal
A. PUBLIC INFORMATION ACTIONS		
<ul style="list-style-type: none"> - Prepare & distribute water conservation materials (bill insert, etc.) - Prepare & disseminate technical conservation information to specific customer types - Coordinate media outreach program - Issue news releases to the media 	<ul style="list-style-type: none"> - Continue public information program 	<ul style="list-style-type: none"> - Continue public information program
B. GOVERNMENT ACTIONS		
<ul style="list-style-type: none"> - Increase enforcement of hydrant opening - Increase meter reading frequency & meter maintenance - Promote intensive leak detection & repair program - Draft & adopt ordinances banning water waste. A typical ordinance could require: <ul style="list-style-type: none"> ▪ No unfixed leaks; ▪ No hosing of paved surfaces; ▪ No fountains except those using re-circulated water; ▪ No water running onto streets; ▪ No watering during the middle of the day; and ▪ No irrigation runoff - Draft & adopt ordinances allowing City to declare a water emergency and require fixed consumption allotments or % cutbacks (rationing) 	<ul style="list-style-type: none"> - Reduce water usage for main flushing, street cleaning, public fountains, & park irrigation - Watering of parks, cemeteries, etc., restricted to nights or designated irrigation days 	<ul style="list-style-type: none"> - All public water uses not required for health or safety prohibited unless using tank truck water supplies or reclaimed wastewater - Irrigation of public parks, cemeteries, etc., severely restricted - Pool covers required for all municipal pools - Main flushing allowed only for emergency purposes
C. USER RESTRICTIONS		
<ul style="list-style-type: none"> - Implement voluntary water use reductions (see A. Stage 1) 	<ul style="list-style-type: none"> - Implement ordinance banning water waste (See B. Stage 1 above) - Adopt landscape irrigation restrictions incorporating one or more of the following: <ul style="list-style-type: none"> ▪ Time of day (e.g., 7 pm to 7 am) ▪ Weekly frequency (e.g., odd/even, time per week) ▪ Sprinkler bans (e.g., hand) - Commercial car washes should intensify voluntary use reductions - Golf course irrigation times and weekly watering limits reduced 	<ul style="list-style-type: none"> - Implement ordinance allowing utilities to declare a water emergency & to require rationing (see B. Stage 1) - Car washing permitted only during specified watering hours of designated irrigation days - Times of day restrictions applied to commercial car washes - Golf course watering times & weekly watering limits reduced - Permissible watering hours & weekly frequency for landscaping irrigation further reduced
D. PENALTIES		
<ul style="list-style-type: none"> - None 	<ul style="list-style-type: none"> - Warning - House call - Shut off and reconnection fee 	<ul style="list-style-type: none"> - Fines
E. PRICING		
<ul style="list-style-type: none"> - None 	<ul style="list-style-type: none"> - Impose surcharges 	<ul style="list-style-type: none"> - Impose surcharges

The City Council has the necessary authority to implement the above measures at such time as they are required.

9.0 SOURCE WATER PROTECTION

The City's Wellhead Protection and Watershed Control Program contains the City's source water protection information. The City submitted the Wellhead Protection and Watershed Control Program under separate cover with a past Water System Plan; the City will provide an additional copy of the Program under separate cover for DOH review if required.

In 2017 the City updated the potential contaminant sources list within the existing one, five, and ten year time of travel boundaries. The Water Treatment Plant Operator Arnica Briody performed the update.

10.0 OPERATION AND MAINTENANCE

10.1 Water System Management and Operator Certification

The following City personnel have responsibility for the water system.

Joel Walinski, City Administrator
Herb Amick, Public Works Director
Arnica Briody, Water Treatment Plant Operator, WTPO II ⁽¹⁾, CCS
Tracy Valentine, Water Distribution Manager, WDM II

⁽¹⁾ *Leavenworth currently has a bilateral compliance agreement (BCA) with DOH which requires the City WTPO to have level 3 certification by February 2018. The City plans to have Arnica Briody level 3 certified by that date.*

Herb Amick can be reached at City Hall at (509) 548-5725. Arnica Briody or Tracy Valentine can be reached at the WTP at (509) 548-4235.

10.2 System Operation and Control

10.2.1 Identification of Major System Components

Refer to **Section 1.3** for an inventory of system components.

10.2.2 Routine System Operation

Refer to **Section 1.3.1** and **2.3.2** for a description of how the City operates the system using the WTP and wells as sources of supply.

10.3 Monitoring Procedures

The City performs all routine water quality monitoring as required by WAC 246-290-300. Refer to **Section 4.2.5** for a summary of the City's recent sampling. The City's water quality monitoring meets the requirements of the WAC and no adjustments to procedures appear necessary at this time.

10.4 Emergency Response Procedures

The Table following describes the City's planned response for various types of emergencies. In an emergency the City (509) 548-5275 should be notified whereupon the Public Works Director, or in his absence, an assistant (or the person on call if after hours) will assign responsibilities.

Table 10-1 Emergency Response Procedures

Potential Emergency	Action
Fire	<ul style="list-style-type: none"> • Provide assistance to fire department as needed
Contaminant Spill near Wells or WTP	<ul style="list-style-type: none"> • Contact fire department – 911 • Contact police department – 911 • Contact DOE spill response unit (509) 456-2926 • Shut down well pump(s) or WTP if contaminant could reach aquifer or Icicle Cr. • If necessary, notify public of emergency water consumption restrictions by way of Wenatchee TV station
Main Break	<ul style="list-style-type: none"> • Isolate reach by closing nearest valves • Repair main, if parts not available from City inventory obtain from suppliers
Power Outage at WTP (the wells have backup power)	<ul style="list-style-type: none"> • Contact Chelan County PUD at (888) 663-8121 • Demand temporarily supplied from wells or storage. Historically, power outages have been short.
Controls Between Reservoir and Sources Disrupted	<ul style="list-style-type: none"> • Operate well pumps or WTP manually if necessary • Contact Adam Blüher (Z Engineers) at (509) 888-9364
Well Pump Out of Service	<ul style="list-style-type: none"> • Contact Grays Electric at (509) 662 6834
WTP or Well Related Alarm (Auto-dialer)	<ul style="list-style-type: none"> • Contact Arnica Briody or Tracy Valentine, or Herb Amick at (509) 548-5275 or (509) 548-4235

10.5 Cross Connection Control (CCC)

The City has prepared its CCC program with the assistance of BMI and in accordance with WAC 246-290-490. The City's complete CCC program as prepared by BMI available for DOH review upon request. The following list summarizes the City's CCC Program.

Element 1 - Ordinance

City Ordinance 1178 establishes the City's authority to implement and enforce CCC, describes the operating policies and technical provisions of the program, and describe the corrective actions used to ensure that consumers comply with the City's CCC requirements.

Elements 2 & 3 – Procedures Evaluating New & Existing Services for Potential Hazard and Correcting Same

Prior to connection of a new service to the City's water system, City personnel determine the nature of the new service. If the service presents a potential hazard, the City notifies the property owner and requires that the cross connection be eliminated, or, if that is not possible, an appropriate backflow preventer be installed. See SOP 2.2 and 2.7 in the City's complete CCC program (separately bound).

The City evaluates all existing service connections to determine the nature of the water use and whether or not a backflow preventer is required. If necessary, the cross connections are eliminated or an appropriate backflow preventer installed.

Upon completion of the initial evaluation, the City reviews annually the adequacy/necessity of backflow prevention devices. In addition, whenever there is a change in building occupancy or use, the City reviews the adequacy/necessity of a backflow prevention device.

Element 4 – Certification of Personnel as CCS

The City's WTP Operator (Arnica Briody) is a CCS and is responsible for implementation of the CCC program.

Elements 5 & 6 – Procedures to Ensure Backflow Preventers are Inspected and/or Tested by Qualified Personnel

The City contracts with a BAT who tests all BAs annually. BA owners are billed for this service by the City. Customers must immediately repair backflow assemblies which fail the test or the City may terminate service. The City keeps test results on file on the master list.

Element 7 – Response to Backflow Incident

The City's water system has experienced no known backflow incidents. If one were to occur, the City would take all necessary steps to determine the origin and nature of the problem and remedy that problem. Refer to SOP 2.13 in the City's complete CCC program (separately bound).

Element 8 - Education

The City mails a report annually to all customers regarding CCC requirements. The City makes CCC literature provided by DOH available at City Hall.

Element 9 – CCC Records

As part of its contract with BMI, the City has established a computerized database of backflow assemblies. The City updates as necessary a master list of services with installed backflow assemblies. This list includes the locations, types, sizes, brand, model numbers, dates of testing, and repairs made for all installed backflow assemblies. The list includes services which should but do not yet have backflow assemblies. The list also includes a status field for monitoring progress toward installation of an appropriate backflow prevention device.

Element 10 – Reclaimed Water

Reclaimed water is used at the WWTP. There is no interconnection with the potable water system.

Premise Isolation

The City has approximately 20 services which require premises isolation in accordance with Table 9 of WAC 246-280-490.

10.6 Record Keeping and Reporting

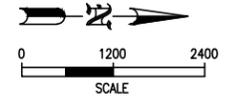
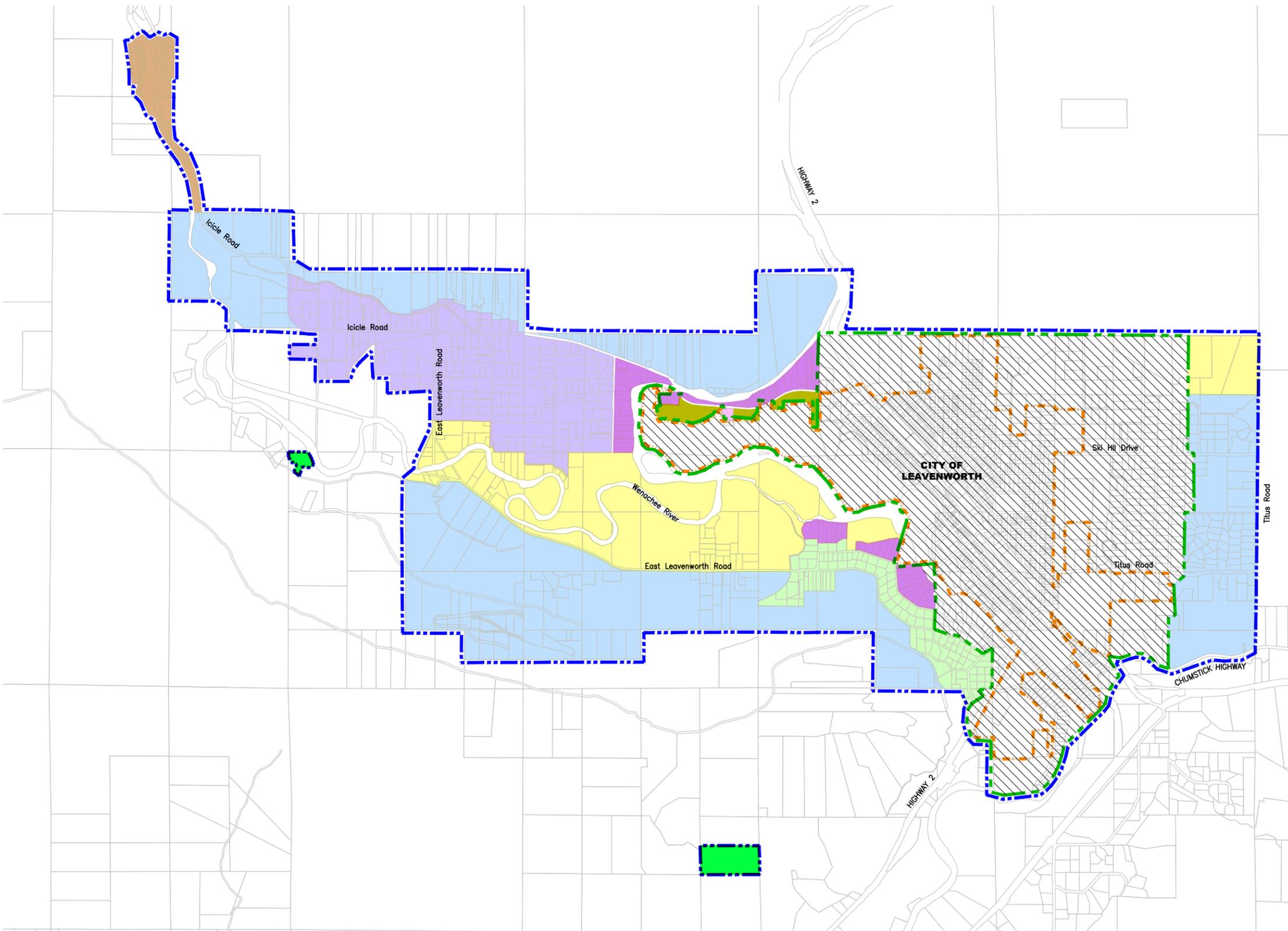
All water system records are filed at City Hall. Available records include:

- Water quality sampling results
- Source meters records
- Service meter records
- Customer complaints
- Project record drawings
- Water system engineering reports
- Billing records

The period of record for each of these types of records varies. In general it is the City's policy retain any potentially valuable system records.

10.7 O&M Improvements

The water system is operated efficiently and effectively. Unlike many systems, knowledge of water system operation is shared by more than one person which increases system reliability. The City's O&M practices do not appear to require improvement at this time.



- LEGEND**
- CITY LIMITS
 - URBAN GROWTH AREA
 - WATER RIGHTS PLACE OF USE AREA
 - REFER TO FIGURE 1B FOR CITY LAND USE

- CHELAN COUNTY ZONING**
- RRR
 - RR 5
 - RR 2.5
 - RR 10
 - RR 20M
 - RW
 - RV
 - FC
 - MR

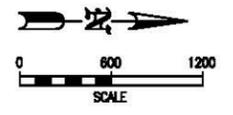
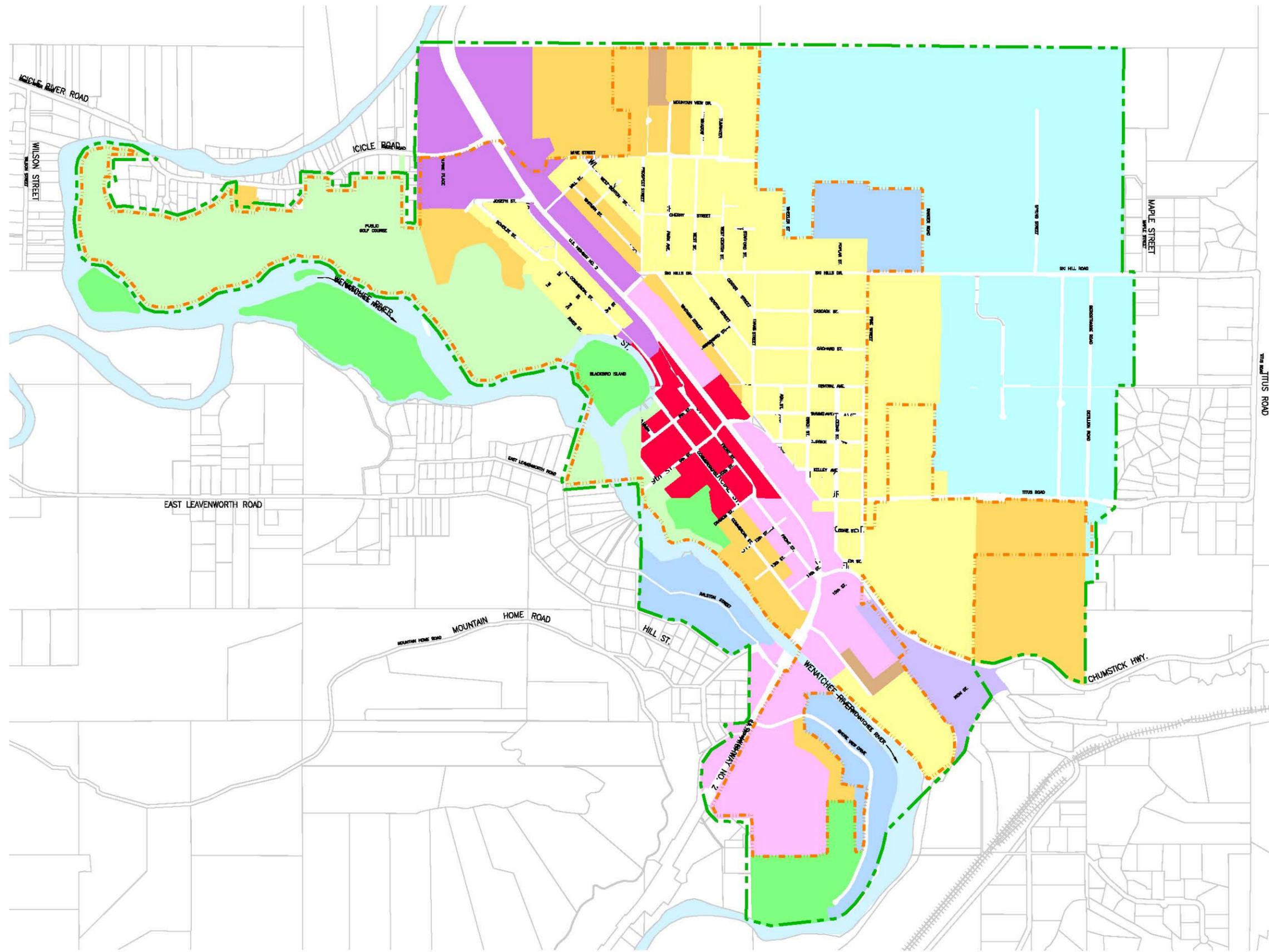
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 CHECKED:
 APPROVED:
 PROJ. NO.: 14-10-01
 DATE: 12/18/17

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 ENGINEERING AND MANAGEMENT

CITY OF LEAVENWORTH, WA
 WATER SYSTEM PLAN
 CHELAN COUNTY ZONING

FIGURE
1A



- LEGEND**
- CITY LIMITS BOUNDARY
 - UGA BOUNDARY
 - TOURIST COMMERCIAL ZONE
 - CENTRAL COMMERCIAL ZONE
 - GENERAL COMMERCIAL ZONE
 - LIGHT INDUSTRIAL ZONE
 - RECREATION PUBLIC ZONE
 - RECREATION ZONE
 - PLANNED DEVELOPMENT ZONE
 - RL-10 ZONE
 - RL-12 ZONE
 - RL-6 ZONE
 - RESIDENTIAL MULTI-FAMILY

141001-WSP-Fig 1B

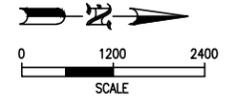
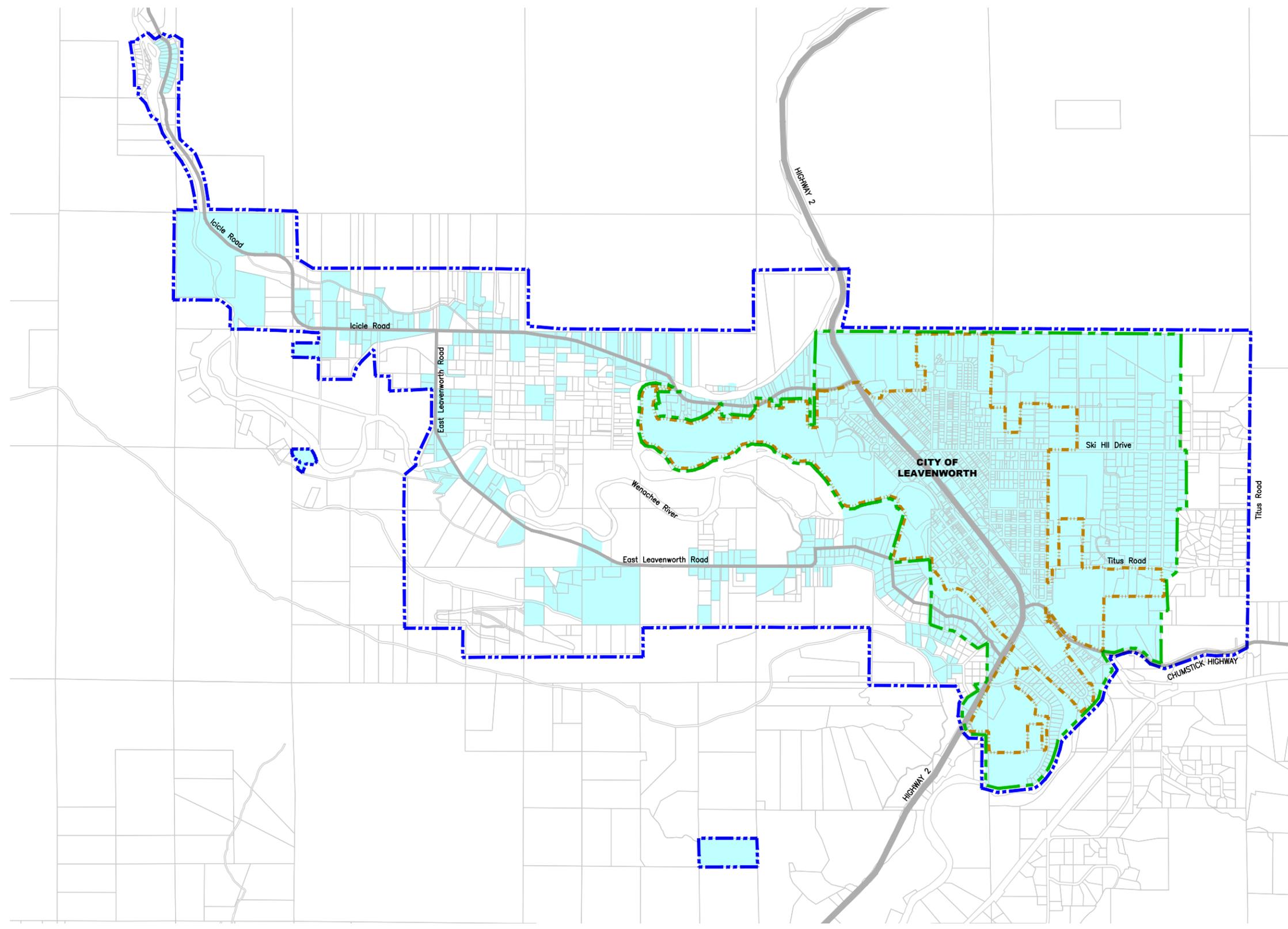
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 APPROVED:
 PROJ. NO.: 14-10-01
 DATE: 6/30/17

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 ENGINEERING AND MANAGEMENT

CITY OF LEAVENWORTH, WA
 WATER SYSTEM PLAN

CURRENT LAND USE

FIGURE
1B



- LEGEND**
- CITY LIMITS
 - URBAN GROWTH AREA
 - RETAIL SERVICE AREA
 - WATER RIGHTS PLACE OF USE AREA

NOTES ON SERVICE AREA BOUNDARIES

1. RETAIL SERVICE AREA: THE AREA WHERE A WATER SYSTEM PROVIDES SERVICE TO EXISTING CUSTOMERS AND THE AREA INSIDE WHICH A WATER SYSTEM HAS A DUTY TO PROVIDE NEW WATER SERVICE CONNECTIONS UPON REQUEST AS OUTLINED IN WAC 246-290-106. REFER TO MUNICIPAL CODE FOR EXCEPTIONS TO DUTY TO SERVE REQUIREMENTS FOR AREAS OUTSIDE THE URBAN GROWTH AREA AND RETAIL SERVICE AREA. RETAIL SERVICE AREA IS APPROXIMATE AND HAS NOT BEEN VERIFIED BY A PARCEL BY PARCEL ANALYSIS OF CURRENT CONNECTIONS.
2. WATER RIGHTS PLACE OF USE SERVICE AREA: WAC 246-290-107 ALLOWS A SYSTEM TO EXPAND ITS WATER RIGHTS PLACE OF USE TO INCLUDE ANY PORTION OF THE SERVICE AREA NOT INCLUDED IN THE ORIGINAL WATER RIGHT

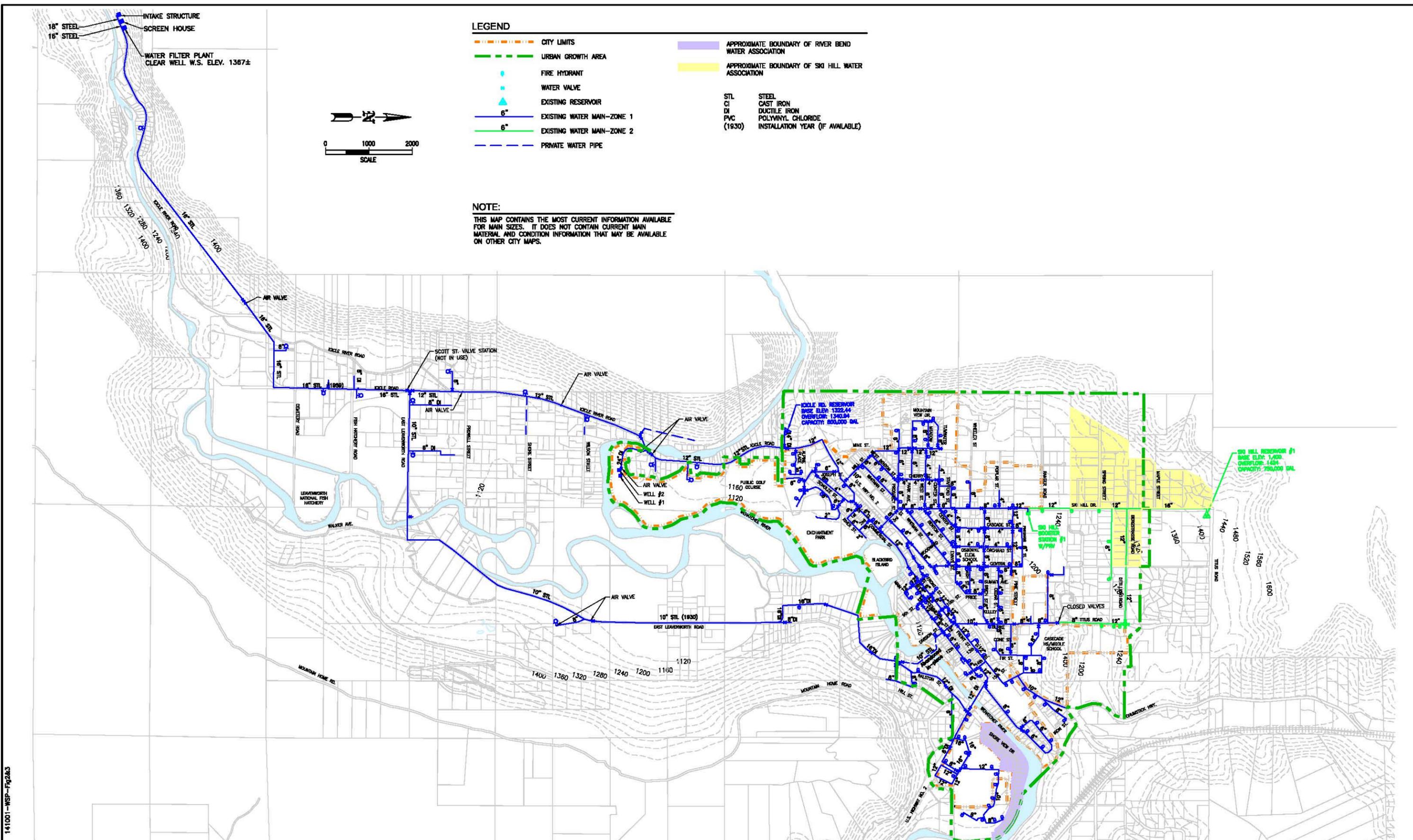
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 APPROVED:
 PROJ. NO.: 14-10-01
 DATE: 8/1/17



CITY OF LEAVENWORTH, WA
 WATER SYSTEM PLAN
 WATER SERVICE AREA BOUNDARIES

FIGURE
1C



LEGEND

- - - - - CITY LIMITS
 - - - - - URBAN GROWTH AREA
 - FIRE HYDRANT
 - WATER VALVE
 - ▲ EXISTING RESERVOIR
 - 6" EXISTING WATER MAIN—ZONE 1
 - 6" EXISTING WATER MAIN—ZONE 2
 - - - - - PRIVATE WATER PIPE
 - APPROXIMATE BOUNDARY OF RIVER BEND WATER ASSOCIATION
 - APPROXIMATE BOUNDARY OF SKO HILL WATER ASSOCIATION
- | | |
|--------|----------------------------------|
| STL | STEEL |
| CI | CAST IRON |
| DI | DUCTILE IRON |
| PVC | POLYVINYL CHLORIDE |
| (1930) | INSTALLATION YEAR (IF AVAILABLE) |

NOTE:

THIS MAP CONTAINS THE MOST CURRENT INFORMATION AVAILABLE FOR MAIN SIZES. IT DOES NOT CONTAIN CURRENT MAIN MATERIAL AND CONDITION INFORMATION THAT MAY BE AVAILABLE ON OTHER CITY MAPS.

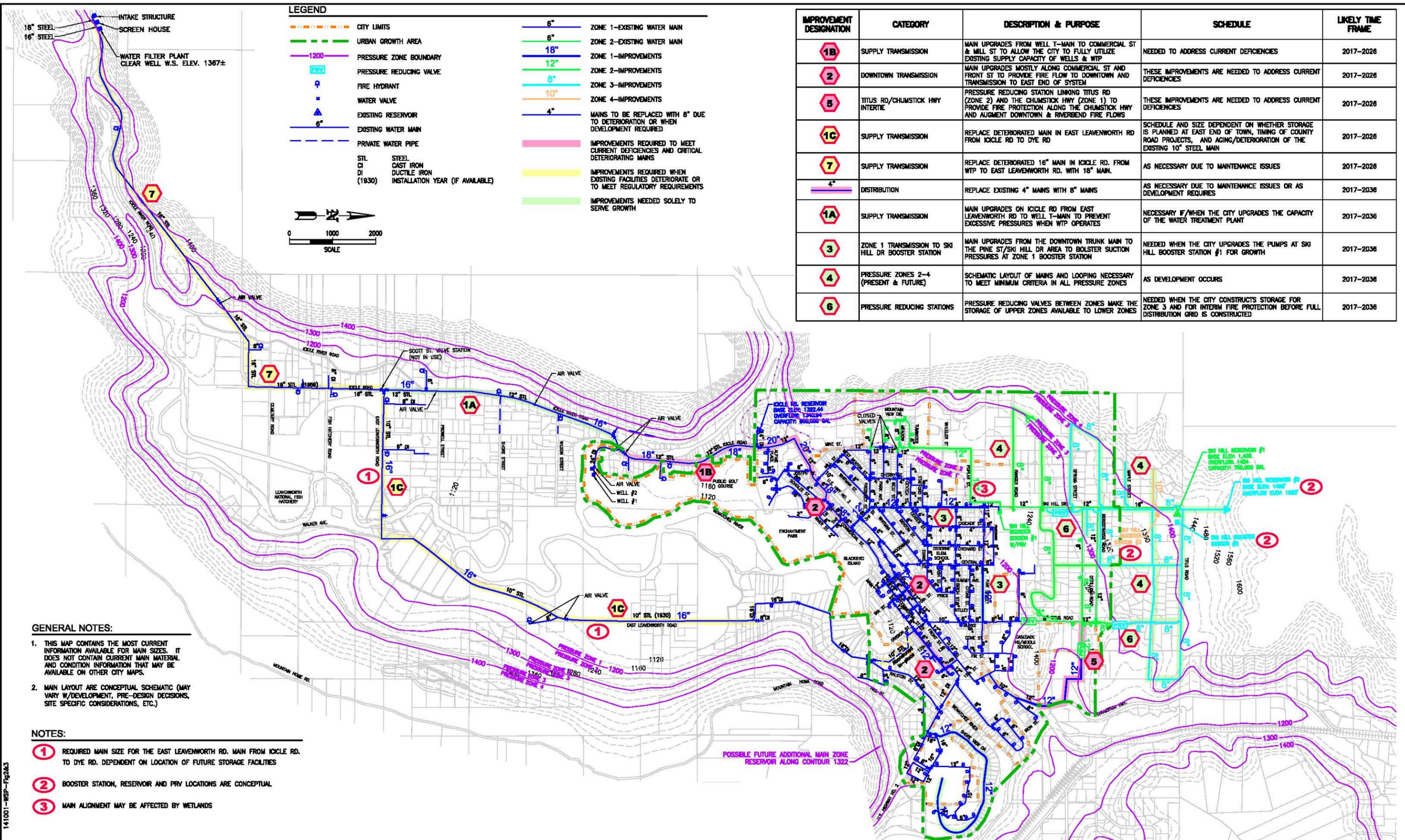
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 APPROVED:
 PROJ. NO.: 14-10-01
 DATE: 6/28/17

VARELA AND ASSOCIATES, INC.
 ENGINEERING AND MANAGEMENT

CITY OF LEAVENWORTH, WA
 WATER SYSTEM PLAN
 EXISTING WATER SYSTEM

FIGURE
2



LEGEND

	CITY LIMITS		6"	ZONE 1-EXISTING WATER MAIN
	URBAN GROWTH AREA		6"	ZONE 2-EXISTING WATER MAIN
	PRESSURE ZONE BOUNDARY		18"	ZONE 1-IMPROVEMENTS
	PRESSURE REDUCING VALVE		12"	ZONE 2-IMPROVEMENTS
	FIRE HYDRANT		8"	ZONE 3-IMPROVEMENTS
	WATER VALVE		10"	ZONE 4-IMPROVEMENTS
	EXISTING RESERVOIR		4"	MAINS TO BE REPLACED WITH 8" DUE TO DETERIORATION OR WHEN DEVELOPMENT REQUIRED
	EXISTING WATER MAIN			IMPROVEMENTS REQUIRED TO MEET CURRENT DEFICIENCIES AND CRITICAL DETERIORATING MAINS
	PRIVATE WATER PIPE			IMPROVEMENTS REQUIRED WHEN EXISTING FACILITIES DETERIORATE OR TO MEET REGULATORY REQUIREMENTS
STL	STEEL			IMPROVEMENTS NEEDED SOLELY TO SERVE GROWTH
CI	CAST IRON			
DI	DUCTILE IRON			
(1930)	INSTALLATION YEAR (IF AVAILABLE)			

IMPROVEMENT DESIGNATION	CATEGORY	DESCRIPTION & PURPOSE	SCHEDULE	LIKELY TIME FRAME
1B	SUPPLY TRANSMISSION	MAIN UPGRADES FROM WELL T-MAIN TO COMMERCIAL ST & MILL ST TO ALLOW THE CITY TO FULLY UTILIZE EXISTING SUPPLY CAPACITY OF WELLS & WTP	NEEDED TO ADDRESS CURRENT DEFICIENCIES	2017-2026
2	DOWNTOWN TRANSMISSION	MAIN UPGRADES MOSTLY ALONG COMMERCIAL ST AND FRONT ST TO PROVIDE FIRE FLOW TO DOWNTOWN AND TRANSMISSION TO EAST END OF SYSTEM	THESE IMPROVEMENTS ARE NEEDED TO ADDRESS CURRENT DEFICIENCIES	2017-2026
5	TITUS RD/CHUMSTICK HWY INTERTIE	PRESSURE REDUCING STATION LINKING TITUS RD (ZONE 2) AND THE CHUMSTICK HWY (ZONE 1) TO PROVIDE FIRE PROTECTION ALONG THE CHUMSTICK HWY AND AUGMENT DOWNTOWN & RIVERBEND FIRE FLOWS	THESE IMPROVEMENTS ARE NEEDED TO ADDRESS CURRENT DEFICIENCIES	2017-2026
1C	SUPPLY TRANSMISSION	REPLACE DETERIORATED MAIN IN EAST LEAVENWORTH RD FROM ICICLE RD TO DYE RD	SCHEDULE AND SIZE DEPENDENT ON WHETHER STORAGE IS PLANNED AT EAST END OF TOWN, TIMING OF COUNTY ROAD PROJECTS, AND AGING/DETERIORATION OF THE EXISTING 10" STEEL MAIN	2017-2026
7	SUPPLY TRANSMISSION	REPLACE DETERIORATED 18" MAIN IN ICICLE RD. FROM WTP TO EAST LEAVENWORTH RD. WITH 18" MAIN.	AS NECESSARY DUE TO MAINTENANCE ISSUES	2017-2026
4"	DISTRIBUTION	REPLACE EXISTING 4" MAINS WITH 8" MAINS	AS NECESSARY DUE TO MAINTENANCE ISSUES OR AS DEVELOPMENT REQUIRES	2017-2036
1A	SUPPLY TRANSMISSION	MAIN UPGRADES ON ICICLE RD FROM EAST LEAVENWORTH RD TO WELL T-MAIN TO PREVENT EXCESSIVE PRESSURES WHEN WTP OPERATES	NECESSARY IF/WHEN THE CITY UPGRADES THE CAPACITY OF THE WATER TREATMENT PLANT	2017-2036
3	ZONE 1 TRANSMISSION TO SKI HILL DR BOOSTER STATION	MAIN UPGRADES FROM THE DOWNTOWN TRUNK MAIN TO THE PINE ST/SKI HILL DR AREA TO BOLSTER SUCTION PRESSURES AT ZONE 1 BOOSTER STATION	NEEDED WHEN THE CITY UPGRADES THE PUMPS AT SKI HILL BOOSTER STATION #1 FOR GROWTH	2017-2036
4	PRESSURE ZONES 2-4 (PRESENT & FUTURE)	SCHEMATIC LAYOUT OF MAINS AND LOOPING NECESSARY TO MEET MINIMUM CRITERIA IN ALL PRESSURE ZONES	AS DEVELOPMENT OCCURS	2017-2036
6	PRESSURE REDUCING STATIONS	PRESSURE REDUCING VALVES BETWEEN ZONES MAKE THE STORAGE OF UPPER ZONES AVAILABLE TO LOWER ZONES	NEEDED WHEN THE CITY CONSTRUCTS STORAGE FOR ZONE 3 AND FOR INTERIM FIRE PROTECTION BEFORE FULL DISTRIBUTION GRID IS CONSTRUCTED	2017-2036

GENERAL NOTES:

1. THIS MAP CONTAINS THE MOST CURRENT INFORMATION AVAILABLE FOR MAIN SIZES. IT DOES NOT CONTAIN CURRENT MAIN MATERIAL AND CONDITION INFORMATION THAT MAY BE AVAILABLE ON OTHER CITY MAPS.
2. MAIN LAYOUT ARE CONCEPTUAL SCHEMATIC (MAY VARY W/DEVELOPMENT, PRE-DESIGN DECISIONS, SITE SPECIFIC CONSIDERATIONS, ETC.)

NOTES:

- 1 REQUIRED MAIN SIZE FOR THE EAST LEAVENWORTH RD. MAIN FROM ICICLE RD. TO DYE RD. DEPENDENT ON LOCATION OF FUTURE STORAGE FACILITIES
- 2 BOOSTER STATION, RESERVOIR AND PRV LOCATIONS ARE CONCEPTUAL
- 3 MAIN ALIGNMENT MAY BE AFFECTED BY WETLANDS

SCALE: AS SHOWN
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 CHECKED:
 APPROVED:
 PROJ. NO.: 14-10-01
 DATE: 6/30/17

VARELA AND ASSOCIATES, INC.
 ENGINEERING AND MANAGEMENT

CITY OF LEAVENWORTH, WA
 WATER SYSTEM PLAN
 IMPROVEMENTS

FIGURE 3

APPENDICES

- Appendix A** Planning Consistency Checklists
Fire District Coordination Documentation
Wenatchee Water Working Group (WWWG) Letter
Chelan County Resolution 2015-112
Monthly and Annual Water Production Documentation
ERU Determination Worksheet
- Appendix B** DOH Water Facilities Inventory (WFI) Form
DOH Water Quality Monitoring Schedule (WQMS)
DOH CCC Activities Annual Summary Report (ASR)
DOH Sanitary Survey
DOH Water Use Efficiency (WUE) Performance Reports
Annual Consumer Confidence Report (CCR)
- Appendix C** Well Logs
Water Rights Final Order and Notice of Appeal
Water Rights Documentation
- Appendix D** Ordinances & Resolutions
Leavenworth Municipal Code (excerpts)
Council Meeting Minutes (Meeting of Consumers & WUE Goal)
Coliform Monitoring Plan
Emergency Response Plan
Operation & Maintenance Procedures
Potential Contaminant Source Inventory Update Documentation
Reservoir Inspection Reports
IntegriTech WTP Intake Piping Assessment (excerpts)
- Appendix E** Hydraulic Model Sample Outputs and Documentation
Hydraulic Model Node Map
- Appendix F** Improvements Cost Estimates
- Appendix G** State Environmental Policy Act (SEPA) Documentation

APPENDIX A

Planning Consistency Checklists,
Fire District Coordination Documentation,
Wenatchee Water Working Group (WWWG) Letter,
Chelan County Resolution 2015-112,
Monthly and Annual Water Production Documentation,
ERU Determination Worksheet



Local Government Consistency Determination Form

Water System Name: City of Leavenworth PWS ID: 46500

Planning/Engineering Document Title: Water System Plan Plan Date: 2017

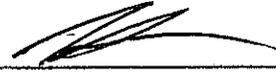
Local Government with Jurisdiction Conducting Review: City of Leavenworth

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	For use by local government
	Identify the page(s) in submittal	Yes or Not Applicable
a) The water system service area is consistent with the adopted <u>land use and zoning</u> within the service area.	Figures 1 and 2	Yes
b) The <u>growth projection</u> 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.	Section 2.2 (and sub-sections)	Yes
c) For <u>cities and towns that provide water service</u> : All water service area policies of the city or town described in the plan conform to all relevant <u>utility service extension ordinances</u> .	Sections 1.9 and 1.10	yes
d) <u>Service area policies</u> 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.	Sections 1.8 and 1.10	yes
e) <u>Other relevant elements</u> 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.	Not Applicable	Not Applicable

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.


 Signature: Nathan Pale, Development Services Manager Date: 9/15/17
 Printed Name, Title, & Jurisdiction: City of Leavenworth



Local Government Consistency Determination Form

Water System Name: City of Leavenworth PWS ID: 46500

Planning/Engineering Document Title: Water System Plan Plan Date: 2017

Local Government with Jurisdiction Conducting Review: Cheilan 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	For use by local government
	Identify the page(s) in submittal	Yes or Not Applicable
a) The water system service area is consistent with the adopted <u>land use and zoning</u> within the service area.	Figures 1 and 2	Yes
b) The <u>growth projection</u> 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.	Section 2.2 (and sub-sections)	Yes
c) For <u>cities and towns that provide water service</u> ; All water service area policies of the city or town described in the plan conform to all relevant <u>utility service extension ordinances</u> .	Sections 1.9 and 1.10	Yes
d) <u>Service area policies</u> 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.	Sections 1.8 and 1.10	Yes
e) <u>Other relevant elements</u> 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.	Not Applicable	Not Applicable

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.

Lilith Vespior
 Signature
Lilith Vespior, Senior Planner, Cheilan County
 Printed Name, Title, & Jurisdiction

12/26/17
 Date



CHELAN COUNTY FIRE PROTECTION DISTRICT #3

THE BAVARIAN VILLAGE in the heart of Washington State

August 15, 2017

City of Leavenworth
Department of Public Works
PO Box 287
Leavenworth, WA 98826

ATTN: Herb Amick

Dear Mr. Amick

We have reviewed the City of Leavenworth's proposed fire flow rate and duration criteria and agree the criteria appears reasonable for the type of construction found within the areas served by the city.

After much discussion and correspondence with your engineer CCFD #3 approve to nesting the standby and fire suppression components of the City of Leavenworth's storage.

We understand that some areas within Leavenworth's existing system do not meet the minimum fire flow criteria. Your engineer indicates the City plans to address areas with deficient fire flow during the 20yr planning period. CCFD# 3 routinely tests fire flow at hydrants to ascertain the current fire flow capabilities of hydrants that we use.

Please contact our office at (509) 548-7711 for further assistance.

Sincerely

CHELAN COUNTY FIRE DISTRICT 3
Bill Horner
Deputy Chief

Cc: Jesse Cowger – Varela & Associates



BOARD OF COMMISSIONERS
CHELAN COUNTY

STATE OF WASHINGTON
COUNTY ADMINISTRATION BUILDING
400 DOUGLAS STREET, SUITE #201
WENATCHEE, WA 98801
PHONE (509) 667-6215 FAX (509) 667-6599

CATHY MULHALL
County Administrator
cathy.mulhall@co.chelan.wa.us

CARLYE BAITY
Clerk of the Board
carlye.baity@co.chelan.wa.us

April 26, 2017

Mr. Trevor Hutton, Water Resources Program
Ecology – Central Regional Office
1250 West Alder Street
Union Gap, WA 98903-0009

Re: Wenatchee Coordinated Cost-Reimbursement Program

Dear Mr. Hutton:

We are writing to request your concurrence on key issues necessary to complete the coordinated cost-reimbursement processing we've initiated in the Wenatchee Basin, WRIA 45. This letter outlines two central issues that the Wenatchee Water Working Group (WWWG) has come to consensus on, which we'd like to discuss with you as well in the hopes that we share a common policy outlook. We've characterized these issues as Regional Planning and Permit Portability, and discuss each in greater detail below.

Regional Planning

In response to information requests from the coordinated cost-reimbursement contractor, Aspect Consulting, LLC (Aspect), the WWWG has been compiling water use data and projections of future water needs for use in the Reports of Examination (ROEs). The WWWG understands that new permits can only be issued for reasonable quantities that can be put to beneficial use. This necessitates consideration of the appropriate planning horizon and magnitude of growth projections. In working through this issue, the WWWG resolved the following issues:

1. Water System Plan Coordination: The City of Cashmere, City of Leavenworth, and Alpine Water District each have different water system plan schedules. To establish baseline demand information, each of the WWWG members produced information for a base year of 2015 in terms of both total use and consumptive use for forecasting purposes.
2. Projected Growth Rates: Growth projections for each water system vary due to demographic differences. For example, the City of Cashmere has historically had a significant industrial component to its water use, while the City of Leavenworth has a significant nonresident recreational water use demand. These can complicate traditional growth projections. After consideration, the WWWG have generally agreed to use the Office of Financial Management

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'High Series' growth rate of 2.19 percent per year to cover typical residential uses.¹ Two exceptions are an allowance in Cashmere for previous industrial use (Tree Top, which moved, but the industrial use is expected to be restored in the future) and for the Alpine Water District, which plans to serve an additional 360 existing parcels in the Lake Wenatchee area. These are discussed in greater detail in Table 1.

3. Planning Horizon: Ecology has often relied on a 20-year planning horizon when projecting future municipal water needs. Ecology has allowed for longer-range planning when factors warrant, such as regional planning by multiple utilities, and uncertainty in water availability for future planning cycles. Examples where Ecology has allowed longer than 20-year planning horizons include permit authority for Quad Cities, Suncadia, City of White Salmon, Wenatchee Regional Water System, Cascade Water Alliance (Lake Tapps), City of North Bend, and others.

The WWWG proposes to use a 50-year planning horizon. In support of this determination, we note that the reserve adopted in WAC 173-545-090 is for "*domestic purposes, irrigation associated with a residence, potable domestic water requirements associated with municipal, commercial, and industrial purposes, and stock water.*" These future uses in the Wenatchee basin will primarily be served by the members of the WWWG, which is consistent with Ecology's regional water supply planning directive in RCW 90.54.020(8): "*Development of water supply systems, whether publicly or privately owned, which provide water to the public generally in regional areas within the state shall be encouraged.*"

Reserve Allocation and Proposed Water Right Attributes

Reserve allocation and proposed water right attributes for the four municipalities are summarized in Table 1. The allocation of reserve quantities considers water demand from future growth based on assumptions expressed in this letter. Reserve allocation expressed as September consumptive use equivalents was converted to total use instantaneous (Qi) and annual (Qa) quantities using consumptive use and peaking factors provided by the municipalities. A more detailed description of the method used to allocate reserve is provided in Attachment 1.

The total demand on the reserve from these four municipalities is 2.79 cfs (Table 1). Aspect estimates demand on the reserve of 0.06 cfs from all other applicants participating in the Wenatchee Coordinated Cost Reimbursement Program, for a combined demand on the reserve of 2.85 cfs. Therefore, the quantity of unallocated reserve remaining after allocating water to all Program participants is 1.15 cfs.

¹ Source: <http://www.ofm.wa.gov/pop/gma/projections12/projections12.asp>

Table 1. Municipal Reserve Allocation and Proposed Water Right Attributes

Municipality	Proposed Water Right Attributes			Reserve Allocation	Used to Convert to Total Use on Peak Day	
	Qi (cfs) ¹	Qa (ac-ft) ²	End of Development Schedule ³	Sept CU (cfs) ⁴	Sept CU Rate (%) ⁵	Peak Day Multiplier ⁶
Alpine WD	0.99	500*	2050*	0.51	0.47	2.49
Cashmere	4.16	1076**	2067	0.80	0.45	2.34
Leavenworth	2.82	702	2067	0.73	0.64	2.49
Chelan Co.	n/a	n/a	n/a	0.75	n/a	n/a
Total				2.79		

Notes:

* Requested Qa of 500 ac-ft estimated to be depleted in 2050. In addition to the standard growth rate, Alpine Water District's application anticipates higher water demand to serve an additional 360 existing parcels in the Lake Wenatchee area. The application would be non-additive to any existing rights already serving those parcels whose authorized annual quantity is 15 acre-feet or less.

** Total use in 2067 includes an additional 250 ac-ft accounting for restoration of former industrial use.

- 1 Peak Qi proposed for water right. Represents total use on peak day under water demand growth conditions estimated for the end of the development schedule. Alpine Water District's Qi is limited by the application quantity.
- 2 Annual quantity in terms of total use under water demand growth conditions estimated for the end of the development schedule.
- 3 End of development schedule set for 50 years except Alpine Water District that is estimated to deplete its requested annual quantity of 500 ac-ft in 2050.
- 4 Quantity deducted from the Reserve in September consumptive use (CU) equivalents.
- 5 Used to convert between Consumptive to Total Use. As reported by each municipality for 2015.
- 6 Used to convert average daily use in September to peak day use in 2015. As reported by each municipality for 2015.

Permit Portability

The WWWG wants to preserve the reserve architecture outlined in WAC 173-545-090, which originated in water system planning. This includes allocations for both the mainstem Wenatchee River and its tributaries. When projecting new uses into the future, there is uncertainty regarding the location and magnitude of those uses. Through their regional coordination, the WWWG envisions that some portability of permit authority may be necessary in the future, and that that authority must be consistent with State law. By specifically recognizing that the rule framework is adopted in the permit, it provides the WWWG with flexibility to seek permit transfers amongst one another, or to serve others via satellite management authority; as long as those transfers are consistent with the original allocations in the rule when evaluating impairment, then the instream flow will be protected.

We think that the example provision language below appropriately addresses this issue and would be added to each permit:

“The quantities in this authorization are issued consistent with the reserve allocations in WAC 173-545-090, which specifies maximum reserve quantities in 6 tributaries and at 2 locations on the Wenatchee River. This water management framework was adopted in rule, consistent with the consensus-based watershed planning effort led by Chelan County Natural Resource Department, which culminated with the adoption of the Watershed Plan in 2006. Under RCW 90.82.130, *“the department shall use the plan as the framework for making future water resource decisions for the planned watershed or watersheds. Additionally, the department shall rely upon the plan as a primary consideration in determining the public interest related to such decisions.”* These reserve quantities and their associated impacts to instream flows and habitat were subsequently affirmed by the Legislature in 2016 in ESSB 6513. Future transfers or reallocation of the quantities contained herein that are proposed via change applications, new water budget neutral water rights, or other permit modifications shall be consistent with these adopted allocations when evaluating impairment and public interest criteria.”

Conclusion

In submitting this letter, we are unified in our agreement with the methods used to allocate reserve in a manner which satisfies the requests of each municipality to support of growth in our community.

We would be happy to meet with you and discuss these issues further, and to ensure that our approach to regional planning can be supported by Ecology when it reviews the ROEs.

Sincerely,



Keith Goehner
Commissioner, Chelan County



Jeff Gomes
Mayor, City of Cashmere



Joel Walinski
City Administrator, City of Leavenworth



Mark Peterson
Alpine Water District

cc: Pete Fraley, City of Cashmere

Attachments: Attachment 1 – Municipal Reserve Allocation

Municipal Reserve Allocation

Members of the Wenatchee Water Working Group (WWWG) participating in the Wenatchee Coordinated Cost-Reimbursement Program are working together to ensure there is adequate water supply available to support projected growth over the next 50 years. These municipal users include Chelan County, City of Cashmere, City of Leavenworth, and the Alpine Water District.

The Wenatchee Instream Flow Rule (WAC 173-545-090) set aside a reservation of 4 cubic feet per second (cfs) for "*domestic purposes, irrigation associated with a residence, potable domestic water requirements associated with municipal, commercial, and industrial purposes, and stock water.*"

The following method was applied to satisfy the municipal and domestic use requests of all Coordinated Cost-Reimbursement participants and determine how much water will remain in the 4 cfs reservation after all requests are processed:

- Process requests of Coordinated Cost-Reimbursement participants other than the four municipalities listed above. Table 1 shows the quantity required by these requests, in terms of September consumptive use equivalents, is 0.06 cfs leaving 3.94 cfs of the reserve remaining.
- Establish total water use in Year 2015 as a baseline for municipal growth. Assume water demand will grow according to the Office of Financial Management 'High Series' growth rate of 2.19 percent per year, which has been agreed to by WWWG members.¹
- Assume municipalities will first use 2015 inchoate quantities before accessing the reserve to meet demands.
- Determine the date inchoate quantities (instantaneous rates and annual) are projected to be depleted by deducting growth in total use at a rate of 2.19 percent annually. For all municipalities, annual quantity is estimated to be depleted before instantaneous quantity.
- Assume the year that inchoate annual quantity is depleted is when access to the reserve begins. Because it has no water rights, Chelan County immediately began using the reserve to support permit-exempt water use when the Wenatchee Instream Flow Rule was adopted in 2008.
- Assign each municipality a reserve quantity sufficient to support growth from the year inchoate quantities are estimated to be depleted to the Year 2067 (50 years from present).

City of Cashmere

The City of Cashmere reports total annual water use of 661 ac-ft (ac-ft) in 2015. In addition, 250 ac-ft were previously associated with Tree Top, and another industry is expected to replace this historic demand. The City's water right portfolio has a total uninterruptible annual quantity of 1,213 ac-ft, leaving 302 ac-ft of inchoate or previously perfected water right remaining at the end of 2015. Assuming water demand increases by 2.19 percent annually for the domestic portion, the City's inchoate quantity will be depleted in 2032. Beginning in 2033, the City will require 0.80 cfs of reserve (in September consumptive use equivalents) to support growth through 2067. Converting this to total uses, the

¹ Alpine Water District will assume a higher growth rate due to planned expansion. See below.

proposed water right attributes are Qi of 4.16 cfs and Qa of 1,076 ac-ft. This request is within the City's application quantities.

City of Leavenworth

The City of Leavenworth reports total annual water use of 936 ac-ft in 2015. The City's water right portfolio has a total uninterruptible annual quantity of 2,185.95 ac-ft, leaving 1,250 ac-ft of Inchoate or previously perfected water right remaining at the end of 2015. This uninterruptible quantity presumes that the 811 ac-ft of water rights involved in the City's dispute with Ecology over its existing water right portfolio will be resolved in a manner other than reliance on this reserve (e.g., supplied through Icicle Strategy, Court decision, or other settlement of City of Leavenworth v. Wash. St. Dep't of Ecology, WA Ct. of Appeals, Div. III, Case No. 312364). To the extent this presumption proves incorrect, the City of Leavenworth reserves the right to seek additional allocations of uninterruptible water from the Wenatchee Reservation.

Assuming water demand increases by 2.19 percent annually, the City's inchoate quantity will be depleted in 2054. Beginning in 2055, the City will require 0.73 cfs of reserve (in September consumptive use equivalents) to support growth through 2067. Converting this to total uses, the proposed water right attributes are Qi of 2.82 cfs and Qa of 702 ac-ft. This request is within the City's application quantities.

Chelan County

An Interlocal Agreement between the City of Leavenworth and Chelan County established 0.75 cfs of reserve allocation for County growth.

From 2008 through 2015, Chelan County permitted 327 residential connections subject to the Wenatchee Instream Flow Rule. These permit-exempt water uses debit the reserve by 0.14 cfs in terms of September consumptive use equivalents. Assuming a growth rate of 2.19 percent annually, Chelan County will need 0.45 cfs of reserve (in September consumptive use equivalents) to cover domestic water use occurring from 2008 to 2067, which translates to about 250 ac-ft of annual use. The 0.45 cfs covering demand from growth by domestic use is nested within the County's 0.75 cfs reserve allocation. The remaining 0.30 cfs is intended to supply other uses authorized under reserve (e.g., rural commercial/industrial uses, stockwater, etc.)

Alpine Water District

Alpine Water District reports total annual water use of 19.9 ac-ft in 2015. The District's water right portfolio has a total annual quantity of 95 ac-ft, leaving 75 ac-ft of inchoate water right remaining at the end of 2015. The District anticipates expanding to serve an additional 360 parcels over the next 50 years. Considering district expansion at a rate of 7.2 parcels per year and the agreed 2.19 percent growth within the district, water demand is assumed to increase by 10.30 percent annually. Assuming the 10.30 percent combined growth and expansion rate, the District's inchoate water right will be depleted in 2030. Beginning in 2031, the District will need 0.51 cfs of reserve (in September consumptive use equivalents) to support growth and expansion until 2050, when the requested additional 500 ac-ft will be depleted. There is uncertainty regarding the current authority serving the 360 existing lots, which may include permitted, exempt, or unauthorized uses. Although this growth projection is higher than the other municipal water suppliers, the District's permit will be non-additive to existing uses whose

annual authorizations are 15 ac-ft or less, as there is no intent to duplicate such small or exempt authorizations. Alpine Water District may serve those users with this permit and voluntarily cancel the previous authorizations, or may use changes, transfers, or consolidations to add the original rights to the District's portfolio in lieu of fully developing this permit.

Unallocated Reserve after 2067

The total demand on the reserve from the four municipalities is 2.79 cfs (Table 1). All other applicants participating in the Wenatchee Coordinated Cost-Reimbursement Program account for 0.06 cfs, resulting in a combined demand on the reserve of 2.85 cfs. Therefore, the quantity of unallocated reserve remaining after allocating water to all Coordinated Cost-Reimbursement Program participants under the aforementioned assumptions is 1.15 cfs.

Reserve Allocation Provision

Due to uncertainty in where long-term growth may ultimately go and the need to potentially transfer water amongst the WWWG members, we recommend the following Reserve Allocation Provision:

The quantities in this authorization are issued consistent with the reserve allocations in WAC 173-545-090, which specifies maximum reserve quantities in 6 tributaries and at 2 locations on the Wenatchee River. This water management framework was adopted in rule, consistent with the consensus-based watershed planning effort led by Chelan County Natural Resource Department, which culminated with the adoption of the Watershed Plan in 2006. Under RCW 90.82.130, *"the department shall use the plan as the framework for making future water resource decisions for the planned watershed or watersheds. Additionally, the department shall rely upon the plan as a primary consideration in determining the public interest related to such decisions."* These reserve quantities and their associated impacts to instream flows and habitat were subsequently affirmed by the Legislature in 2016 in ESSB 6513. Future transfers or reallocation of the quantities contained herein that are proposed via change applications, new water budget neutral water rights, or other permit modifications shall be consistent with these adopted allocations when evaluating impairment and public interest criteria.

RESOLUTION 2015-112

Regarding: Population allocations for Chelan County and each of the designated Urban Growth Areas including the incorporated cities of Cashmere, Chelan, Entiat, Leavenworth and Wenatchee.

WHEREAS, State law requires the review and update of the County and respective City's Comprehensive Plans and Development Regulations by June 30, 2017, pursuant to RCW 36.70A.110 and .130; and,

WHEREAS, the County is tasked with using the Office of Financial Management population estimates for the County and providing analysis of the population projections appropriate to each Urban Growth Boundary; and,

WHEREAS, the County and the Cities of Cashmere, Chelan, Entiat, Leavenworth and Wenatchee have come to an agreement on the proposed population projection method and determination; and

WHEREAS, the Board of County Commissioners finds that this is a necessary step in drafting proposed amendments to the County Comprehensive Plan and each of the Cities Comprehensive Plans;

WHEREAS, the population projections are for the purpose of review and consideration during the mandated 2017 Comprehensive Plan and Development Regulation Update and may be modified through the review and adoption process based on additional information, findings and public or agency comments; and,

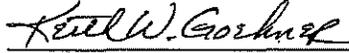
WHEREAS, the Board of County Commissioners conducted a duly advertised public hearing on December 15, 2015, to examine the records and files and invite public testimony for or against the proposal;

NOW, THEREFORE, BE IT RESOLVED that the Board of County Commissioners hereby adopts Exhibit A proposed population projections; and,

BE IT FURTHER RESOLVED that this Resolution is hereby signed into authentication and shall take effect and be in force from and after the date of signing.

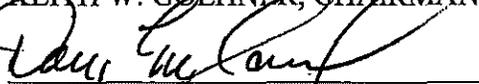
Dated this 15th day of DECEMBER, 2015.

BOARD OF CHELAN COUNTY COMMISSIONERS



KEITH W. GOEHNER, CHAIRMAN

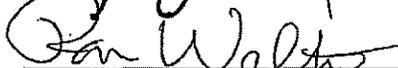
ATTEST: Kami Albers



DOUG ENGLAND, COMMISSIONER



Deputy Clerk of the Board



RON WALTER, COMMISSIONER



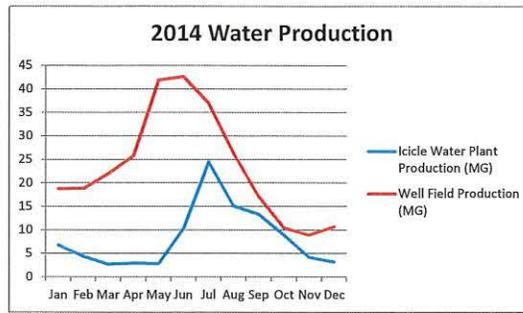
Exhibit A - Jurisdiction Specific Population Projections based on Share of Population Growth Between 1990 and 2010
Using OFM 2012 Medium Projection for Chelan County

	Share of 1990-2010 Population Growth	Adjusted Population Allocations	2014 OFM Estimate	2015 Projection	2020 Projection	2025 Projection	2030 Projection	2035 Projection	2037 Projection	2040 Projection
Manson UGA	3.69%	3.69%	2,032	2,064	2,190	2,312	2,418	2,507	2,538	2,583
Chelan UGA*	2.88%	3.61%	4,384	4,416	4,539	4,658	4,762	4,849	4,880	4,924
Entiat UGA	2.01%	2.01%	1,143	1,161	1,229	1,296	1,354	1,402	1,420	1,444
Leavenworth UGA	1.71%	1.71%	2,404	2,419	2,477	2,534	2,583	2,624	2,638	2,659
Peshastin UGA	0.32%	0.32%	671	674	685	696	705	712	715	719
Cashmere UGA	2.88%	2.88%	3,742	3,767	3,885	3,960	4,043	4,112	4,137	4,172
Wenatchee UGA	53.09%	53.09%	38,454	38,921	40,729	42,481	44,017	45,286	45,741	46,389
Urban	66.58%	67.31%	52,830	53,422	55,715	57,935	59,883	61,491	62,069	62,890
Rural	33.42%	32.69%	21,470	21,758	22,871	23,950	24,895	25,677	25,957	26,356
TOTAL	100.00%	100.00%	74,300	75,180	78,586	81,885	84,778	87,168	88,026	89,246

*Modified based on population changes from 1990-2015

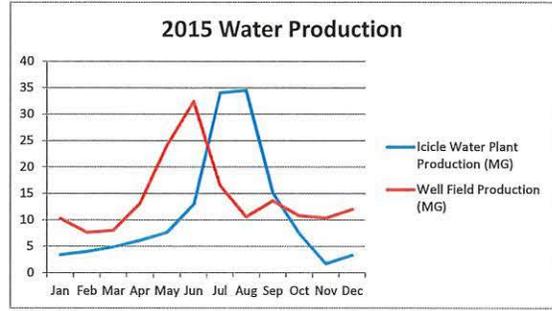
14-10 Leavenworth WSP Update
Monthly Water Production

Year 2014 - Month	Icicle Water Plant Production (MG)	Well Field Production (MG)	Total (MG)	ac-ft
Jan	6.78	18.797	25.577	78
Feb	4.336	18.816	23.152	71
Mar	2.716	21.969	24.685	76
Apr	2.893	25.739	28.632	88
May	2.821	41.904	44.725	137
Jun	10.364	42.661	53.025	163
Jul	24.499	37.025	61.524	189
Aug	15.11	26.425	41.535	127
Sep	13.356	17.2	30.556	94
Oct	8.862	10.44	19.302	59
Nov	4.146	8.911	13.057	40
Dec	3.194	10.668	13.862	43
TOTAL	99.077	280.555	379.632	1165



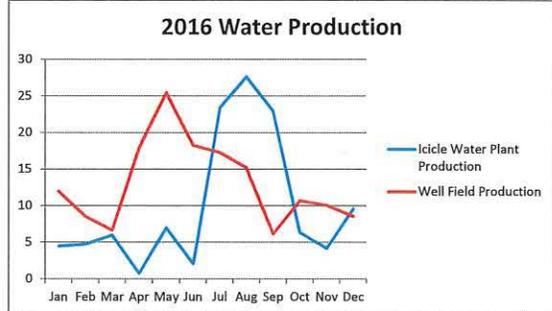
Year 2015 - Month	Icicle Water Plant Production (MG)	Well Field Production (MG)	Total (MG)	ac-ft
Jan	3.381	10.305	13.686	42
Feb	4.048	7.649	11.697	36
Mar	4.899	8.037	12.936	40
Apr	6.156	13.172	19.328	59
May	7.661	24.206	31.867	98
Jun	12.943	32.442	45.385	139
Jul	34.026	16.613	50.639	155
Aug	34.512	10.615	45.127	138
Sep	15.151	13.636	28.787	88
Oct	7.441	10.803	18.244	56
Nov	1.724	10.359	12.083	37
Dec	3.339	11.986	15.325	47
TOTAL	135.281	169.823	305.104	936

Water Sold (MG)
6.536
6.470
5.411
4.342
46.811
19.716
38.395
36.989
39.912
26.765
7.614
5.826
244.785



Year 2016 - Month	Icicle Water Plant Production (MG)	Well Field Production (MG)	Total (MG)	ac-ft
Jan	4.47	11.986	16.456	51
Feb	4.74	8.547	13.287	41
Mar	5.978	6.68	12.658	39
Apr	0.76	17.889	18.649	57
May	6.985	25.47	32.455	100
Jun	2.057	18.26	20.317	62
Jul	23.376	17.294	40.67	125
Aug	27.62	15.252	42.872	132
Sep	22.9	6.161	29.061	89
Oct	6.34	10.72	17.06	52
Nov	4.176	10.07	14.246	44
Dec	9.566	8.56	18.126	56
TOTAL	118.968	156.889	275.857	847

Water Sold (MG)
5.940
6.781
6.493
4.659
46.669
25.254
28.537
31.824
39.046
27.875
7.834
5.511
236.422



SUMMARY:

	<u>WTP Production (MG)</u>	<u>Well Production (MG)</u>	<u>Total Production (MG)</u>
2014	99.077	280.555	379.632
2015	135.281	169.823	305.104
2016	118.968	156.889	275.857
Average	117.775	202.422	320.198

<u>Water Sold (MG)</u>
237.8
244.8
236.4
239.7

WORKSHEET 6-1: ERU Determinations

Water System Physical Capacity Documentation based on MDD

Note: Capacity determinations are only for existing facilities that are operational for the water system.

Specific Single-Family Residential Connection Criteria (measured or estimated demands) (see Chapter 5):

Average Day Demand (ADD): 269 gpd/ERU

Maximum Day Demand (MDD) 613 gpd/ERU

Water System Service Connections correlated to ERUs			
Service Classification	Total MDD for the classification, gpd (2014-2016 Ave.)	Total # Connections in the classification (2014-2016 Ave.)	ERUs (2014-2016 Ave.)
Residential			
Single-family	667,000	1,089	1,089
Multifamily	117,700	84 Conn. (1,028 Units)	192
Nonresidential			
Industrial			
Commercial	707,400	215	1,154
Governmental			
Agricultural			
Recreational			
Other (specify)			
DSL/Unaccounted For	503,900	N/A	822
Other (identify)			
Total existing ERUs (Residential + Nonresidential + Non-revenue + Other) =			<u>3,257</u>

Physical Capacity as ERUs	
Water System Component (Facility)	Calculated Capacity in ERUs for each component
Source(s)	11,381
Treatment	9,973
Equalizing Storage	5,272⁽²⁾
Standby Storage	
Distribution	5,033
Transmission	9,973
Other (specify) <u>Water Rights</u>	<u>$Q_i = 8,047 - 11,020$ ERUs, $Q_a = 7,254 - 9,584$ ERUs⁽³⁾</u>
Water System Physical Capacity (ERUs) = <u>5,033</u> ERUs	
<i>(based on the limiting water system component shown above)</i>	

(1) REFER TO ATTACHED SYSTEM CAPACITY ANALYSIS SPREADSHEET.

Note: If multiple-day storage is needed to meet MDD, another approach to estimate the ERU capacity is necessary.

(2) DOES NOT ACCOUNT FOR EQUALIZING STORAGE ASSOCIATED WITH EXISTING AND FUTURE BOOSTER ZONES. REFER TO WSP FOR ANALYSIS OF EXISTING AND FUTURE PRESSURE ZONE NEEDS.

(3) DEPENDENT ON PENDING WATER RIGHTS. REFER TO SECTION 4.3 OF WSP.

Table 6-1: Determination of Equivalent Residential Units (ERUs)

Available Information (what is known)

ERU Equation (Determination of N)*

<p>Source Capacity (Annual Average) Based</p> <ol style="list-style-type: none"> 1. Average rate of flow for each source. 2. Time each source operation annually. 3. ADD for the water system. 4. Average annual volume of water used. 	<p>Equation 6-3:</p> $N = \frac{V_a}{(365)(ADD)} = \frac{\sum_a^1 (Q_a)(t_a)}{(365)(ADD)}$
<p>Source Capacity (Peak Day) Based</p> <ol style="list-style-type: none"> 1. Flow rate of each source on peak day. 2. Time each source operates on peak day. 3. MDD for the water system. 4. Total volume of a peak day demand. 	<p>Equation 6-4:</p> $N = \frac{V_a}{MDD} = \frac{\sum_a^1 (Q_a)(t_a)}{MDD}$
<p>Equalizing Storage Capacity Based</p> <ol style="list-style-type: none"> 1. MDD for water system. 2. ES available at 30 psi minimum. 3. Total source pumping capacity. 4. PHD equation factors, C and F. 	<p>Equation 6-6:</p> $N = \frac{1}{C} \left[\left(\frac{1440}{MDD} \right) \left(\frac{ES}{150} + Q_s - 18 \right) - F \right]$
<p>Standby Storage Based</p> <ol style="list-style-type: none"> 1. Total available SB storage. 2. SB desired per unit. 3. Duration that SB is expected to be used. 	<p>Equation 6-7:</p> $N = \frac{SB_T}{(SB_i)(t_d)}$
<p>Total "Capacity-Related Storage" Based</p> <ol style="list-style-type: none"> 1. ES available at 30 psi. 2. SB desired, available for water system. 3. Duration of SB when needed. 4. PHD equation factors, C and F. 	<p>Equation 6-8:</p> $N = \frac{CRS + 150 \left[Q_s - \left(\frac{MDD}{1440} \right) (F) \right] - 2700}{150 \left(\frac{MDD}{1440} \right) (C) + (SB_i)(t_d)}$

* See the descriptions of these equations in Chapter 6 for definitions of the terms above.

Summary of System Capacity									
Description of Facility	Present Capacity (ERUs)	Reserve Capacity (ERUs)	Reserve Capacity (%)	Present Capacity	Required Capacity	Reserve Capacity	Reserve Capacity (%)		
Supply Facilities ⁽¹⁾	11,381	8,124	71%	6.984 MGD	1,999	4,985	71%		
Treatment	9,973								
Water Rights ⁽¹⁾									
Qi (existing)	8,042	4,785	59%	3,427 GPM	1,388	2,039	59%		
Qa (existing)	7,254	3,997	55%	2,186 AF	982	1,204	55%		
Qi (w/ pending water rights)	11,012	7,755	70%	4,693 AF	1,388	3,305	70%		
Qa (w/ pending water rights)	9,584	6,327	66%	2,888 AF	982	1,906	66%		
Storage Facilities	5,272	2,015	38%	1.50 MG	0.836	0.66	44%		
Transmission/Distribution System	5,033								
(1) Based on supplying MDD									
Capacity Analysis Calculations									
Current System ERU's and Demands									
ERU's	3,257 ERUs								
ADD	0.877 MGD	Existing total water production of 320 MG per WSP							
	269 gpd/ERU								
MDD	614 gpd/ERU	1,999	MGD per WSP						
	0.43 gpm/ERU	614	gpd						
PHD	0.72 gpm/ERU	2,335	gpm						
Supply Analysis									
Existing Supply Facilities									
	Total Supply Capacity		4,850 gpm	(total well and WTP capacity)					
			6.98 MGD	(total supply capacity x 1440 min/day)					
Capacity Analysis Based on Supplying MDD									
All current supply systems working at full capacity									
	Total allowable ERUs = supply capacity / MDD ERU = 6.984 MGD / 614 gpd/ERU								
	Total allowable ERUs =		11,381 ERUs						
Treatment Analysis									
WTP Treatment Capacity (1,600 gpm) =			2.3 MGD	3,754 ERUs					
Treated Well Capacity (3,250 gpm) =			4.68 MGD	7,626 ERUs					
		Total =	6.98 MGD	11,381 ERUs					
The WTP has a treatment capacity of approximately 1,600 gpm (~2.3 MG), however, gravity flow out of the WTP is limited due to transmission capacity which causes water in the transmission main to back up into the chlorine contact basin during high flows. Therefore, the WTP transmission capacity of approximately 1,000 gpm (~1.44 MGD) limits the WTP treatment capacity. Hence, total system treatment capacity equals WTP transmission capacity plus the treated well capacity of 3,250 gpm (~4.68 MGD).									
WTP Transmission Capacity (1,000 gpm) =			1.44 MGD	2,347 ERUs					
Treated Well Capacity (3,250 gpm) =			4.68 MGD	7,626 ERUs					
		Total =	6.12 MGD	9,973 ERUs					
	Total Treatment Capacity =		9,973 ERUs						
Water Rights Analysis									
Capacity Based on Existing Water Rights									
Qi =	3,427 gpm	Current Required = MDD/1440 =		1388 gpm					
Qa =	2,185.95 ac-ft	Current Required = ADD x 365 =		982 ac-ft					
	712 MG/yr			320 MG/yr					
Qi	Total allowable Qi ERUs = Qi / (MDD ERU)								
	Total allowable Qi ERUs =		8,042 ERUs						
Qa	Total allowable Qa ERUs = Qa / (ADD ERU x 365)								
	Total allowable ERUs =		7,254 ERUs						
Capacity Based on Existing and Pending Water Rights									
Qi =	4,693 gpm	Current Required = MDD/1440 =		1388 gpm					
Qa =	2,887.95 ac-ft	Current Required = ADD x 365 =		982 ac-ft					
	941 MG/yr			320 MG/yr					
Qi	Total allowable Qi ERUs = Qi / (MDD ERU)								
	Total allowable Qi ERUs =		11,012 ERUs						
Qa	Total allowable Qa ERUs = Qa / (ADD ERU x 365)								
	Total allowable ERUs =		9,584 ERUs						

Storage Analysis				
Existing Storage				
Zone 1 Reservoir		800,000	gal	
Zone 2 Reservoir		700,000	gal	
Total Existing System Storage =		1,500,000	gal	
Existing or required Dead Storage				
Assume no system connections are allowed at elevations that will require dead storage (not investigated in this report)				
Required DS =		0	gal	
Operational Storage Allowance				
Reservoir #1		108,100	gal	Assume top 3.25 feet of reservoir
Reservoir #2		97,800	gal	Assume top 2.5 feet of reservoir
Total OS allowance =		205,900	gal	
Required Fire Storage				
FS = fire flow rate x duration				
3,500 gpm for 3 hrs				
Required FS =		630,000	gal	Confirmed with local fire district
Required Standby Storage				
SB = 2 Average Days minus all sources but largest or minimum of 200 gal/ERU				
Required Current SB =		651,400	gal	SB and ES were adjusted iteratively with the number of ERU's until the existing 1.5 MG total storage capacity was reached
Available SB =		1,054,400	gal	
Required Equalizing Storage				
ES = (PHD minus capacity of all sources) x 150 minutes				
Required ES =		0	gal	(PHD - Qs) x 150 < 0
Available ES =		229,932	gal	See comment for "Available SB" above
Total Current Required Storage =		835,900	gal	SB and FS can be nested
Total Available Storage =		1,490,232	gal	See comment for "Available SB" above
Total Storage Capacity in ERUs =		5,272	ERUs	See comment for "Available SB" above
Transmission/Distribution System Analysis				
DOH requires estimation of the physical capacity of the transmission/distribution system facilities. Estimating existing utilization and residual capacity of these facilities depends on the assumptions associated with the location of existing and projected future demands within the transmission/distribution system. The Water System Plan identifies existing and projected future deficiencies in the transmission/distribution system based on an estimated geographic distribution of existing demands and assumed location of future growth.				
The transmission/distribution system improvements identified in the Water System Plan will be needed to serve existing and/or projected future growth at the level of service criteria defined in the Water System Plan. Other system improvements may be necessary if growth or redevelopment does not occur as assumed or if development necessitates a change in the level of service criteria (e.g. fire flow rate, service pressure, etc.). It is assumed the local permitting process and water system policies will identify needed improvements for each new development on a case by case basis.				
For the purpose of system capacity analysis it has been assumed that the system can supply projected 20-year demand (ERUs) provided the transmission/distribution system improvement(s) identified in the Water System Plan are implemented. Hence, the capacity of the system based on transmission/distribution system facilities is equal to or greater than the ERUs shown below. Refer also to the Treatment Capacity Analysis on this spreadsheet for specific analysis of the effect of transmission capacity from the WTP and its effect on overall system treatment capacity.				
Projected 20-Year System Size =		5,033	ERUs	

APPENDIX B

DOH Water Facilities Inventory (WFI) Form,
DOH Water Quality Monitoring Schedule (WQMS),
DOH CCC Activities Annual Summary Report (ASR),
DOH Sanitary Survey,
DOH Water Use Efficiency (WUE) Performance Reports,
Annual Consumer Confidence Report (CCR)



WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1

Updated: 02/06/2018

Printed: 2/15/2018

WFI Printed For: On-Demand

Submission Reason: Source Update

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

1. SYSTEM ID NO. 46500 5	2. SYSTEM NAME LEAVENWORTH CITY OF	3. COUNTY CHELAN	4. GROUP A	5. TYPE Comm
6. PRIMARY CONTACT NAME & MAILING ADDRESS ARNICA M. BRIODY [WATER PROD SUPV] PO BOX 287 LEAVENWORTH, WA 98826		7. OWNER NAME & MAILING ADDRESS LEAVENWORTH, CITY OF HERB AMICK PO BOX 287 LEAVENWORTH, WA 98826-0287		8. OWNER NUMBER: 003301 PUBLIC WRKS DIR
STREET ADDRESS IF DIFFERENT FROM ABOVE ATTN ADDRESS CITY HALL, 700 SR-2 CITY LEAVENWORTH STATE WA ZIP 98826		STREET ADDRESS IF DIFFERENT FROM ABOVE ATTN ADDRESS CITY HALL, SR-2 CITY LEAVENWORTH STATE WA ZIP 98826		
9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION		
Primary Contact Daytime Phone: (509) 548-4235		Owner Daytime Phone: (509) 548-5275		
Primary Contact Mobile/Cell Phone: (509) 630-8703		Owner Mobile/Cell Phone: (509) 387-9355		
Primary Contact Evening Phone: (xxx)-xxx-xxxx		Owner Evening Phone: (xxx)-xxx-xxxx		
Fax:	E-mail: xxxxxxxxxxxxxxxxxxxxxx	Fax: (509) 548-6429	E-mail: xxxxxxxxxxxxxxxxxxxxxx	
WAC 246-290-420(9) requires that water systems provide 24-hour contact information for emergencies.				
11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)				
<input checked="" type="checkbox"/> Not applicable (Skip to #12) <input type="checkbox"/> Owned and Managed <input type="checkbox"/> Managed Only <input type="checkbox"/> Owned Only				
SMA NAME: _____		SMA Number: _____		
12. WATER SYSTEM CHARACTERISTICS (mark all that apply)				
<input type="checkbox"/> Agricultural <input checked="" type="checkbox"/> Commercial / Business <input checked="" type="checkbox"/> Day Care <input checked="" type="checkbox"/> Food Service/Food Permit <input checked="" type="checkbox"/> 1,000 or more person event for 2 or more days per year				
<input checked="" type="checkbox"/> Hospital/Clinic <input type="checkbox"/> Industrial <input type="checkbox"/> Licensed Residential Facility <input checked="" type="checkbox"/> Lodging <input checked="" type="checkbox"/> Recreational / RV Park				
<input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> School <input type="checkbox"/> Temporary Farm Worker <input checked="" type="checkbox"/> Other (church, fire station, etc.): _____				
13. WATER SYSTEM OWNERSHIP (mark only one)				14. STORAGE CAPACITY (gallons)
<input type="checkbox"/> Association <input type="checkbox"/> County <input type="checkbox"/> Investor <input type="checkbox"/> Special District <input checked="" type="checkbox"/> City / Town <input type="checkbox"/> Federal <input type="checkbox"/> Private <input type="checkbox"/> State				1,550,000

- SEE NEXT PAGE FOR A COMPLETE LIST OF SOURCES -

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.		2. SYSTEM NAME										3. COUNTY					4. GROUP		5. TYPE									
46500 5		LEAVENWORTH CITY OF										CHELAN					A		Comm									
15 Source Number	16 SOURCE NAME 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	17 INTERTIE SYSTEM ID NUMBER	18 SOURCE CATEGORY										19 USE		20 TREATMENT					22 DEPTH	23 CAPACITY (GALLONS PER MINUTE)	24 SOURCE LOCATION						
			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	1/4 SECTION	SECTION NUMBER	TOWNSHIP
S01	Icicle Creek WTP														X			X	X					2400	SE SE	28	24N	17E
S02	InAct 12/05/1996 Infiltration Well														X		X	Y	X					1000	SE NE	14	24N	17E
S03	WF/S04,5,6		X												X		Y	X					2100	SW NE	14	24N	17E	
S04	Well #1 - AGJ060			X											X		Y	X					53	1300	SE NE	14	24N	17E
S05	Well #2 - AGJ061			X											X		Y	X					51	750	SE NE	14	24N	17E
S06	Well #3 - BHT201			X											X		Y	X					70	1200	SE NE	14	24N	17E

→ 1600

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO. 46500 5	2. SYSTEM NAME LEAVENWORTH CITY OF	3. COUNTY CHELAN	4. GROUP A	5. TYPE Comm
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	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?)		2127	3131
A. Full Time Single Family Residences (Occupied 180 days or more per year)	1099		
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	84		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	514		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	514		
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	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	215	215	0
28. TOTAL SERVICE CONNECTIONS		2342	3131

29. FULL-TIME RESIDENTIAL POPULATION
A. How many residents are served by this system 180 or more days per year? 3000

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	3	3	3	3	3	3	3	3	3	3	3	3

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

<u>WS ID</u>	<u>WS Name</u>
46500	LEAVENWORTH CITY OF

Total WFI Printed: 1



Water Quality Monitoring Schedule

System: LEAVENWORTH, CITY OF
Contact: Arnica M Briody

PWS ID: 46500 5
Group: A - Comm

Region: EASTERN
County: CHELAN

NOTE: To receive credit for compliance samples, you must fill out laboratory and sample paperwork completely, send your samples to a laboratory accredited by Washington State to conduct the analyses, AND ensure the results are submitted to DOH Office of Drinking Water. There is often a lag time between when you collect your sample, when we credit your system with meeting the monitoring requirement, and when we generate the new monitoring requirement.

Coliform Monitoring Requirements

	Nov 2016	Dec 2016	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017
Coliform Monitoring Population	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Number of Routine Samples Required	3	3	3	3	3	3	3	3	3	3	3	3

- Collect samples from representative points throughout the distribution system.
- Collect required repeat samples following an unsatisfactory sample. In addition, collect a sample from each operating groundwater source.
- For systems that chlorinate, record chlorine residual (measured when the coliform sample is collected) on the coliform lab slip.

Chemical Monitoring Requirements

Distribution Monitoring

Water Quality Monitoring Schedule

<u>Test Panel/Analyte</u>	<u># Samples Required</u>	<u>Compliance Period</u>	<u>Frequency</u>	<u>Last Sample Date</u>	<u>Next Sample Due</u>
Lead and Copper	10	Jan 2015 - Dec 2017	standard - 3 year	06/25/2014	Jun 2017
Asbestos	1	Jan 2011 - Dec 2019	standard - 9 year	05/05/2015	
Total Trihalomethane (THM)	1	Jan 2016 - Mar 2016	quarterly	08/23/2016	
Total Trihalomethane (THM)	1	Apr 2016 - Jun 2016	quarterly	08/23/2016	
Total Trihalomethane (THM)	1	Jul 2016 - Sep 2016	quarterly	08/23/2016	
Total Trihalomethane (THM)	1	Oct 2016 - Dec 2016	quarterly	08/23/2016	Nov 2016
Halo-Acetic Acids (HAA5)	1	Jan 2016 - Mar 2016	quarterly	08/23/2016	
Halo-Acetic Acids (HAA5)	1	Apr 2016 - Jun 2016	quarterly	08/23/2016	
Halo-Acetic Acids (HAA5)	1	Jul 2016 - Sep 2016	quarterly	08/23/2016	
Halo-Acetic Acids (HAA5)	1	Oct 2016 - Dec 2016	quarterly	08/23/2016	Nov 2016

Notes on Distribution System Chemical Monitoring

For *Lead and Copper*:

- Collect samples from the COLD WATER side of a KITCHEN or BATHROOM faucet that is used daily.
- Before sampling, make sure the water has sat unused in the pipes for at least 6 hours, but no more than 12 hours (e.g. overnight).
- If you are sampling from a faucet that has hot water, make sure cold water is the last water to run through the faucet before it sits overnight.
- If your sampling frequency is annual or every 3 years, collect samples between June 1 and September 30.

For *Asbestos*: Collect the sample from one of your routine coliform sampling sites in an area of your distribution system that has asbestos concrete pipe.

For *Disinfection Byproducts (HAA5 and THM)*: Collect the samples at the locations identified in your Disinfection Byproducts (DBP) monitoring plan.

Source Monitoring

- Collect 'source' chemical monitoring samples from a tap after all treatment (if any), but before entering the distribution system.
- Washington State grants monitoring waivers for various test panels /analytes. Please note that we may require some monitoring as a condition of some waivers. We have granted complete waivers for dioxin, endothal, glyphosate, diquat, and insecticides.

Water Quality Monitoring Schedule

Source S01	Icicle Creek WTP	Surface	Use - Permanent	Susceptibility - High
<u>Test Panel/Analyte</u>	<u># Samples Required</u>	<u>Compliance Period</u>	<u>Frequency</u>	<u>Last Sample Date</u> <u>Next Sample Due</u>
Nitrate	1	Jan 2016 - Dec 2016	standard - 1 year	05/24/2016
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	06/20/2011
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	03/31/2009 Mar 2018
Pesticides	0	Jan 2014 - Dec 2016	waiver - 3 year	03/31/2009
Soil Fumigants	0	Jan 2014 - Dec 2016	waiver - 3 year	08/25/1998
Gross Alpha	1	Jan 2014 - Dec 2019	standard - 6 year	10/19/2010 Oct 2016
Radium 228	1	Jan 2014 - Dec 2019	standard - 6 year	10/19/2010 Oct 2016
Source S03	WF/S04,5,6	Well Field	Use - Permanent	Susceptibility - Moderate
<u>Test Panel/Analyte</u>	<u># Samples Required</u>	<u>Compliance Period</u>	<u>Frequency</u>	<u>Last Sample Date</u> <u>Next Sample Due</u>
Nitrate	1	Jan 2016 - Dec 2016	standard - 1 year	06/28/2016
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	11/28/2012
Volatile Organics (VOC)	1	Jan 2014 - Dec 2019	waiver - 6 year	07/19/2016
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	11/28/2012 May 2021
Pesticides	0	Jan 2014 - Dec 2016	waiver - 3 year	11/28/2012
Soil Fumigants	0	Jan 2014 - Dec 2016	waiver - 3 year	09/12/2001
Gross Alpha	1	Jan 2014 - Dec 2019	standard - 6 year	10/19/2010 Oct 2016
Radium 228	1	Jan 2014 - Dec 2019	standard - 6 year	10/19/2010 Oct 2016



Water Quality Monitoring Schedule

Other Information

<i>Other Reporting Schedules</i>	<i>Due Date</i>
Measure chlorine residuals and submit monthly reports if your system uses continuous chlorination:	monthly
Submit Consumer Confidence Report (CCR) to customers and ODW (Community systems only):	07/01/2016
Submit CCR certification form to ODW (Community systems only):	10/01/2016
Submit Water Use Efficiency report online to ODW (Community and other municipal water systems only):	07/01/2016
Send notices of lead and copper sample results to the customers sampled:	10 days after you receive the laboratory results
Submit Certification of customer notification of lead and copper results to ODW:	60 days after you notify customers

Special Notes

None

Eastern Regional Water Quality Monitoring Contacts

For questions regarding chemical monitoring:	Stan Hoffman: (509) 329-2132: or Stan.Hoffman@doh.wa.gov
For questions regarding DBPs:	Stan Hoffman: (509) 329-2132 or Stan.Hoffman@doh.wa.gov
For questions regarding coliform bacteria and microbial issues:	Mark Steward: (509) 329-2134 or Mark.Steward@doh.wa.gov

Additional Notes

The information on this monitoring schedule is valid as of the date in the upper left corner on the first page. However, the information may change with subsequent updates in our water quality monitoring database as we receive new data or revise monitoring schedules. There is often a lag time between when you collect your sample and when we credit your system with meeting the monitoring requirement.

We have not designed this monitoring schedule to display all compliance requirements. The purpose of this schedule is to assist water systems with planning for most water quality monitoring, and to allow systems to compare their records with DOH ODW records. Please be aware that this monitoring schedule does not include constituents that require a special monitoring frequency, such as monitoring affiliated with treatment.

Any inaccuracies on this schedule will not relieve the water system owner and operator of the requirement to comply with applicable regulations.

If you have any questions about your monitoring requirements, please contact the regional office staff listed above.



**Backflow Prevention for Severe Health Hazard Facilities (Gray)
Annual Summary Report (ASR) for 2016**

PWS ID: 465005 PWS Name: LEAVENWORTH, CITY OF County: CHELAN

Part 1: Backflow Prevention Status

- Describe the backflow prevention status at the end of the reporting year for each wastewater treatment plant and nuclear facility your system serves.
- If you serve more than one severe health hazard facility, click the "Add Facility" button to display another facility data entry box.
- If you serve more than one connection to the same facility, click the "Add Connection" button to display another connection row for that facility.
- You may add as many facilities and connections as needed.
- To update this form, you may delete facilities and connections which are no longer served.

<i>Facility 1 of 1</i>	
Facility Name	City of leavenworth Wastewater Plant
Physical Address	1402 Commercial Street
City	Leavenworth
Zip	98826
NPDES Permit#	WA0020974D
Facility Type	Wastewater Treatment Plant (WWTP)
Facility Comments	
<i>Facility 1 Connection 1 of 1</i>	
Connection Name	Lab Machanical room/ 2 RPs
Backflow Prevention Status	In-Premises (fixture) Backflow Prevention Only
Connection Comments	1 RP at Press room 1 RP at UV Room

Part 2: Report Certification and Contact Information

I, Tracy Valentine, certify that the information in this form is true, complete and accurate to the best of my knowledge.

Last Saved	03/06/2017	All ASR Forms Certified/Submitted	03/06/2017
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Designated CCS/CCC Program Manager ¹					
Name	Tracy Valentine	Title	CCC Program Manager	CCS Cert #	7438
Email Address	Tvalentine@cityofleavenworth.com	Phone	509-548-4235	Phone Ext	

PWS Manager ²					
Name	Arnica Briody	Title	CCC Program Manager	Operator Cert #	12312
Email Address	Abriody@cityofleavenworth.com	Phone	509-548-4235	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.



**Cross-Connection Control Program Summary (Cream)
Annual Summary Report (ASR) for 2016**

PWS ID: 465005 PWS Name: LEAVENWORTH, CITY OF County: CHELAN

Describe the characteristics of the PWS's Cross-Connection Control (CCC) Program at the end of 2016.

Part 1: CCC Program Characteristics

A. Type of Program Implemented

Type of Program	Check One
Premises isolation only.	<input type="radio"/>
Combination program: reliance on both premises isolation and in-premises prevention.	<input checked="" type="radio"/>
In transition from a combination program to a premises isolation only program.	<input type="radio"/>

B. Coordination with Authority Having Jurisdiction (AHJ) on CCC Issues

Indicate the status of coordination with AHJs in your service area. The AHJ is the entity that enforces the Uniform Plumbing Code at the local level. The AHJ is usually your county or city building department. Don't list DOH as an AHJ.

AHJ #	Name of AHJ (City or County Building Department) ¹	PWS		AHJ Declined to Coordinate
		Coordinates with AHJ	Has Written Agreement with AHJ	
1	City Code Admin. & County Fire Marshall	Yes <input checked="" type="radio"/> No <input type="radio"/>	Yes <input checked="" type="radio"/> No <input type="radio"/>	Yes <input type="radio"/> No <input type="radio"/>

¹ Do not enter an individual's name.

C. Corrective/Enforcement Actions Available to the Purveyor

Type of Corrective Action/Enforcement Action	Indicate Whether Available	Most Often Used (Check One)
Purveyor denies or discontinues water service.	Yes <input checked="" type="radio"/> No <input type="radio"/>	<input type="radio"/>
Purveyor installs backflow assembly and bills customer.	Yes <input checked="" type="radio"/> No <input type="radio"/>	<input type="radio"/>
Purveyor assesses fines (in addition to eliminating or controlling cross connection).	Yes <input checked="" type="radio"/> No <input type="radio"/>	<input type="radio"/>
Purveyor tests backflow assembly and bills customer.	Yes <input checked="" type="radio"/> No <input type="radio"/>	<input checked="" type="radio"/>

¹ Enter detailed description of other enforcement actions available to PWS. Don't enter "None", "Not Applicable", or "Not Available."

D. CCC Program Responsibilities

Do not include enforcement action related procedures or circumstances.

CCC Program Activity	Responsible Party (Check one per row)	
	Customer	Purveyor
Hazard Evaluation by DOH-certified CCS	<input type="radio"/>	<input checked="" type="radio"/>
Backflow preventer (BP) ownership	<input checked="" type="radio"/>	<input type="radio"/>
BP installation	<input checked="" type="radio"/>	<input type="radio"/>
BP <i>initial</i> inspection (for proper installation - all BPs)	<input checked="" type="radio"/>	<input type="radio"/>
BP <i>initial</i> test (for testable assemblies)	<input checked="" type="radio"/>	<input type="radio"/>
BP <i>annual</i> inspection (Air Gaps and AVBs)	<input type="radio"/>	<input checked="" type="radio"/>
BP <i>annual</i> test (for testable assemblies)	<input checked="" type="radio"/>	<input type="radio"/>
BP maintenance and repair	<input checked="" type="radio"/>	<input type="radio"/>

E. Backflow Prevention for Fire Protection Systems

Please remember to enter number of days allowed if you require retrofitting.

PWS coordinates with <i>AHJ</i> on CCC issues for fire sprinkler systems (FSSs)	Yes <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>
PWS coordinates with <i>local Fire Marshal</i> on CCC issues for FSSs.	Yes <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>
PWS ensures backflow prevention is installed before serving <i>new</i> connections with FSSs.	Yes <input checked="" type="radio"/> No <input type="radio"/>
PWS requires retrofits to <i>high</i> -hazard FSSs.	Yes <input type="radio"/> No. of days allowed: No <input checked="" type="radio"/> N/A <input type="radio"/>
PWS requires retrofits to <i>low</i> -hazard FSSs.	Yes <input type="radio"/> No. of days allowed: No <input checked="" type="radio"/> N/A <input type="radio"/>

F. Backflow Prevention for Irrigation Systems

Minimum level of backflow prevention required on irrigation systems <i>without</i> chemical addition.	Not Addressed <input type="radio"/> AVB <input checked="" type="radio"/> PV/SVBA <input type="radio"/> DCVA <input type="radio"/> RPBA <input type="radio"/>
PWS currently inspects AVBs upon <i>initial</i> installation.	Yes <input type="radio"/> No <input checked="" type="radio"/> N/A <input type="radio"/>
PWS currently inspects AVBs upon repair, reinstallation or relocation.	Yes <input type="radio"/> No <input checked="" type="radio"/> N/A <input type="radio"/>

G. Used Water

Does PWS prohibit, by ordinance, rules, policy, by-laws or agreement, the intentional return of used water (e.g. for heating or cooling) into the distribution system?	Yes <input checked="" type="radio"/> No <input type="radio"/>
If not prohibited at present, date plan to prohibit use.	N/A
Current number of service connections returning used water to distribution system.	0

H. Backflow Prevention for Unapproved Auxiliary Water Supplies¹ NOT Interconnected with PWS

Show the **minimum** backflow preventer and type of protection required for service connections having unapproved auxiliary water supplies *when they are NOT interconnected to the PWS.*

Existing service connections.	None <input checked="" type="radio"/> DCVA <input type="radio"/> RPBA <input type="radio"/> AG <input type="radio"/>
Type of protection required.	N/A <input checked="" type="radio"/> In-premises prevention <input type="radio"/> Premises isolation <input type="radio"/>
New service connections.	None <input checked="" type="radio"/> DCVA <input type="radio"/> RPBA <input type="radio"/> AG <input type="radio"/>
Type of protection required.	N/A <input checked="" type="radio"/> In-premises prevention <input type="radio"/> Premises isolation <input type="radio"/>

¹ An auxiliary water supply is any water supply on or available to customer's premises in addition to the purveyor's potable water supply.

I. Backflow Prevention for Tanker Trucks and Temporary Water Connections

Minimum level of backflow prevention (installed on or associated with the truck) required for tanker trucks taking water from PWS.	AG <input checked="" type="radio"/> DCVA <input type="radio"/> RPBA <input type="radio"/> Not Specified <input type="radio"/> Tanker trucks not allowed <input type="radio"/>
PWS requires tanker trucks to obtain water at designated fill sites each equipped with permanently installed backflow preventer(s).	Yes <input type="radio"/> (Minimum preventer: DCVA <input type="radio"/> RPBA <input type="radio"/>) No <input type="radio"/> N/A <input type="radio"/> No sites provided <input checked="" type="radio"/>
PWS currently accepts tanker trucks approved by other PWSs without further inspection or testing.	Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/>
Minimum level of backflow prevention required for temporary water connections (e.g., for construction sites).	AG <input type="radio"/> DCVA <input checked="" type="radio"/> RPBA <input type="radio"/> Not specified <input type="radio"/> Temp. connections not allowed <input type="radio"/>
PWS provides approved backflow preventer for temporary connections.	Yes <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/> (Temp. connections not allowed)
PWS requires testing each time the temporary connection backflow preventer is relocated.	Yes <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/> (Temp. connections not allowed)

J. Backflow Prevention for Non-Residential Connections

For each category shown, indicate whether PWS has non-residential connections of that type and the **minimum level of premises isolation** backflow prevention required (whether or not PWS currently has that type of customer).

Type of Connection	PWS has Customers of this Type	Minimum Premises Isolation Backflow Prevention Required
Commercial	Yes <input checked="" type="radio"/> No <input type="radio"/>	Not Required <input type="radio"/> DCVA <input checked="" type="radio"/> RPBA <input type="radio"/>
Industrial	Yes <input type="radio"/> No <input checked="" type="radio"/>	Not Required <input type="radio"/> DCVA <input type="radio"/> RPBA <input checked="" type="radio"/>
Institutional	Yes <input checked="" type="radio"/> No <input type="radio"/>	Not Required <input type="radio"/> DCVA <input checked="" type="radio"/> RPBA <input type="radio"/>

K. Backflow Prevention for Wholesale Customers

Indicate whether the PWS requires backflow prevention at interties with wholesale customers (other PWSs).

Type of Intertie	PWS has Customers of this Type	Minimum Backflow Prevention Required (if prevention is required, indicate minimum level).	
Existing	Yes <input type="radio"/> No <input checked="" type="radio"/>	Not specified / Not required <input type="radio"/>	
		Always required <input checked="" type="radio"/>	
		Required only if purchaser's CCC program is inadequate <input type="radio"/>	
New	Yes <input type="radio"/> No <input checked="" type="radio"/>	Not specified / Not required <input type="radio"/>	
		Always required <input checked="" type="radio"/>	
		Required only if purchaser's CCC program is inadequate <input type="radio"/>	

L. Exceptions to Mandatory Premises Isolation

PWS's written CCC Program Plan allows system to grant exceptions to mandatory premises isolation per WAC 246-290-490(4)(b)(iii)	Yes <input checked="" type="radio"/> No <input type="radio"/> Doesn't Address <input type="radio"/>
PWS currently grants new Exceptions.	Yes <input type="radio"/> No <input checked="" type="radio"/>
PWS granted Exceptions in past reporting years.	Yes <input checked="" type="radio"/> No <input type="radio"/>

Part 2: CCC Program Record-Keeping Software

Indicate the type or name of computer software the PWS uses to track CCC records.

BPMS <input type="radio"/>	Cross-Track (BMI) <input checked="" type="radio"/>	Tokay <input type="radio"/>	XC2 <input type="radio"/>	Custom developed for or by PWS ¹ <input type="radio"/>
Other non-CCC software (e.g. Excel) <input type="radio"/>	Other commercial CCC software (specify) <input type="radio"/>	None Used <input type="radio"/>		

¹ Do not include commercial CCC software customized for PWS. If PWS uses customized commercial software, check the box for the appropriate commercial software name.

Part 3: Comments and Clarifications

- Enter comments to:
 - Explain or clarify information in this report.
 - Describe accomplishments made in this reporting year.
 - Identify challenges faced in this reporting year.
 - Share your goals and objectives for the coming reporting year.
- Delete comments that are no longer valid.

No Comments

Part 4: Report Certification and Contact Information

I, Tracy Valentine, certify that the information in this form is true, complete and accurate to the best of my knowledge.

Last Saved	03/06/2017	All ASR Forms Certified/Submitted	03/06/2017
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Designated CCS/CCC Program Manager ¹					
Name	Tracy Valentine	Title	CCC Program Manager	CCS Cert #	7438
Email Address	Tvalentine@cityofleavenworth.com	Phone	509-548-4235	Phone Ext	

PWS Manager ²					
Name	Amica Briody	Title	CCC Program Manager	Operator Cert #	12312
Email Address	Abriody@cityofleavenworth.com	Phone	509-548-4235	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.



**Cross-Connection Control Activities (Blue)
Annual Summary Report (ASR) for 2016**

PWS ID: **465005** PWS Name: **LEAVENWORTH, CITY OF** County: **CHELAN**

Part 1: Designated Cross-Connection Control Specialist (CCS) Information

CCS Name	Tracy Valentine	CCS Phone	509-548-4235	CCS Cert. #	7438	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 Plan¹ <input checked="" type="radio"/> Yes <input type="radio"/> No	Program Plan Last Updated³ 06/05/2016
	CCC implementation activities² <input checked="" type="radio"/> Yes <input type="radio"/> 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	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
2	Hazard Evaluation Procedures and Schedules	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
3	Procedures/Schedules for Ensuring Installation of Backflow Preventers	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
4	Certified CCS Provided	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
5	Backflow Preventer Inspection and Testing	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
6	Assembly Testing Quality Assurance/Quality Control (QA/QC) Program	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
7	Backflow Incident Response Procedures	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
8	Public Education Program	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
9	CCC Records	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
10	Reclaimed Water Permit	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> 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)	1160
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)	235
Total Number of Connections	1395

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 <u>WAC 246-290-490(4)(b)</u>	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)				
Beverage bottling plants (including breweries)				
Car washes	1	1	1	0
Chemical plants				
Commercial laundries and dry cleaners				
Both reclaimed water and potable water provided				
Film processing facilities				
Dedicated fire lines with chemical addition or using unapproved auxiliary supplies				
Food processing plants (including canneries, slaughter houses, rendering plants)				
Hospitals, medical centers, medical, dental and veterinary clinics, mortuaries, nursing homes, etc., reported on Part 3C page 3 (totals imported from page 3)	9	7	7	2
Dedicated irrigation systems using purveyor's water supply and chemical addition ⁴				
Laboratories				
Metal plating industries				
Petroleum processing or storage plants				
Piers and docks				
Radioactive material processing plants or nuclear reactors				
Survey access denied or restricted				
Wastewater lift/pump stations (non-residential only)				
Wastewater treatment plants	1	1	1	
Unapproved auxiliary water supply interconnected with potable water supply				
Totals	11	9	9	2

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".

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 <u>[WAC 246-290-490(4)(b)]</u>	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)	1	1	1	0
Facilities for Treatment and Care of Patients Not Located in Hospitals Counted Above				
Same day surgery centers				
Out-patient clinics and offices	1	1	1	0
Alternative health out-patient clinics and offices				
Psychiatric out-patient clinics and offices				
Chiropractors with water-connected X-ray equipment				0
Hospice care centers				
Childbirth centers				
Kidney dialysis centers				
Blood centers				
Dental clinics and offices	4	2	2	2
Facilities for Housing Patients				
Nursing homes	1	1	1	0
Assisted Living Facilities (formerly Boarding Homes)				
Residential treatment centers				
Other Medical-Related Facilities				
Mortuaries with embalming equipment	1	1	1	0
Morgues and autopsy facilities (not in hospitals)				
Veterinarian offices, clinics and hospitals	1	1	1	0
Totals	9	7	7	2

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 Preventer 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 RPDA's and DCDA's 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	2	25	2	157	3			
2	Inspected and/or tested in 2016 ¹	2	25	2	132	3			
3	Failed inspection or test in 2016	0	0	0	3	0			
New Premises Isolation Backflow Preventers									
4	Installed in 2016 ²	0	4	0	12	0			
5	Inspected and/or tested in 2016 ¹	0	4	0	0	0			
6	Failed inspection or test in 2016	0	0	0	0	0			
Premises Isolation Backflow Preventers (existing or new)									
7	Removed from service in 2016 ³	0	0	0	0	0			
Total Premises Isolation Preventers at End of 2016		2	29	2	169	3	0	0	0
Does PWS track AVBs on irrigation systems? <input type="radio"/> Yes <input checked="" type="radio"/> No									
Table 2: In-Premises Preventers (include preventers within PWS-owned facilities)									
Existing In-Premises Backflow Preventers									
8	In service at beginning of 2016	0	30	2	94	7	1	0	unk
9	Inspected and/or tested in 2016 ¹	0	30	2	94	7	0	0	unk
10	Failed inspection or test in 2016	0	0	0	5	0	0	0	unk
New In-Premises Backflow Preventers									
11	Installed in 2016 ²	0	1	0	3	0	0	0	unk
12	Inspected and/or tested in 2016 ¹	0	1	0	3	0	0	0	unk
13	Failed inspection or test in 2016	0	1	0	0	0	0	0	unk
In-Premises Backflow Preventers (existing or new)									
14	Removed from service in 2016 ³	0	0	0	0	0	0	0	unk
Total In-Premises Preventers at End of 2016 ⁴		0	31	2	97	7	1	0	0
Grand Totals at End of 2016		2	60	4	266	10	1	0	0

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?	<input type="radio"/> Yes <input checked="" type="radio"/> No

On-site Hazard Surveys			
Did your CCS conduct any on-site hazard surveys during 2016?			<input checked="" type="radio"/> Yes <input type="radio"/> No Number 7
	Service Connection Type		
	New	Existing	Total
1. Number of connections surveyed for cross-connection hazards to PWS.	3	4	7
2. Number of connections requiring backflow prevention to protect PWS. ^{1,2}	3	4	7

New Exceptions to Premises Isolation	
Did your CCS grant any new premises isolation exceptions in 2016 to high-hazard premises? ³	<input type="radio"/> Yes <input checked="" type="radio"/> No

CCC Enforcement Actions	
Did your PWS take any enforcement actions during 2016? ⁴	<input checked="" type="radio"/> Yes <input type="radio"/> No Number 1

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
<i>Backflow Incidents during 2016</i>		
1	Backflow incidents that contaminated the PWS. ⁵	0
2	Backflow incidents that contaminated the customer's drinking water system <i>only</i> . ⁵	0
<i>Risk Factors for Backflow during 2016</i>		
3	Distribution main breaks per 100 miles of pipe.	0.00
4	Low pressure events (<20 psi in PWS distribution system).	0
5	Water outage events.	0
<i>Indicators of Possible Backflow during 2016</i>		
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.).	0
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.

No Comments

Part 7: Report Certification and Contact Information

I, Tracy Valentine , certify that the information in this form is true, complete and accurate to the best of my knowledge.

Last Saved	03/06/2017	All ASR Forms Certified/Submitted	03/06/2017
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Designated CCS/CCC Program Manager¹					
Name	Tracy Valentine	Title	CCC Program Manager	CCS Cert #	7438
Email Address	tvalentine@cityofleavenworth.com	Phone	509-548-4235	Phone Ext	

PWS Manager²					
Name	Amica Briody	Title	CCC Program Manager	Operator Cert #	12312
Email Address	Abriody@cityofleavenworth.com	Phone	509-548-4235	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.



STATE OF WASHINGTON
DEPARTMENT OF HEALTH

EASTERN DRINKING WATER REGIONAL OPERATIONS

16201 East Indiana Avenue, Suite 1500, Spokane Valley, Washington 99216-2830
TDD Relay 1-800-833-6388

October 6, 2011

Stanley D. Adams
City of Leavenworth
PO Box 287
Leavenworth, WA 98826

Subject: Leavenworth, City of; PWS #465005; Chelan County
Routine Sanitary Survey – September 27, 2011

Dear Mr. Adams:

Thank you for your time and attention given to me during your Routine Sanitary Survey on September 27, 2011. This letter documents our discussion and observations during the survey.

Significant Deficiencies

Significant sanitary deficiencies, if left unaddressed, have the potential of causing a health risk to people consuming water from your water system. **Congratulations, no significant deficiencies were identified during this survey.**

In addition to the inspection of the Icicle Creek filtration treatment plant, well field (Sources S04 and S05), and Icicle Road and Ski Hill Reservoirs, we discussed the following items:

Water Facilities Inventory (WFI) Form

The WFI form was reviewed and no updates were needed at this time.

Source Water Quality Monitoring

Your source water monitoring is current for 2011.

Disinfection Byproduct Monitoring

Under the Stage One Disinfection Byproduct (DBP) Rule, your routine monitoring schedule is one TTHM and one HAA5 sample per quarter. Your next DBP samples are required in November 2011.



Stanley D. Adams
October 6, 2011
Page 2 of 3

You may be eligible for reduced DBP monitoring if:

- Source water annual average TOC before treatment is ≤ 4.0 mg/L and
- Annual average TTHM ≤ 0.040 mg/L and
- Annual average HAA5 ≤ 0.030 mg/L.

The reduced monitoring schedule is one TTHM/HAA5 sample per year during the month of warmest water temperature. Leavenworth's TTHM is less than 0.040 mg/L and HAA5 is less than 0.030 mg/L, but there are no TOC samples results in our database. Monthly TOC samples are needed to be eligible for reduced DBP monitoring.

Lead and Copper Monitoring

From your lead/copper monitoring in July, the sample collected at #5 Pine Street had a copper level of 1.5 mg/L, which exceeds the 1.3 mg/L regulatory action level. A follow-up sample collected at this location had a copper result that was below the action level. Please note that from your original July 2011 samples, the 90th percentile of the sample set was below the copper action level and a follow-up sample was not required, but the follow-up samples provide useful information.

We discussed proper sampling sites and I told you that homes with water softeners should not be used. However, I could not find this guidance in any of our publications. This information came from a 2004 EPA memorandum and a copy of this memorandum is enclosed for your reference. Please refer to Page 5, where, as an example, a sample site with a water softener would be invalidated.

Please remember that water systems must now provide notification of sample results to water users where lead and copper samples are collected. Water systems must also certify they have completed these notices and provide a copy to the Office of Drinking Water. The *Consumer Notice for Lead and Copper Water Sample Results* and the *Consumer Notice Requirements and Certification Form* (DOH publication # 331-462) were developed to help water systems meet these requirements. These publications and other Lead/Copper Rule information are available on our website at http://www.doh.wa.gov/ehp/dw/our_main_pages/lead-copper.htm.

Cross-Connection Control Annual Summary Report (ASR)

In Part 3B of the ASR, you report the number of high-hazard connections served by the water system in Column A, the number of high-hazard connections with premise isolation by air gap (AG) or reduced pressure backflow assembly (RP) in Column B, and the number of AGs inspected or RPs tested in Column C. The values in Column C must be less than or equal to the values in Column B because you cannot test/inspect more AG/RP than what are installed. There appears to be a typo in your 2010 ASR, because in Part 3B you inspect/tested more AG/RP than

Stanley D. Adams
October 6, 2011
Page 3 of 3

what are installed. Please verify the numbers in Columns B and C and make any corrections in your 2011 ASR. I also notice a similar problem in Part 3C of your 2010 ASR.

By having a sanitary survey completed, the water system met the sanitary survey requirement of the Group A public water system regulation, WAC 246-290-416. We will notify you in three years of the next sanitary survey. Please note that satisfying the requirements of the sanitary survey should not be construed as meeting other applicable federal, state or local statutes, ordinances and regulations. Similarly, other Department of Health (DOH) requirements should be addressed separately from the sanitary survey.

In a letter dated February 1, 2011 you were notified that a fee is charged by DOH to help recover the cost of conducting a sanitary survey. WAC 246-290-990 (3)(c), authorizes a schedule of fees to be implemented to help recover the cost of conducting a sanitary survey.. The Department of Health's total cost to complete this sanitary survey is \$1836.00. An invoice is enclosed.

Please contact me at (509) 329-2117, if you have any questions regarding this letter.

Sincerely,



Michael D. Wilson, PE
Regional Engineer
Office of Drinking Water
Division of Environmental Health

Enclosure: EPA Lead and Copper Rule Memorandum
Sanitary Survey Invoice

cc: Chelan-Douglas Health District
Danielle Russell, Sanitary Survey Regional Coordinator



Date Submitted: 6/2/2017

Water Use Efficiency Annual Performance Report - 2016

WS Name: LEAVENWORTH, CITY OF

Water System ID# : 46500

WS County: CHELAN

Report submitted by: *Arnica Briody*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not fully metered - Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period: *01/01/2016* To *12/31/2016*

Incomplete or missing data for the year? *No*

If yes, explain:

Distribution System Leakage Summary:

Total Water Produced and Purchased (TP) – Annual Volume	<i>275,857,000</i> gallons
Authorized Consumption (AC) – Annual Volume	<i>245,000,000</i> gallons
Distribution System Leakage – Annual Volume TP – AC	<i>30,857,000</i> gallons
Distribution System Leakage – Percent DSL = $[(TP - AC) / TP] \times 100$	<i>11.2 %</i>
3-year annual average	<i>19.9 %</i>

Goal-Setting Information:

Date of Most Recent Public Forum: *06/28/2016* Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process

WUE Goals:

Customer Goal (Demand Side):

Through education in water conservation, try to maintain consumption at or below 300 million annual gallons.

Describe Progress in Reaching Goals:

Customer (Demand Side) Goal Progress:

Through education in water conservation, try to maintain consumption at or below 300 million annual gallons.

Additional Information Regarding Supply and Demand Side WUE Efforts

Include any other information that describes how you and your customers use water efficiently:

Have leakage below 10%. Replace older main distribution lines in 10 years.

Do not mail, fax, or email this report to DOH



Date Submitted: 5/23/2016

Water Use Efficiency Annual Performance Report - 2015

WS Name: LEAVENWORTH, CITY OF

Water System ID# : 46500

WS County: CHELAN

Report submitted by: *Arnica Briody*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not fully metered - Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period: *01/01/2015* To *12/31/2015*

Incomplete or missing data for the year? *No*

If yes, explain:

Distribution System Leakage Summary:

Total Water Produced and Purchased (TP) – Annual Volume	294,966,000 gallons
Authorized Consumption (AC) – Annual Volume	258,099,595 gallons
Distribution System Leakage – Annual Volume TP – AC	36,866,405 gallons
Distribution System Leakage – Percent DSL = $[(TP - AC) / TP] \times 100$	12.5 %
3-year annual average	24.0 %

Goal-Setting Information:

Date of Most Recent Public Forum: *07/09/2013* Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process

WUE Goals:

Customer Goal (Demand Side):

Through education in water conservation, try to maintain consumption at or below 300 million annual gallons.

Describe Progress in Reaching Goals:

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Include any other information that describes how you and your customers use water efficiently:

Do not mail, fax, or email this report to DOH



Date Submitted: 5/11/2015

Water Use Efficiency Annual Performance Report - 2014

WS Name: LEAVENWORTH, CITY OF

Water System ID# : 46500

WS County: CHELAN

Report submitted by: Stan Adams

Meter Installation Information:

Estimate the percentage of metered connections: 100%

If not fully metered - Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period: 01/01/2014 To 12/31/2014

Incomplete or missing data for the year? No

If yes, explain:

Distribution System Leakage Summary:

Total Water Produced and Purchased (TP) – Annual Volume	371,146,000 gallons
Authorized Consumption (AC) – Annual Volume	237,822,968 gallons
Distribution System Leakage – Annual Volume TP – AC	133,323,032 gallons
Distribution System Leakage – Percent DSL = $[(TP - AC) / TP] \times 100$	35.9 %
3-year annual average	28.2 %

Goal-Setting Information:

Date of Most Recent Public Forum: 07/09/2013 Has goal been changed since last performance report? No

Note: Customer goal must be re-established every 6 years through a public process

WUE Goals:

Customer Goal (Demand Side):

Through education in water conservation, try to maintain consumption at or below 300 million annual gallons.

Describe Progress in Reaching Goals:

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Include any other information that describes how you and your customers use water efficiently:

*We located a 4 inch broken sub main below a vacant rural field. We didn't discover the leak until a new owner ask " How long has that spring been in that back pasture ?"
We told him there was no spring. We found the leak had been nearly all year with the numbers we were seeing. That leak was repaired, and we estimated it was over a 50 million gallon water loss.*

We met our consumption goals of under 300 million annual gallons, if you don't count leakage. Our goal is to maintain that level of usage. With all the growth, that will prove difficult.

Do not mail, fax, or email this report to DOH



Annual Consumer Confidence Water Report

700 Highway 2/Post Office Box 287

Leavenworth City Hall

June 2016

INTRODUCTION

We are pleased to present to you this year's Annual Water Quality Report. This report is designed to inform you about the quality water delivered to your home or business every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring you the best quality of water.

The City draws water from both Icicle Creek and wells near the Wenatchee River. The water we provide can be from either of these two sources individually, or a blend of both sources. We have a source water protection plan available from our office that provides more information.

Water Announcements 2016

As of this last February, Stan Adams retired and Arnica Briody is the new Water Plant Supervisor. Arnica has a total of 12 years of past experience and education. She has grown up in Leavenworth and is excited for the opportunity to provide her community with quality drinking water.



QUESTIONS OR COMMENTS?

If you have any questions about this report, or concerning your water utility, please contact Arnica Briody, Leavenworth's Water System Supervisor or call the Water Plant at **548-4235**. We want our valued customers to be informed about their water utility. All actions regarding improvements to the Water System Plan and infrastructure are approved by the Leavenworth City Council. If you want to learn more, please attend any of our City Council regularly scheduled meetings on the second and fourth Tuesday of each month at 6:30 p.m. at City Hall.

The City of Leavenworth routinely monitors for constituents (contaminants) in your drinking water according to Federal and State regulations. The tables included in this report show the results of our monitoring for the period of **January 1st to December 31st, 2015**. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

DEFINITIONS

The terms and abbreviations used in this report and in the following tables include the following:

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter - one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

Parts per trillion (ppt) or Nanograms per liter (nanograms/l) - one part per trillion corresponds to one minute in 2,000,000 years, or a single penny in \$10,000,000,000.

Parts per quadrillion (ppq) or Picograms per liter (picograms/l) - one part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in \$10,000,000,000,000.



Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level (AL) - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment Technique (TT) - (mandatory language) A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - (mandatory language) The "Maximum Allowed" (MCL) is 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 treatment technology.

Maximum Contaminant Level Goal - (mandatory language) The "Goal" (MCLG) is 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 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.

Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant is necessary for control of microbial contaminants.

"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 City of Leavenworth is responsible for providing high quality drinking water, but cannot control the variety of material 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 2 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>"

METALS DETECTED IN 2015

Lead tests are taken every three years. The last test completed was August, 2014 and the results came back negative. The next lead and copper test will be completed in June, 2017.

INORGANIC CONTAMINANTS DETECTED IN 2015

Contaminant	Violation Yes / No	Level Detected	Unit Measurements	MCLG	MCL
1. Nitrite (as Nitrogen)	NO	0.09 (wells)	Mg/L	1	1
2. Nitrates - N	NO	<0.07	Mg/L	1	1

Likely Source of Contamination: Runoff from fertilizer use, leaching of septic tanks, sewage, natural deposits.

OTHER CONSTITUENTS NOT DETECTED IN 2015

In addition to the two constituents listed above, the City also tests drinking water for the following:

<p><u>Inorganic Contaminants</u></p> <ul style="list-style-type: none"> Antimony Arsenic Asbestos Barium Beryllium Cadmium Chromium Copper Cyanide Fluoride Lead Mercury Selenium Thallium 	<ul style="list-style-type: none"> 1,1- Dichloroethylene cis-1,2-ichloroethylene trans-1,2,-Dichloroethylene Dichloromethane 1,2- Dichloropropane Ethylbenzene Styrene Tetrachloroethylene 1,2,4-Trichlorobenzene 1,1,1-Trichloroethane 1,1,2- Trichloroethane Trichloroethyle Total Trihalomethanes Toluene Vinyl Choride Xylenes 	<ul style="list-style-type: none"> Di(2-ethylhexyl)adipate Di(2-ethylhexyl)phthalate Dibromochloropropane Dinoseb Diquat Dioxin[2,3,7,8-TCDD] Endothall Endrin Epichlorohydrin Ethylene dibromide Glyphosate Heptachlor Heptachlor epoxied Hexachlorobenzene Hexachlorocyclo-pentadiene Lindane Methoxychlor Oxamyl[Vydate} PCBs Pentachlorophenol Picloram Simazine Toxaphene
<p><u>Microbiological Contaminants</u></p> <ul style="list-style-type: none"> Coliform Fecal coliform 	<p><u>Synthetic Organic Contaminants</u></p> <ul style="list-style-type: none"> 2,4-D 2,4,5-TP (Silvex) Acrylamide Alachlor Atrazine Benzo(a)pyrene (PAH) Carbofuran Chlordane Dalapon 	
<p><u>Volatile Organic Contaminants</u></p> <ul style="list-style-type: none"> Benzene Carbon tetrachloride Chlorobenzene o-Dichlorobenzene p-Dichlorobenze 1,2- Dichloroethane 		



Historical facts: Icicle River had the highest flow at 19,800 cfs in 1995. Whereas, last year the highest flow for the Icicle River was 1,240 cfs in May and the lowest flow was 63 cfs in October. Cubic feet per second (cfs) is a measurement of water flow.

We're proud that your drinking water meets or exceeds all other Federal and State requirements. We have learned through our monitoring and testing that some constituents, such as, nitrites, and nitrates have been detected although well within the range found acceptable by the Department of Health (DOH) and the Environmental Protection Agency (EPA). The EPA has determined that your water **IS SAFE** at these levels.

All 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 the water poses a health risk. More information about contaminants and potential health effects may be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-compromised persons, such as, persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS, or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline 1-800-426-4791.

City Ordinance No. 1178 and Washington State Law WAC#246-290
require all Water Customers who have backflow assembly(s) to test annually (June)
and have the results sent to the City of Leavenworth.

Thank you for your compliance.

City of Leavenworth
700 HWY 2 / P.O. Box 287
Leavenworth, WA 98826

U.S. Postage
PAID
Postal Permit
#1
Standard Mail
Wenatchee, WA
98801

Residential Postal Customer

APPENDIX C

Well Logs,
Water Rights Final Order and Notice of Appeal,
Water Rights Documentation

PUMP TEST CITY OF LEAVENWORTH, WA WELL NO.3

480544

DATE: TUESDAY 27TH, 2012

STATIC LEVEL: 9'

PUMP: 25HP FRANKLIN

PUMP CONTROL: CERUS 30HP VARIABLE SPEED DRIVE

SETTING: 63FT OF 6" COLUMN, PUMP LENTH 4', INTAKE AT 65'

TESTING DONE BY: JEREMY BACH, PUMP INSTALLERS LICENSE#PL BACH*J*939BU/EL BACH*J*938WR,
BACH WELL DRILLING

ALL MEASUREMENTS WERE TAKEN FROM THE TOP OF THE WELL HEAD 3'

4-HOUR DRAWDOWN

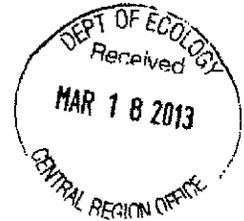
11:20-12:20 RAN PUMP AT DIFFERENT RATES TO ENSURE CLARITY OF WATER AND SAND CONTENT

500GPM 12:30-1:30 (30hz)

12:30	17.4'	500GPM (VERIFIED TOTALIZER)
12:40	17.4'	
12:50	17.4'	
1:00	17.4'	
1:10	17.4'	
1:20	17.4'	
1:30	17.4'	500GPM (VERIFIED TOTALIZER)

700GPM 1:30-2:30 (38hz)

1:35	20.2'	700GPM (VERIFIED TOTALIZER)
1:40	20.2'	



The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

480544

1:50	20.2'	
2:00	20.2'	
2:10	20.2'	
2:20	20.2'	700GPM (VERIFIED TOTALIZER)
2:30	20.2'	

900GPM 2:30-3:30 (45hz)

2:35	24.4'	900GPM (VERIFIED TOTALIZER)
2:40	24.4'	
2:50	24.4'	
3:00	24.4'	
3:10	24.4'	
3:20	24.4'	900GPM (VERIFIED TOTALIZER)
3:30	24.4'	

1200GPM 3:30-4:30 (58hz)

3:35	31.6'	1200GPM (VERIFIED TOTALIZER)
3:40	31.7'	1200GPM (VERIFIED TOTALIZER)
3:50	32.2'	
4:00	32.35'	
4:10	32.4'	
4:20	32.5'	1200GPM (VERIFIED TOTALIZER)
4:30	32.5'	1200GPM (VERIFIED TOTALIZER)

24-HOUR CONTANT PUMPING TEST

1000GPM TUESDAY NOVEMBER, 27TH 4:30PM-WED. NOVEMBER, 28TH 4:30PM (54hz)

TOTALIZER WAS VERIFIED THROUGHOUT TEST





Well #3

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
EASTERN DRINKING WATER REGIONAL OPERATIONS
16201 E Indiana Avenue, Suite 1500, Spokane Valley, Washington 99216-2830
TDD Relay 1-800-833-6388

March 25, 2014

Joel Walinski, City Administrator
City of Leavenworth
PO Box 287
Leavenworth, WA 98826

Subject: Leavenworth, City of; PWS ID# 465005; Chelan County
Source Approval Well #3, S06; DOH Project #14-0204; APPROVAL

Dear Mr. Walinski:

The source approval materials for the above project received in this office February 10, 2014, have been reviewed and, in accordance with the provisions of WAC 246-290, are hereby APPROVED.

As required in WAC 246-290-040 – Within sixty days following the completion of, and prior to the use of, the above project or portions thereof, the attached Construction Report must be completed by a professional engineer and returned to this department.

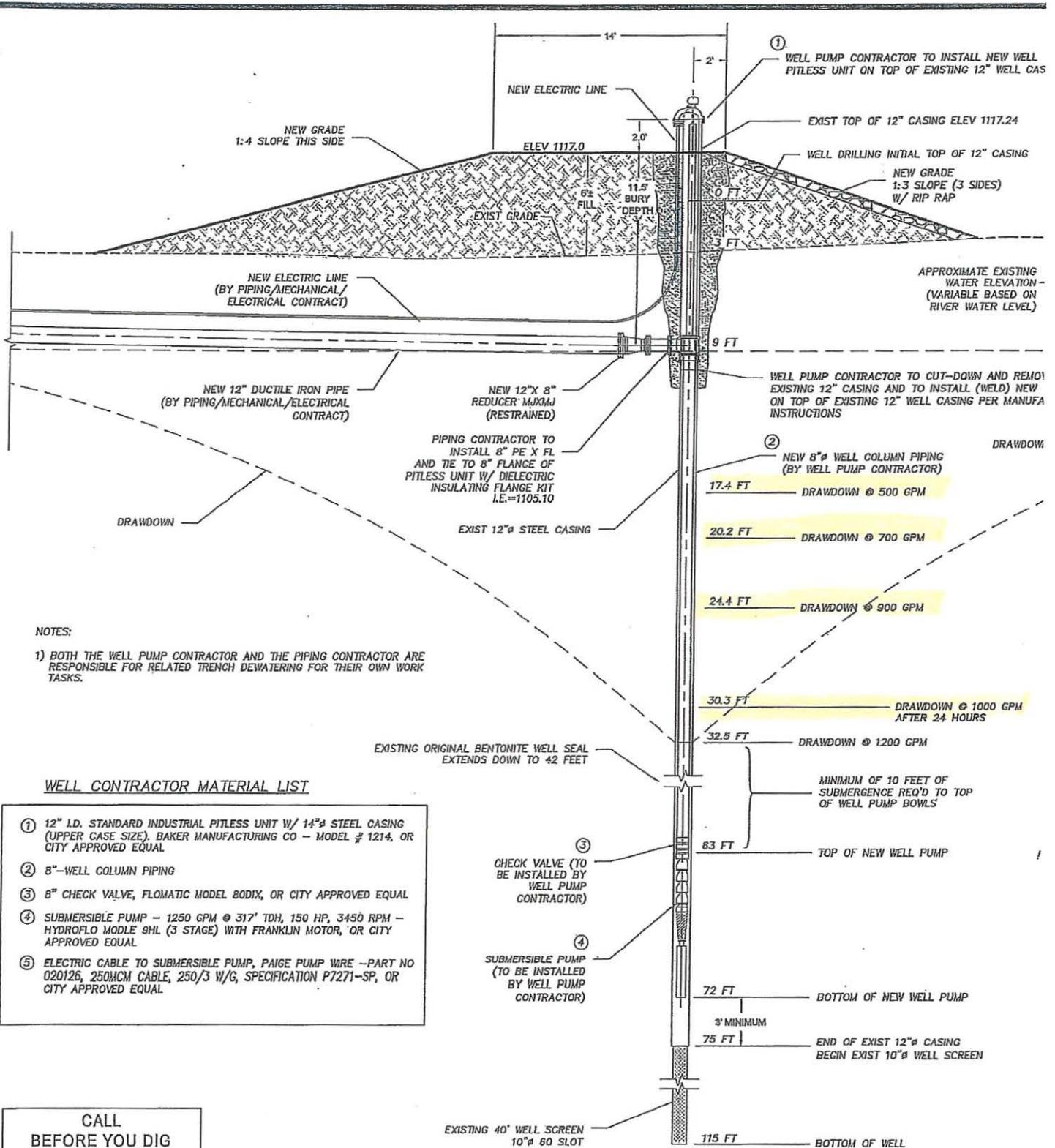
WAC 246-290-120 provides if the certification of completion has not been submitted within two years of the date of this letter, this approval will become null and void unless you take action at that time to arrange for an extension of the approval period in the manner prescribed.

After receiving the Construction Completion Report, Well #3 (Source S06) will be added as a third well to your existing well field, Source S03.

In addition, you are required to submit a revised Water Facilities Inventory (WFI) at the time of certification in order that this new source may be properly listed on your WFI.

WAC 246-290-990 authorizes a schedule of fees to be implemented for review of planning, engineering, and construction documents. The Department of Health's (DOH) total cost to review the supporting materials is \$919.00. An invoice is enclosed.

Well #3



NOTES:

1) BOTH THE WELL PUMP CONTRACTOR AND THE PIPING CONTRACTOR ARE RESPONSIBLE FOR RELATED TRENCH DEWATERING FOR THEIR OWN WORK TASKS.

WELL CONTRACTOR MATERIAL LIST

- ① 12" I.D. STANDARD INDUSTRIAL PITLESS UNIT W/ 1 1/2" STEEL CASING (UPPER CASE SIZE). BAKER MANUFACTURING CO - MODEL # 121-4, OR CITY APPROVED EQUAL
- ② 8"-WELL COLUMN PIPING
- ③ 8" CHECK VALVE, FLOMATIC MODEL 80DIX, OR CITY APPROVED EQUAL
- ④ SUBMERSIBLE PUMP - 1250 GPM @ 317' TDH, 150 HP, 3450 RPM - HYDROFLO MODLE 9HL (3 STAGE) WITH FRANKLIN MOTOR, OR CITY APPROVED EQUAL
- ⑤ ELECTRIC CABLE TO SUBMERSIBLE PUMP, PAIGE PUMP WIRE -PART NO 020126, 250MCM CABLE, 250/3 W/G, SPECIFICATION P7271-SP, OR CITY APPROVED EQUAL

CALL BEFORE YOU DIG
1-800-424-5555
ONE CALL NUMBER
48 HOUR NOTICE REQUIRED

WELL ELEVATION

SCALE: 1/4"=1'-0"

SCALE: 1/4"=1'-0"

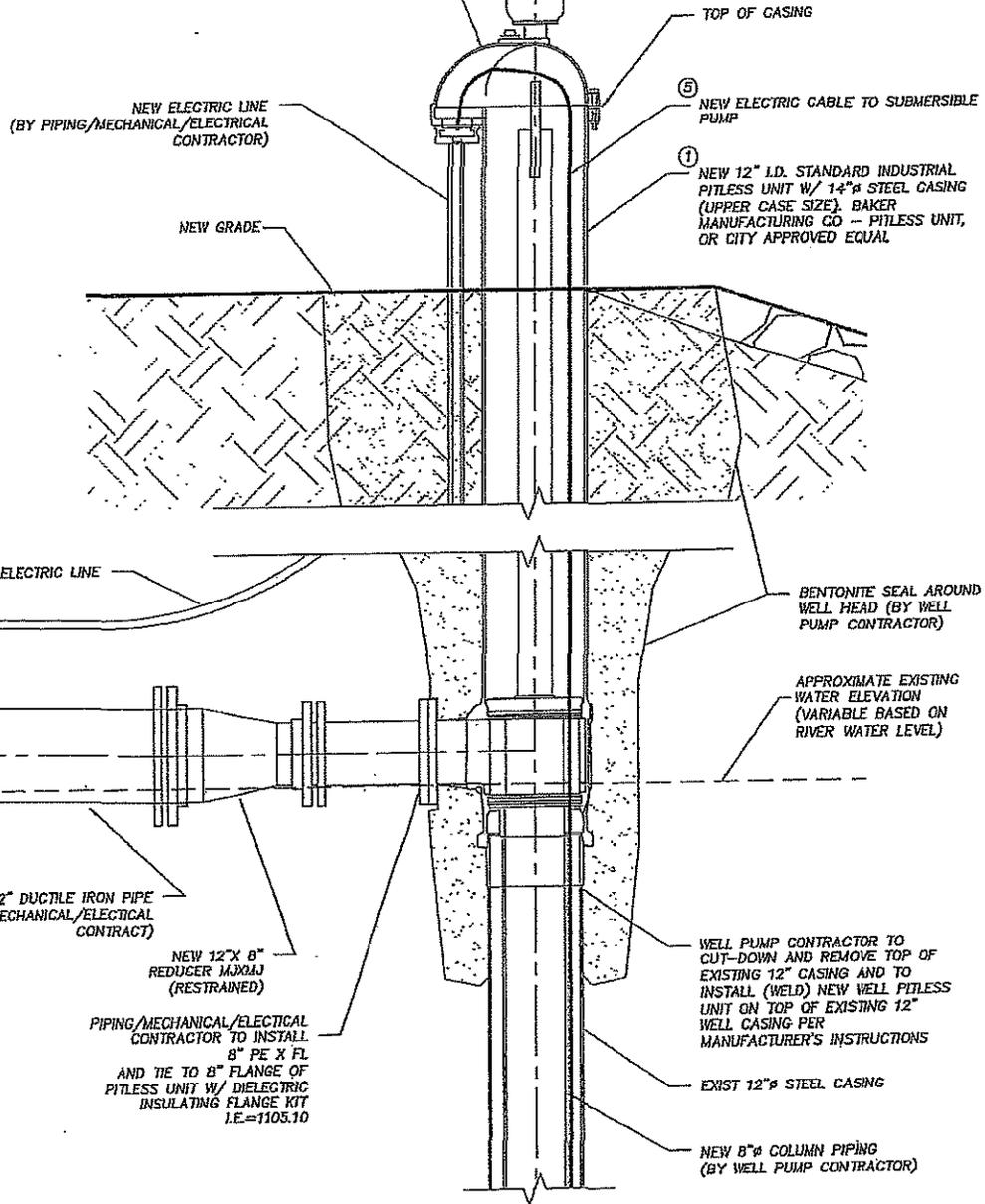
REVISIONS

NO.	DATE	DESCRIPTION

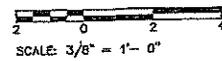
SCALE: SEE DWG
DESIGNED: DJS
DRAWN: DJS
CHECKED: D.SCHETTLER
APPROVED: JW
DATE: 1/10/2014



WELL PUMP CONTRACTOR TO INSTALL NEW WELL PITLESS UNIT ON TOP OF EXISTING 12" WELL CASING



SECTION
SCALE: 3/8" = 1'-0"



CITY OF LEAVENWORTH, WASHINGTON
WELL NO 3 EQUIPPING PROJECT
WELL HEAD ELEVATION & SECTION

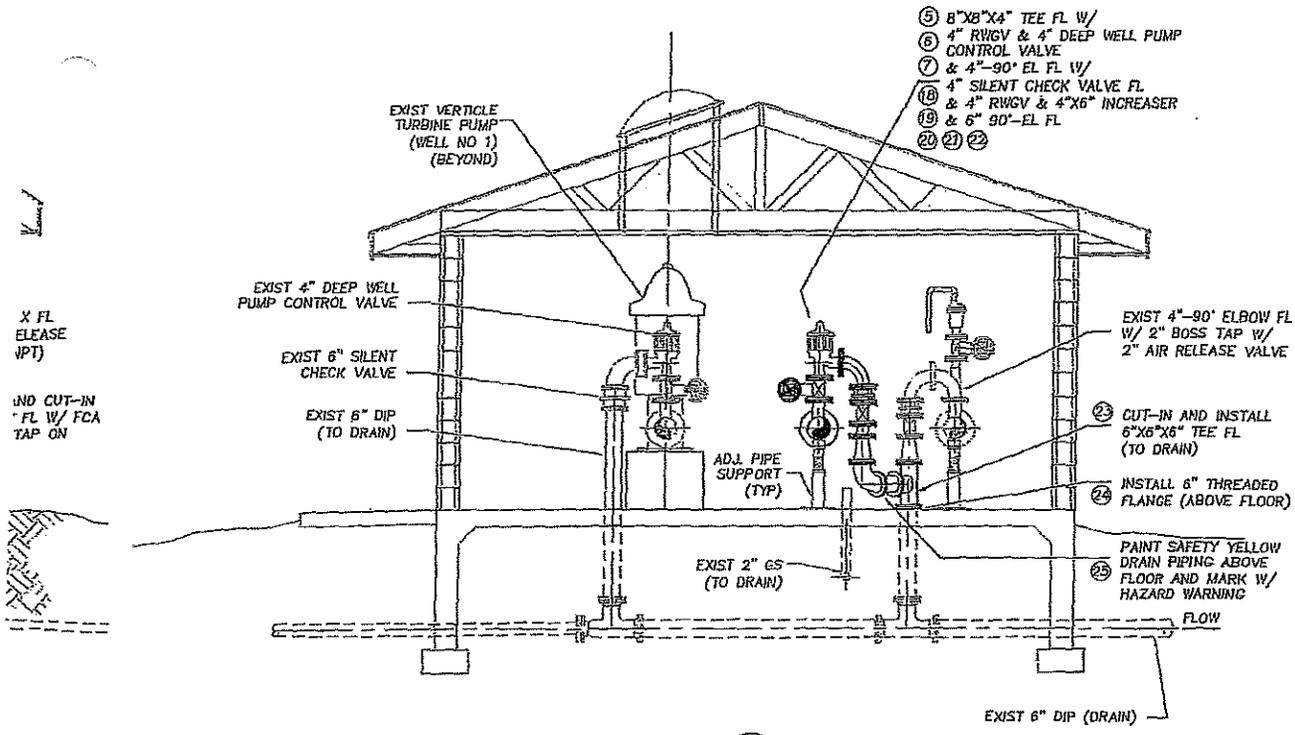
Revised by SC 5/14/2014

Page 9 of 20

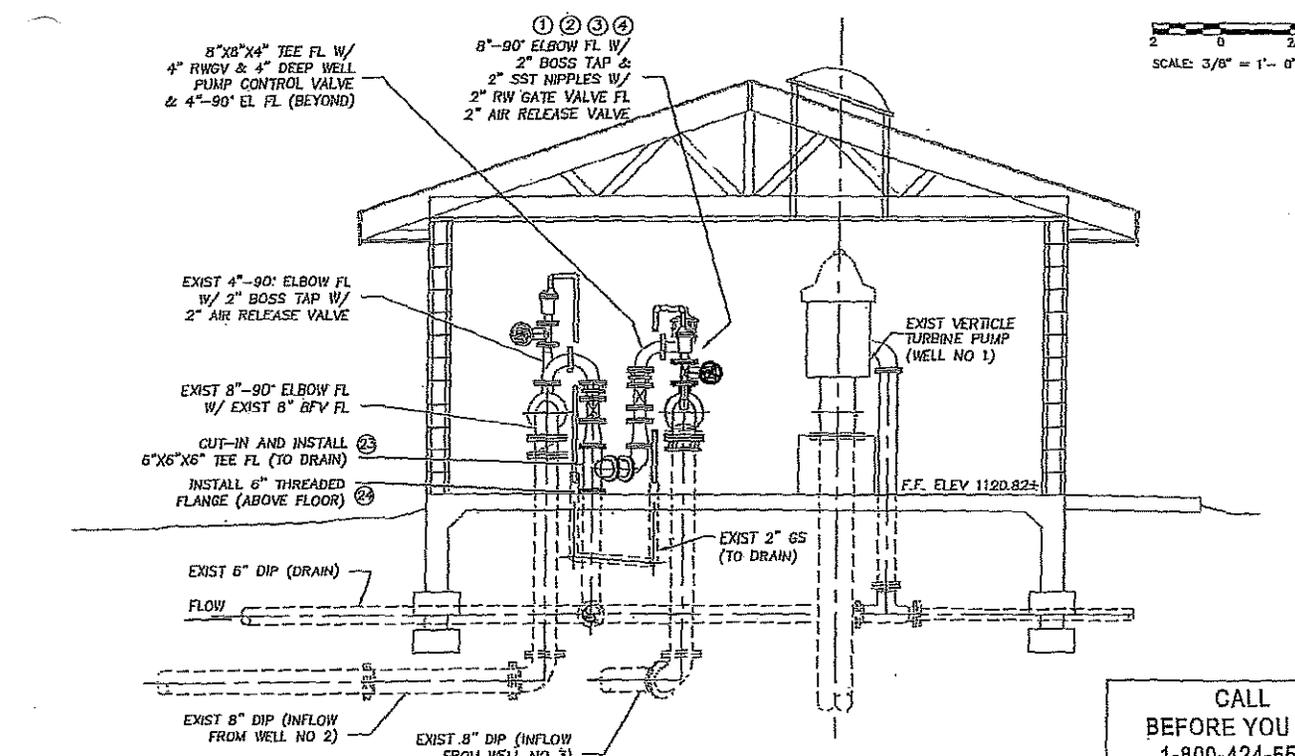
PROJECT#
2012-05

SHEET

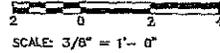
C9



B SECTION
SCALE 3/8" = 1'-0"



C SECTION
SCALE 3/8" = 1'-0"



CALL BEFORE YOU DIG
1-800-424-5555
ONE CALL NUMBER
48 HOUR NOTICE REQUIRED

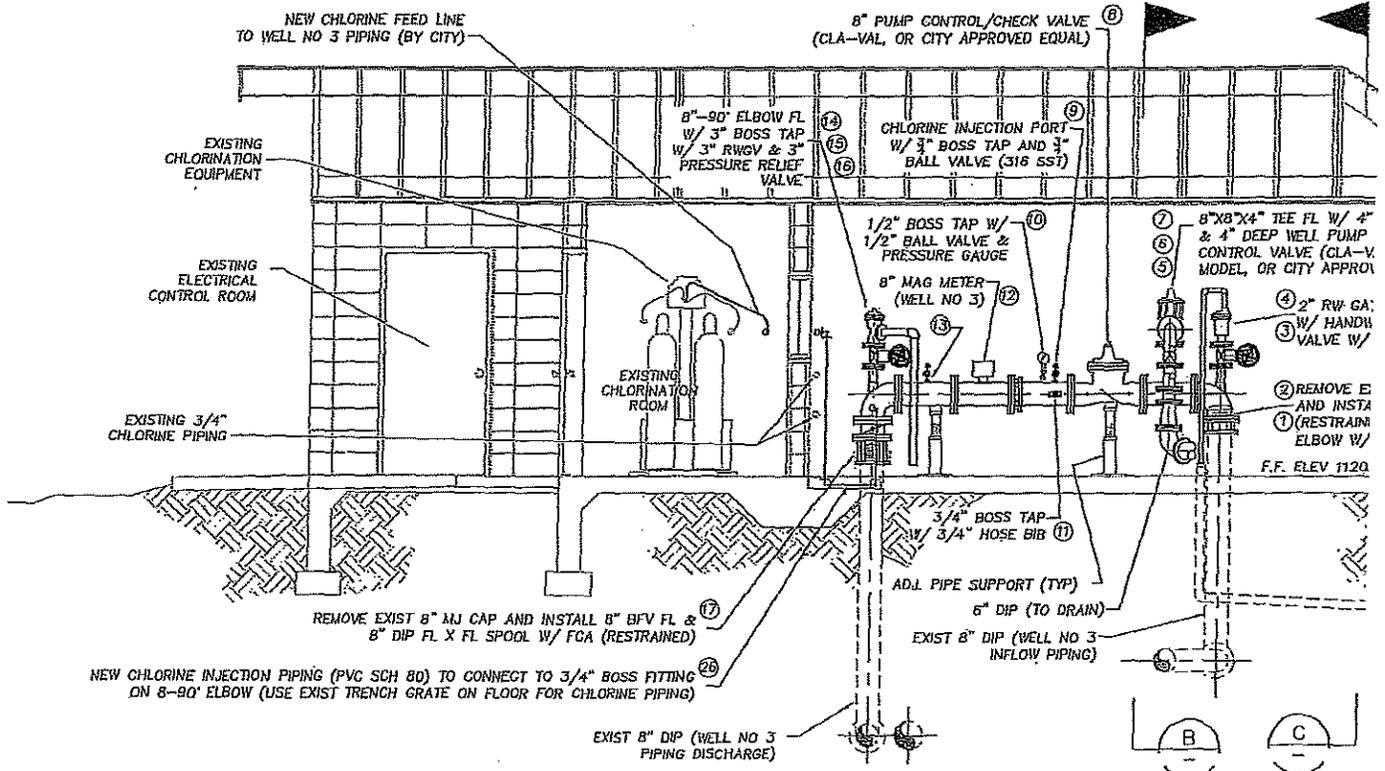


CITY OF LEAVENWORTH, WASHINGTON
WELL NO 3 EQUIPPING PROJECT
PIPING SECTIONS A, B AND C

Revised by SC 5/14/2014 Page 8 of 20

PROJECT#
2012-05

SHEET
C8



SECTION
SCALE 3/8" = 1'-0"

PIPE FITTINGS MATERIAL LIST

- | | |
|--|--|
| <ul style="list-style-type: none"> ① 8"-90° ELBOW FL W/ FCA (RESTRAINED) W/ 2" BOSS ON ELBOW ② 2" SST NIPPLE (NPT) ③ 2" RESILENT WEDGE GATE VALVE NRS FL X FL W/ HANDWHEEL ④ 2" AIR RELEASE VALVE (NPT) W/ 2" SST NIPPLE (NPT) ⑤ 8" X 8" X 4" TEE FL X FL X FL ⑥ 4" RW GATE VALVE FL ⑦ 4" DEEP WELL PUMP CONTROL VALVE FL (CLA-VAL MODEL # 61A-02, BERMAD MODEL WW-4-745-03-Y-C-A5-EB-NM, OR CITY APPROVED EQUAL) ⑧ 8" PUMP CONTROL/CHECK VALVE FL (CLA-VAL MODEL # 606-11BY, BERMAD MODEL WW-8-740-03-Y-C-A5-EB-NM, OR CITY APPROVED EQUAL) ⑨ 8" DIP FL X FL W/ FCA WITH CHLORINE INJECTION PORT W/ 3/4" BOSS TAP AND 3/4" BALL VALVE (316 SST) ⑩ 1/2" BOSS TAP W/ 1/2" BALL VALVE & PRESSURE GAUGE ⑪ 3/4" BOSS TAP W/ 3/4" HOSE BIB ⑫ 8" MAG METER FL (SIEMENS MODEL # 7ME6580-4PK14-2LA2 OR CITY APPROVED EQUAL) ⑬ 8" DIP FL X FL W/ 3/4" BOSS TAP AND 3/4" BALL VALVE (316 SST) | <ul style="list-style-type: none"> ⑭ 8"-90° ELBOW FL W/ 3" BOSS TAP & 3" SST NIPPLE (NPT) AND W/ 3/4" TAP ON 90° ELBOW FOR CHLORINE INJECTION PIPING ⑮ 3" RW GATE VALVE FL W/ HANDWHEEL ⑯ 3" PRESSURE RELIEF VALVE FL (CLA-VAL MODEL # 50a-01B, BERMAD MODEL WW-3-730-Y-C-A5-EB-NM, OR CITY APPROVED EQUAL) ⑰ 8" BUTTERFLY VALVE FL & 8" DIP FL X FL SPOOL W/ FCA (RESTRAINED) ⑱ 4"-90° ELBOW FL ⑲ 4" SILENT CHECK VALVE FL ⑳ 4" RW GATE VALVE ㉑ 4"x6" INCREASER FL X FL ㉒ 6"-90° ELBOW FL ㉓ 6" X 6" X 6" TEE FL X FL X FL ㉔ INSTALL 6" THREADED FLANGE ON 6" DIP ㉕ PAINT SAFETY YELLOW DRAIN PIPING ABOVE FLOOR AND MARK W/ HAZARD WARNING TAPE ㉖ 3/4" CHLORINE INJECTION PIPING (PVC SCH 80) TO CONNECT TO 3/4" BOSS FITTING ON 8"-90° ELBOW W/ 3/4" SST BALL VALVE |
|--|--|
- NOTES:
 1) ALL NEW PIPING W/IN BUILDING SHALL BE PAINTED WITH TWO (2) COATS OF EPOXY PAINT (SHERWIN WILLIAMS, OR CITY APPROVED EQUAL) COLORS TO BE SELECTED BY CITY.
 2) ALL BRONZE/BRASS FITTINGS AND VALVES SHALL COMPLY WITH THE LOW LEAD STANDARD AS PER SDWA 1417.

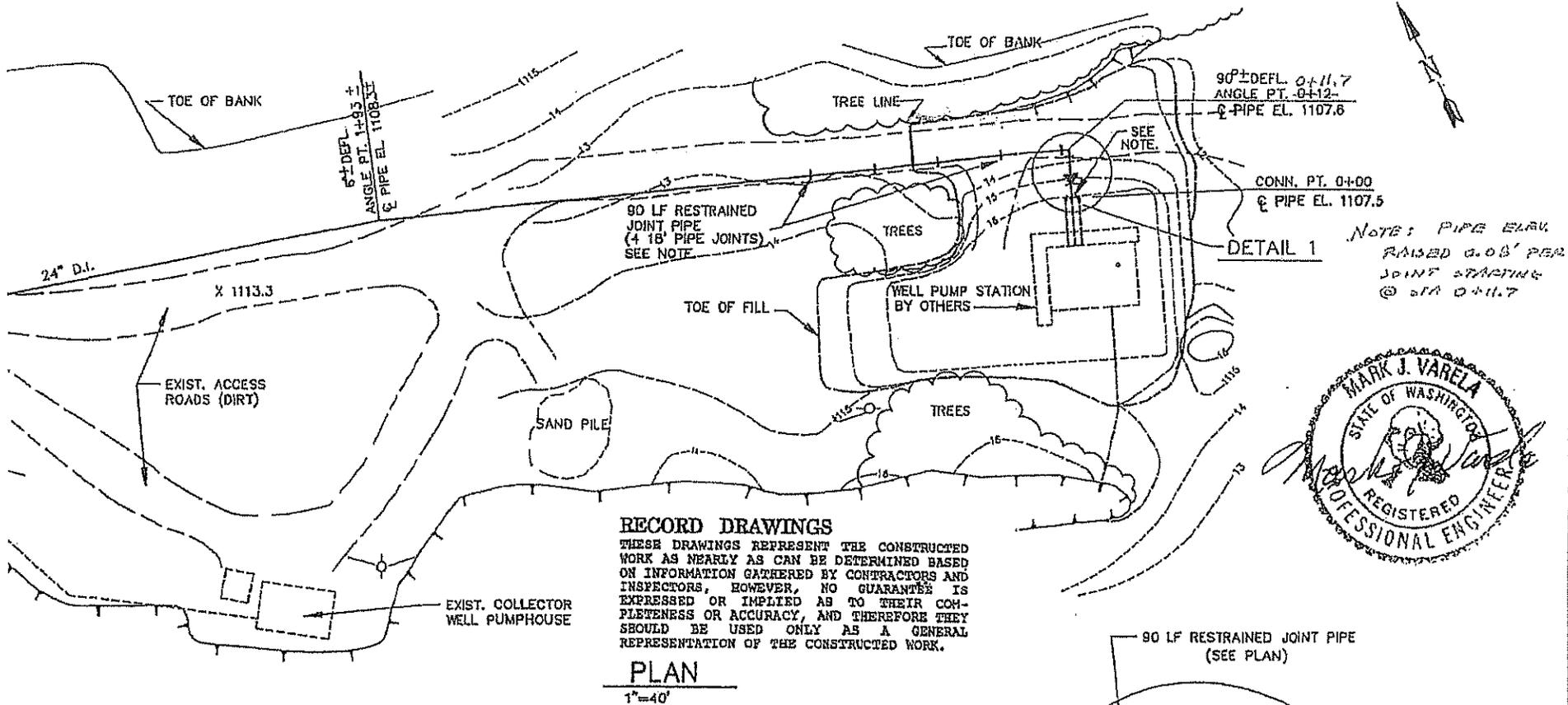
REVISIONS

NO.	DESCRIPTION	DATE

SCALE: 3/8" = 1'-0"
 DESIGNED: DJS
 DRAWN: DJS
 CHECKED: D.SCHETTLER
 APPROVED: JW
 DATE: 1/10/2014

[Handwritten Signature]
 1/10/14
 PROJECT ENGINEER

VERIFY SCALE BAR IS ONE INCH OR



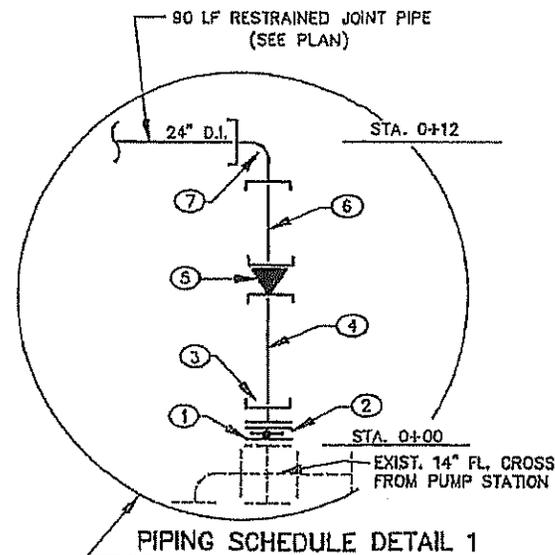
RECORD DRAWINGS

THESE DRAWINGS REPRESENT THE CONSTRUCTED WORK AS NEARLY AS CAN BE DETERMINED BASED ON INFORMATION GATHERED BY CONTRACTORS AND INSPECTORS, HOWEVER, NO GUARANTEE IS EXPRESSED OR IMPLIED AS TO THEIR COMPLETENESS OR ACCURACY, AND THEREFORE THEY SHOULD BE USED ONLY AS A GENERAL REPRESENTATION OF THE CONSTRUCTED WORK.

PLAN

1"=40'

9. RESTRAINED MJ JOINT FITTINGS AND PIPE SHALL BE INSTALLED STRAIGHT, WITH NO HORIZONTAL OR VERTICAL JOINT DEFLECTION ALLOWED. SEE SECTION 02560 FOR RESTRAINED JOINT REQUIREMENTS.
10. EXCESS MATERIAL (SHOT ROCK, BOULDERS AND SOIL ONLY) MAY BE DISPOSED OF ON SITE, IN THE LOW AREA EAST OF THE NEW WELL PUMPHOUSE, OR ELSEWHERE ON SITE AS DIRECTED IN THE FIELD.
11. THE FIRST (EXPOSED JOINT) HYDROSTATIC TEST SHALL BE MANDATORY FOR DETAIL 1 ONLY. OTHER PORTIONS OF THE PIPELINE MAY BE EXPOSED DURING THE FIRST TEST AT THE CONTRACTOR'S OPTION. IF THE CONTRACTOR ELECTS TO CONDUCT THE FIRST TEST WITH JOINTS IN OTHER PORTIONS OF THE PIPELINE EXPOSED, PIPE SHALL BE BACKFILLED AND COMPACTED SUFFICIENTLY TO PREVENT MOVEMENT. TEST PRESSURE SHALL BE 225 PSI AT THE LOWEST END OF THE PIPELINE. TEST DURATIONS SHALL BE MINIMUM 2 HOURS FOR EACH TEST. SEE SECTION 02560.
12. ANOTHER CONTRACTOR MAY BE WORKING ON THE SITE, COMPLETING THE WELL PUMP STATION. THE WELL TRANSMISSION MAIN CONTRACTOR SHALL COORDINATE WITH OTHERS, INCLUDING CITY PERSONNEL, REGARDING USE OF THE ACCESS ROAD, AND SHALL MINIMIZE ITS BLOCKAGE.
13. THE CONTRACTOR SHALL FURNISH & INSTALL 2" SCHEDULE 40 PVC CONDUIT & 1/4" NYLON PULL ROPE MIN. 18" DEEP IN THE PIPE



ITEM	DESCRIPTION
1	EXIST. 14" BLIND FLANGE (REMOVE, CITY OWNED)
2	14" BVV FL X FL
3	14" ADAPT. FL X MJ (RESTRAINED)
4	14" 3'-6" ± D.I. PIPE PE X PE
5	24" X 14" RED MJ X MJ (RESTRAINED)(CONCENTRIC)
6	24" X 3'-6" ± D.I. PIPE PE X PE
7	24" X 90° ELL. MJ X MJ (RESTRAINED)



The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with
Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

WATER WELL REPORT

Start Card No. 6340

STATE OF WASHINGTON

Water Right Permit No. 437-A

OWNER: Name CITY OF LEAVENWORTH Address CITY HALL Leavenworth

(2) LOCATION OF WELL: County CHEWAN SE NE 14 T. 24 N., R. 17 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) _____

(3) PROPOSED USE: Domestic Industrial Municipal
 Irrigation Test Well Other
 DeWater

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
 Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

(4) TYPE OF WORK: Owner's number of well (if more than one)
 Abandoned New well Deepened Reconditioned
 Method: Dug Cable Rotary Bored Driven Jetted

MATERIAL	FROM	TO
BROWN SAND	0	8

(5) DIMENSIONS: Diameter of well 12" inches.
 Drilled 104 feet. Depth of completed well 102 ft.

SAND GRAVEL, SMALL BOWL PERS	8	15
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(6) CONSTRUCTION DETAILS:
 Casing installed: 12" Diam. from 1.5 ft. to 53 ft.
 Welded Liner installed Threaded
 Diam. from 10" ft. to 102 ft.
 Perforations: Yes No

WATER BEARING - DITTO	15	35
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Type of perforator used _____
 SIZE of perforations _____ in. by _____ in.
 _____ perforations from _____ ft. to _____ ft.
 _____ perforations from _____ ft. to _____ ft.
 _____ perforations from _____ ft. to _____ ft.

HARD GRAVEL, COBBLES SOME BOWLERS, LESS WATER	35	51
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Screens: Yes No
 Manufacturer's Name JOHNSON
 Type STAINLESS Model No. _____
 Diam. _____ Slot size _____ from 53 ft. to 93 ft.
 Diam. _____ Slot size _____ from _____ ft. to _____ ft.

STRATIFIED SAND, SOME GRAVEL, SOME COBBLES, WATER BEARING	51	82
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Gravel packed: Yes No Size of gravel _____
 Gravel placed from _____ ft. to _____ ft.
 Surface seal: Yes No To what depth? 20 ft.
 Material used in seal CEMENT
 Did any strata contain unusable water? Yes No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

FINGER SILTY SAND, SOME GRAVEL, WATER BEARING	82	104
---	----	-----

(7) PUMP: Manufacturer's Name _____
 Type: _____ H.P. _____

SCREEN: 10' RISER 4" FIG "K"	51.5	53
6' .060	53	58
5' .050	58	63
5' .040	63	68
5' .050	68	73
10' .040	73	83
10' .025	83	93
8.5' x 10" 1.0250		
TAIL PIPE	93	102.5

(8) WATER LEVELS: Land surface elevation above mean sea level 1117
 Static level 1114 ft. below top of well Date 1/25/89
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (Cap, valve, etc.)

Work started 20 Dec 1988 Completed 28 Jan 1989

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
 Was a pump test made? Yes No If yes, by whom? FOGUE
 Yield: 115 gal./min. with 17 ft. drawdown after 50 hrs.
 " SEE ATTACHED " " " " " "

WELL CONSTRUCTOR CERTIFICATION:
 I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)					
Time	Water Level	Time	Water Level	Time	Water Level

NAME FOGUE PUMP (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
 Address 346 W 5th COLVILLE, WA 99114
 (Signed) James B. Fogue License No. 0367
 (WELL DRILLER)
 Contractor Registration No. PS194 MF Date 1-30 1989

Date of test _____
 Boiler test _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
 Artesian flow _____ g.p.m. Date _____
 Temperature of water _____ Was a chemical analysis made? Yes No

(USE ADDITIONAL SHEETS IF NECESSARY)

809

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

WATER WELL REPORT

Start Card No. 16170

STATE OF WASHINGTON

Water Right Permit No.

(1) OWNER: Name City of Leavenworth

Address 815 Front St. Leavenworth Wn. 98826

(2) LOCATION OF WELL: County CHELAN

SE 1/4 NE 1/4 Sec 14 T. 24 N. R. 17 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: Domestic Industrial Municipal
 Irrigation Test Well Other
 DeWater

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

(4) TYPE OF WORK: Owner's number of well (if more than one) 74# 2

Abandoned New well Deepened Reconditioned
Method: Dug Bored
Cable Driven
Rotary Jetted

MATERIAL FROM TO

SANDY LOAM w/ GRAVEL 0 8

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 85 feet. Depth of completed well 84 1/2 ft.

4"-10" BOULDERS w/ GRAVEL + CLAY 8 27

SANDY SILT + GRAVEL WB 27 42

(6) CONSTRUCTION DETAILS:

Casing installed: 8 Diam. from 7 3/4 ft. to 6 1/2 ft.
Welded Liner installed Threaded

SAND + BIG GRAVEL WB 42 59

SILT SAND + GRAVEL 59 68

Perforations: Yes No
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

HEAVY BROWN SAND + BIG GRAVEL WB 68 80

HARD BROWN CLAY + GRAVEL 80 85 1/2

Screens: Yes No
Manufacturer's Name JOHNSONS
Type STAPLES Model No. 571
Diam. 7 Slot size 160 from _____ ft. to _____ ft.
Diam. 7 Slot size 100 from 6 1/2 ft. to 8 1/2 ft.

Gravel packed: Yes No Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes No To what depth? 20 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

REGISTERED

JUL 13 1988

(7) PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

(8) WATER LEVELS: Land surface elevation above mean sea level _____
Static level 74 ft. below top of well Date 6-23-88
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

Work started 6-21, 19. Completed 6-23, 1988

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

WELL CONSTRUCTOR CERTIFICATION
I constructed and/or accept _____ as the contractor for the well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME TUMWATER DRILLING FAX
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address LEAVENWORTH, WASH.

(Signed) Burt Hill License No. 1249
(WELL DRILLER)

Contractor's Registration No. TUMWAD2-R30C Date 6-28, 1988

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airstest 300 gal./min. with stem seal at 83 ft. for _____ hrs.
Artesian flow _____ g.p.m. Date 6-23-88
Temperature of water _____ Was a chemical analysis made? Yes No

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

078

File Original and First Copy with Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's Copy

WATER WELL REPORT

Start Card No. 16144

STATE OF WASHINGTON

Water Right Permit No. _____

(1) OWNER: Name CITY OF LEAVENWORTH Address 815 FRONT ST. LEAVENWORTH, WA. 99024

(2) LOCATION OF WELL: County CHELAN SE 1/4 NE 1/4 Sec 14 T. 24 N. R. 17 E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) _____ H

(3) PROPOSED USE: Domestic Industrial Municipal
 Irrigation Test Well Other
 DeWater

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

(4) TYPE OF WORK: Owner's number of well (if more than one) 1
Abandoned New well Method: Dug Bored
Deepened Cable Driven
Reconditioned Rotary Jetted

MATERIAL	FROM	TO
BROWN FINE SAND	0	7
SANDY GRAVEL + COBBLE	7	11
GRANITE BOULDER w/ GRAVEL	11	19
SANDY GRAVEL + COBBLE W/	19	30 1/2
GRANITE BOULDER	30 1/2	52 1/2
SANDY GRAVEL	52 1/2	59
38 gpm @ 37' - 43 gpm @ 57'		
HEAVY SAND + P. GRAVEL	59	85
30 gpm @ 77'		
HEAVY SILT + SAND	85	98
SILT SAND + ROCKS	98	103
HEAVY SILT	103	107
HEAVY SILT SAND + ROCKS	107	112
HEAVY SILT + GRAVEL	112	130
HEAVY SILT	130	156
HEAVY SILT + COARSE SAND + GRAVEL	156	181
HARD GRANITE PIECES + CLAY	181	182
SILT - HEAVY -	182	187
HARD GRAVEL + CLAY	187	196
HARD BLACK ROCK	196	204

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 204 feet. Depth of completed well 196 ft.

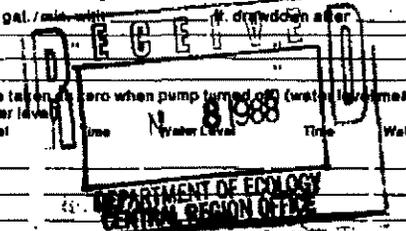
(6) CONSTRUCTION DETAILS:
Casing installed: 6 Diam. from +2 ft. to 19 1/2 ft.
Welded 4 Diam. from _____ ft. to _____ ft.
Linear installed _____ Diam. from _____ ft. to _____ ft.
Threaded _____ Diam. from _____ ft. to _____ ft.
Perforations: Yes No
Type of perforator used ROTARY MILLS
SIZE of perforations 1/8 in. by 1 in.
425 perforations from 147 ft. to 164 ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes No
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Gravel packed: Yes No Size of gravel _____
Gravel placed from _____ ft. to _____ ft.
Surface seal: Yes No To what depth? 20+ ft.
Material used in seal BENTONITE
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 12 1/2 ft. below top of well Date 5-31-88
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap. valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? WELLSHIRE
Yield: 300+ gal./min. with _____ ft. drawdown after _____ hrs.



Recovery data (time taken for water level to rise to static level) measured from well top to water level:
Time Water Level Time Water Level Time Water Level
8:00

Boiler test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Air test 110 gal./min. with stem set at 193 ft. for 1 hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

Work started 5-24, 19 88 Completed 5-31, 19 88

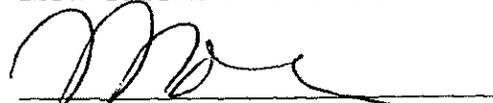
WELL CONSTRUCTOR CERTIFICATION
ENTERED
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction laws and rules. Materials used and the information reported above are true to my best knowledge and belief.
NAME TUMWATER DRILLING INC. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address LEAVENWORTH, WASH.
(Signed) Bruce [Signature] License No. 1249
Contractor's Registration No. TUMWATZ-1350C Date 6-2, 19 88

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

1 DATED this 30th day of October, 2012, in Seattle, Washington.

2 LAW OFFICE OF THOMAS M. PORS

3 

4 Thomas M. Pors, WSBA No. 17718

5 Attorney for Plaintiff

6 City of Leavenworth, Washington

7 KEATING, BUCKLIN &
8 McCORMACK, INC., P.S.

9 

10 Michael C. Walter, WSBA #15044

11 Attorney for Plaintiff

12 City of Leavenworth, Washington

13 Attorney for Defendant
14 Washington State Department of Ecology:

15 Alan M. Reichman, WSBA # 23874

16 Assistant Attorney General

17 Attorney General of Washington

18 PO Box 40117

19 Olympia, WA 98504-0117

20 (360)586-6748

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STATE OF WASHINGTON
CHELAN COUNTY SUPERIOR COURT

CITY OF LEAVENWORTH,

Plaintiff,

v.

WASHINGTON STATE
DEPARTMENT OF ECOLOGY,

Defendant.

NO. 09-2-00748-3

ORDER ON PARTIES' CROSS-
MOTIONS FOR SUMMARY
JUDGMENT, AND ON MOTIONS
TO STRIKE

Clerk's Action Required

THIS MATTER CAME ON FOR HEARING pursuant to CR 56 upon Plaintiff City of Leavenworth's Motion for Partial Summary Judgment (Re: Phase I Issues) dated June 27, 2011, and Defendant Department of Ecology's Motion for Summary Judgment dated June 24, 2011. The Court also considered motions that each party filed requesting the Court to strike portions of the other party's declarations.

Defendant Department of Ecology (Ecology), the moving party on its summary judgment motion and responding party as to the City of Leavenworth's partial summary judgment motion, appeared by and through its attorneys of record, Alan M. Reichman and Sarah Bendersky, Assistant Attorneys General. Plaintiff City of Leavenworth (City), the moving party on its partial summary judgment motion and responding party as to Ecology's summary judgment motion, appeared by and through its attorneys of record, Thomas M. Pors

1 of the Law Office of Thomas M. Pors, and Michael C. Walter of Keating, Bucklin &
2 McCormack, Inc., P.S.

3 THE COURT CONSIDERED the following pleadings, memoranda, and briefs
4 regarding Ecology's Motion for Summary Judgment:

- 5 1. Department of Ecology's Motion for Summary Judgment, dated June 24, 2011;
- 6 2. Department of Ecology's Memorandum in Support of its Motion for Summary
7 Judgment, dated June 24, 2011;
- 8 3. Plaintiff Leavenworth's Response to Ecology's Motion for Summary Judgment
9 (Re: Phase I Issues), dated July 22, 2011; and
- 10 4. Department of Ecology's Reply Memorandum in Support of Motion for
Summary Judgment, dated August 5, 2011.

11 THE COURT ALSO CONSIDERED the following pleadings, memoranda, and briefs
12 regarding the City's Motion for Partial Summary Judgment:

- 13 1. Plaintiff City of Leavenworth's Motion for Partial Summary Judgment
14 (Re: Phase I Issues), dated June 27, 2011;
- 15 2. Department of Ecology's Memorandum in Response to City of Leavenworth's
Motion for Partial Summary Judgment, dated July 22, 2011; and
- 16 3. Reply of the City of Leavenworth to Defendant Department of Ecology's
17 Response/Opposition to the City's Motion for Partial Summary Judgment,
dated August 5, 2011.

18 THE COURT ALSO CONSIDERED the following pleadings, memoranda, and briefs
19 regarding the City's Objections/Requests to Strike:

- 20 1. Leavenworth's Objection to Ecology's PCHB Legal Authority and Reichman
21 Declaration Exhibits 11 and 12, and Request to Strike, dated July 22, 2011;
- 22 2. Department of Ecology's Memorandum in Opposition to City of Leavenworth's
Request to Strike, dated August 4, 2011;
- 23 3. Leavenworth's Objection to Evidence (07-20-11 Stephen Hirschey Declaration
24 and 07-21-11 Daniel R. Haller Declaration) and Request to Strike, dated
25 August 5, 2011;
- 26

- 1 4. Department of Ecology's Memorandum in Opposition to Leavenworth's
2 Request to Strike Declarations, and, in the Alternative, Request to Strike
3 Portions of Leavenworth's Declarations, dated August 19, 2011;
- 4 5. Leavenworth's Additional Objection to Evidence (07-29-11 Daniel R. Haller
5 Declaration) and Request to Strike, dated September 9, 2011; and
- 6 6. Department of Ecology's Memorandum in Opposition to Leavenworth's
7 Additional Objection to Evidence (07-29-2011 Daniel R. Haller Declaration)
8 and Request to Strike, dated September 21, 2011.

9 THE COURT ALSO CONSIDERED the following affidavits, declarations, and
10 evidentiary material, including exhibits appended to each, in support of Ecology's Motion for
11 Summary Judgment, and in Response/Opposition to the City's Motion for Partial Summary
12 Judgment:

- 13 1. Declaration of Melissa Downes in Support of Department of Ecology's Motion
14 for Summary Judgment, dated June 17, 2011;
- 15 2. Declaration of Robert F. Barwin in Support of Department of Ecology's
16 Motion for Summary Judgment, dated June 17, 2011;
- 17 3. Declaration of Alan M. Reichman in Support of Department of Ecology's
18 Motion for Summary Judgment, dated June 20, 2011;
- 19 4. Declaration of Alan M. Reichman in Support of Ecology's Memorandum in
20 Response to City of Leavenworth's Motion for Partial Summary Judgment,
21 dated July 19, 2011;
- 22 5. Declaration of Stephen Hirschey in Support of Ecology's Memorandum in
23 Response to City of Leavenworth's Motion for Partial Summary Judgment,
24 dated July 20, 2011;
- 25 6. Declaration of Daniel R. Haller, dated July 21, 2011; and
- 26 7. Second Declaration of Daniel R. Haller, dated July 29, 2011.

THE COURT ALSO CONSIDERED the following affidavits, declarations, and
evidentiary material, including exhibits appended to each, in support of the City's Motion for
Partial Summary Judgment, and in Response/Opposition to Ecology's Motion for Summary
Judgment:

1. Declaration of Terrence M. McCauley, dated June 22, 2011;

- 1 2. Declaration of Connie Krueger, dated June 23, 2011;
- 2 3. Declaration of Elmer Larsen, dated June 22, 2011;
- 3 4. Declaration of Jill Van Hulle, dated June 21, 2011;
- 4 5. Declaration of Chantell Steiner, dated June 22, 2011;
- 5 6. Declaration of Thomas M. Pors, dated June 26, 2011;
- 6 7. Declaration of Michael J. Cecka, dated June 20, 2011;
- 7 8. Declaration of Stephen Hirschey, dated May 13, 2011;
- 8 9. Declaration of Mark Varela, dated June 22, 2011;
- 9 10. Second Declaration of Michael J. Cecka, dated July 19, 2011;
- 10 11. Second Declaration of Terrence M. McCauley, dated July 19, 2011;
- 11 12. Second Declaration of Jill Van Hulle, dated July 19, 2011;
- 12 13. Second Declaration of Thomas M. Pors, dated July 21, 2011;
- 13 14. Third Declaration of Michael J. Cecka, dated August 3, 2011;
- 14 15. Third Declaration of Thomas M. Pors, dated August 4, 2011; and
- 15 16. Third Declaration of Jill Van Hulle, dated August 3, 2011.

16 THE COURT DECIDED THESE MOTIONS after hearing argument by counsel for
17 the parties on September 27, 2011, after proper and timely notice of the parties' motions, and
18 considered that argument in addition to and in conjunction with the foregoing pleadings
19 memoranda, declarations, and other evidentiary materials. On December 15, 2011, the Court
20 issued a memorandum decision, which is attached hereto and hereby incorporated into this
21 Order. The parties presented separate proposed orders to the Court and, on February 16 and
22 June 7, 2012, the Court held presentation hearings and instructed the parties with respect to
23 the language and content of this Order.

24 BASED ON THE FOREGOING and pursuant to CR 56, the Court finds that there is
25 no question of material fact with respect to the issues raised in Ecology's Motion for
26 Summary Judgment, and in the City's Motion for Partial Summary Judgment (Re: Phase I

1 Issues), that all of the issues and claims raised are questions of law based on undisputed facts
2 and/or interpretations of statutory and/or case law, and that Ecology is entitled to judgment as
3 a matter of law only on the issues concerning the agency's authority under RCW 90.03.290
4 and the effect of the City's failure to appeal Ecology's 1995 Amended Reports of
5 Examination to the Pollution Control Hearings Board, as set forth below, but is not otherwise
6 entitled to the relief requested in its Motion for Summary Judgment.

7 FURTHERMORE, and based on the forgoing and pursuant to CR 56(c), the Court
8 finds that the City is entitled to judgment as a matter of law only on the res judicata and water
9 system planning claims and issues in its motion, as set forth below, but is not otherwise
10 entitled to the relief requested in its Motion for Partial Summary Judgment.

11 NOW, THEREFORE, IT IS HEREBY:

12 ORDERED, ADJUDGED, AND DECREED that all objections to and requests to
13 strike portions of declarations are **DENIED**. In its consideration of the parties' cross-motions
14 for summary judgment, the Court has disregarded any irrelevant legal conclusions and
15 opinions offered by lay witnesses. It is hereby further

16 ORDERED, ADJUDGED, AND DECREED that all objections to and requests to
17 strike legal authorities cited and discussed in memoranda are **DENIED**. It is hereby further

18 ORDERED, ADJUDGED, AND DECREED that Ecology's Motion for Summary
19 Judgment, dated June 24, 2011, is hereby **GRANTED in part and DENIED in part**, and that
20 the City's Motion for Partial Summary Judgment (Re: Phase I Issues), dated June 27, 2011, is
21 hereby **GRANTED in part and DENIED in part**. It is hereby further

22 ORDERED, ADJUDGED, AND DECREED that pursuant to the third cause of action
23 in the City's Second Amended Complaint for Reformation, Declaratory Judgment, and Other
24 Equitable Relief (Second Amended Complaint) the Court hereby finds and makes declarations
25 of law under Chapter 7.24 RCW as to each of the following:
26

1 1. That under RCW 90.03.290, the statute governing applications for water right
2 permits, Ecology has the authority to tentatively determine the extent and validity of a water
3 right permit applicant's preexisting water rights when Ecology evaluates the applicant's
4 permit application for an additional water right. This authority does not include the authority
5 to reduce preexisting water rights. Therefore, under RCW 90.03.290, Ecology was authorized
6 to tentatively determine the extent and validity of the City's preexisting water rights,
7 including Certificate No. 8105, when Ecology evaluated the City's Permit Application Nos.
8 G4-29958 and S4-28812 in 1993 and 1995;

9 2. That under RCW 90.03.290, Ecology is authorized to approve an application
10 for a new water right permit with a condition that limits the total annual quantity of water that
11 may be used by the applicant under the applicant's entire portfolio of water rights, including
12 the new permit and all preexisting water rights. This authority does not include the authority
13 to reduce preexisting water rights. Therefore, under RCW 90.03.290, Ecology was authorized
14 to include a condition limiting the total annual quantity of water that may be used by the City
15 under all of the City's water rights as a condition in Ecology's 1995 revised approvals of the
16 City's water right Permit Application Nos. G4-29958 and S4-28812. The Court interprets the
17 1,465 acre-feet per year language in Permit Nos. G4-29958 and S4-28812, and the Amended
18 Reports of Examination (ROEs) associated with those permits, as a condition limiting the total
19 annual quantity of water usage by the City under the new permits and all preexisting water
20 rights as a condition of approval authorized by RCW 90.03.290;

21 3. That *res judicata* is not applicable to Ecology's tentative determinations
22 described in Declaratory Order No. 1, above, because final determinations of the extent and
23 validity of water rights can only be made through a general adjudication of water rights in
24 superior court pursuant to RCW 90.03.105-.245. As a result, Ecology's tentative
25 determinations of the extent and validity of Certificate No. 8105 in its decisions on Application
26

1 Nos. G4-29958 and S4-28812 are not binding in a future water-related dispute, litigation, or
2 adjudication.

3 4. That under RCW 43.21B.230(1) and 43.21B.310(4), Ecology's decisions on
4 permit applications must be appealed to the Pollution Control Hearings Board (PCHB) within
5 30 days of receipt. Because the City received the Amended ROEs and permits in 1995 and
6 failed to timely appeal those decisions to the PCHB, the City cannot seek judicial review of the
7 Amended ROEs and permits or any of their provisions at this time. Therefore, the City is
8 generally bound by the conditions in Permit Nos. G4-29958 and S4-28812 including, but not
9 necessarily limited to, the amount of additional water granted (up to an additional 90 acre-feet
10 per year), the total quantity of water the City can use each year under its collective water rights
11 (1,465 acre-feet per year), reporting requirements, and well construction requirements.
12 Although Ecology's tentative determination of the annual quantity of Certificate No. 8105 does
13 not have any *res judicata* effect, the Court interprets the City's declaratory judgment claim as a
14 belated appeal of the condition limiting the annual quantity of the City's water rights described
15 in Declaratory Order No. 2, above, that is barred by the 30-day statute of limitations of
16 RCW 43.21B.230(1) and 43.21B.310(4). However, in the event of a future water-related
17 dispute, litigation, or adjudication, Ecology cannot necessarily rely on its tentative
18 determination of the annual quantity of Certificate No. 8105 as being binding;

19 5. That because of the foregoing findings and declarations of law, the Court also
20 finds that it is unnecessary to determine whether Ecology violated the City's constitutional
21 right to due process when Ecology issued its decisions on the City's water right permit
22 applications;

23 6. That statements, figures, and representations in Washington Department of
24 Health-approved water system plans on the status of water rights do not, in themselves, limit
25 the scope and validity of the water rights that are reported in the plans; and
26



RECEIVED
SEP 02 2008

BY:.....

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

15 West Yakima Avenue, Suite 200 • Yakima, Washington 98902-3452 • (509) 575-2490

August 29, 2008

CERTIFIED MAIL

7007 2560 0001 7674 1601

City of Leavenworth
PO Box 287
Leavenworth WA 98826-0287

Re: Ground Water Permit No. G4-29958 -- Extension Request

On February 13, 2008, the Department of Ecology (Ecology) received a request to extend the above permit in the Completion of Construction (CC) stage. In review of your request for extension and associated documents, the following facts are recognized.

The City of Leavenworth's (City) current water rights include a combination of both surface water and ground water sources, some of which are interruptible due to minimum instream flow requirements in Icicle Creek and other surface waters in the Wenatchee River Basin.

LEAVENWORTH WATER RIGHTS:

Certificate No. 4 of the Icicle Creek Adjudication - A Chelan County Superior General Adjudication Decree dated October 28, 1929 for up to 1.52 cubic-feet per second (cfs) of water for municipal supply from Icicle Creek. The priority date is 1912.

Ground Water Certificate No. 437-A authorizes withdrawal of 1,000 gallons per minute (gpm) 1,100 acre-feet per year (af/yr) for irrigation and domestic supply from an infiltration gallery along the north bank of the Wenatchee River. The priority date is March 14, 1949. No instream flow provisions are attached to this water right.

Surface Water Certificate No. 8105 (Certificate Record No. 17, page No. 8105) authorizes diversion of 1.50 cfs from Icicle Creek and seepage waters from an infiltration gallery adjacent to the creek channel for the purposes of municipal supply. The priority date is June 20, 1960.

Permit No. S4-28122P was issued to the City to be used for municipal supply (year-round when not interrupted) permitting the diversion of 3.18 cfs (primary instantaneous). The annual quantity of up to 546 acre-feet under this authorization is supplemental (not in addition to the pre-existing rights). The annual quantity of up to 90 af/yr is primary (in addition to pre-existing rights), but is not in addition to the 90 acre-feet of annual primary duty allocated under Permit No. G4-29958P.



Permit No. G4-29958P was issued to the City to be used for continuous municipal supply subject to provisions (year-round when not interrupted) permitting the withdrawal of up to 2,000 gpm. The annual quantity of up to 810 af/yr is supplemental (not in addition to pre-existing rights). The annual quantity of up to 90 acre-feet is primary (in addition to pre-existing rights) but is not in addition to the 90 acre-feet of annual primary duty allocated under Surface Water Application No. S4-28122P. **The recommended amount was a reduction from the 3,000 gpm that was requested.**

The Permit authorized the drilling of **three wells** under Permit No. G4-29958P with the intent to both:

- Replace the 1,000 gpm as authorized by the change to Certificate No. 437-A and
- To add instantaneous (interruptible) capacity of up to 2,000 gpm.

Surface Water Certificate No. 9707 authorizes the diversion of 0.54 cfs, 106 af/yr from the Wenatchee River for irrigation of 27 acres. The priority date is June 4, 1965. Ecology's records show this right recorded in the name of the Leavenworth Golf Club, based on a change application filed in the year 2000 and a previously-issued Superseding Certificate. Inasmuch as this irrigation right is appurtenant to the 27 acres authorized in the Certificate, the City owns the land and the golf course operates the golf course in a long-term lease arrangement with the City.

WELL FIELD:

The development of the City well field is to:

- Provide the City with flexibility in system operation.
- Replace regular use of the infiltration gallery due to its age. The City intends to maintain the infiltration gallery as a backup emergency source only.
- Significant water quality protection.
- Inability to fully use existing Certificate No. 437-A.
- Well field supply in excess of the amount needed to replace the collector well will be developed to meet peak demands projected to exceed present supply capacity.
- To supplement and/or replace the Icicle Creek supply
 - During periods of high turbidity in Icicle Creek or
 - During emergency shut-down of the filter plant, or
 - Reduction of the Icicle Creek diversion during periods when instream flows are not being satisfied.

There were water conservation elements required by Ecology in 1995 as a condition for the issuance of Permit Nos. S4-28122P and G4-29958P. A permit condition required that the City submit to Ecology an annual progress report on March 1 of each year identifying the annual lost water percentage starting in 1997. Ecology has no record of receipt of such reports to date.

EXTENSION REQUEST:

The City invested effort and funds as part of the project to install a third production well and to design and construct the pump station to accommodate this well when it is needed.

In response to your request for an extension of Ground Water Right Permit No. G4-29958P, you are hereby granted an extension of time in which to complete construction. Your new deadline to complete construction of your water system and submit a completed *Completion of Construction* form is **June 1, 2011**.

Factors in favor of granting extension:

- To utilize the balance of the permitted amounts.
- Planned and existing conservation and water use efficiency measures implemented by this public water system.
- The supply needs of the public water system's service area.
- Progress on construction of the water system relative to the scope of the project.
- Responsible municipal water supply planning in the interest of public welfare.
- Emergency back-up facilities should the primary source (Icicle Creek) not be available.

Please contact Carol Mortensen at 509-454-4256 if you have any questions.

You have a right to appeal this decision. To appeal this you must:

- File your appeal with the Pollution Control Hearing Board within 30 days of the "date of receipt" of this document. Filing means actual receipt by the Board during regular office hours.
- Serve your appeal on the Department of Ecology within 30 days of the "date of receipt" of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). "Date of receipt" is defined at RCW 43.21B.001(2).

Be sure to do the following:

- Include a copy of this document that you are appealing with your Notice of Appeal.
- Serve and file your appeal in paper form; electronic copies are not accepted.

1. To file your appeal with the Pollution Control Hearings Board:

Mail appeal to:

The Pollution Control Hearings Board
PO Box 40903
Olympia WA 98504-0903

OR

Deliver your appeal in person to:

The Pollution Control Hearings Board
4224 - 6th Ave SE Rowe Six, Bldg 2
Lacey WA 98503

City of Leavenworth

August 29, 2008

Page 4 of 4

2. To serve your appeal on the Department of Ecology:

Mail appeal to:

OR

Deliver your appeal in person to:

The Department of Ecology
Appeals Coordinator
PO Box 47608
Olympia WA 98504-7608

The Department of Ecology
Appeals Coordinator
300 Desmond Dr SE
Lacey WA 98503

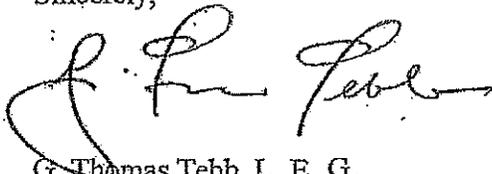
3. And send a copy of your appeal packet to:

G. Thomas Tebb, L.E.G.
The Department of Ecology
Central Region Office
15 W Yakima Ave Ste 200
Yakima WA 98902-3452

For additional information visit the Environmental Hearings Office Website: <http://www.eho.wa.gov>

To find laws and agency rules visit the Washington State Legislature Website: <http://www.leg.wa.gov/CodeReviser>

Sincerely,



G. Thomas Tebb, L. E. G.
Section Manager
Water Resources Program

GTT:CM:gh
080874

Enclosures: Your Right to Be Heard
Construction Notice

Ref. F.

Chelan County, Washington, Form No. 477-A

State of Washington, County of Chelan

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 122, Laws of Washington for 1949, and the rules and regulations of the State Supervisor of Hydraulics thereunder.

This is to Certify That CITY OF LEAVENWORTH

of Leavenworth, Washington has made proof to the satisfaction of the State Supervisor of Hydraulics of Washington, of a right in the use of the ground waters of an AR infiltration gallery located within the SW 1/4 of S 24 of NE 1/4 of Sec. 14, Twp. 24 N., R. 21 W.

for the purpose of irrigation and domestic supply under Ground Water Permit No. 1044 issued by the State Supervisor of Hydraulics and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Hydraulics of Washington and entered of record in Volume 1 at page 437-A; that the right hereby confirmed dates from March 14, 1949; that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1000 gallons per minute; 1100 acre-feet per year, for irrigation of 100 acres.

A description of the lands to which such ground water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

Within the corporate limits of City of Leavenworth, Chelan County, Washington.

The right to the use of the ground water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1949.

WITNESS the seal and signature of the State Supervisor of Hydraulics of Washington this 26th day of June, 1950.

Ref. E.

CERTIFICATE OF WATER RIGHT.

THIS IS TO CERTIFY:

That by virtue of a decree of the Superior Court of the State of Washington in and for Chelan County, made and entered on the twenty-eighth day of October, 1929, and recorded in Volume 15 of the Superior Court Journal of said county at page 12, which decree determined the rights of all known claimants to the use of the waters of Icicle Creek, a tributary of the Wenatchee River, the CITY OF LEAVENWORTH, a municipal corporation, is entitled to use, subject to the laws of the State of Washington, the waters of said Icicle Creek for the purpose of a municipal water supply continuously throughout the year.

That the amount of water to which said water right is entitled is limited to the quantity which is reasonably and actually necessary for the purpose aforesaid and shall not exceed 1.52 second feet.

That the date of priority of said water right is 1912; that the decree aforesaid establishes said right in Class Four, which said class includes a total maximum of 1.79 second feet.

That the point of diversion of said water right is as follows:

The NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Sec. 28, Twp. 24 N., Rge 17 E. W. M., and cannot be changed except as provided in Section 39, Chapter 117, Session Laws of 1917.

That said water right was adjudged by said decree to be and is appurtenant to the following described real property situated in Chelan County, Washington, to wit;

All property within the corporate limits of the City of Leavenworth.

This instrument is recorded in the office of the Supervisor of Hydraulics, at Olympia, Washington, in Volume 5-F of Water Right Certificates at page 4.

Misc. 10.26-31

WITNESS the seal and signature of the Supervisor of
Hydraulics affixed this 14th day of September, 1931.

ENGINEERING DATA

O.K. *J. Hall*

Chas. G. Rapphaelt
Supervisor of Hydraulics of the
State of Washington.

Ref. 6

Abandoned Infiltr. Gallery
Levee River

A. P. No. 122-1-21-544 6179. O.S.

CERTIFICATE RECORD No. 17, PAGE No. 8105

STATE OF WASHINGTON, COUNTY OF Chelan

CERTIFICATE OF SURFACE WATER RIGHT

(In accordance with the provisions of Chapter 122, Laws of Washington for 1921, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.)

This is to certify that CITY OF LEAVENWORTH
of Leavenworth, State of Washington, has made
proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use
of the waters of Island Creek and seepage water tributary of Wenatchee River
with point or points of diversion within the Wahkiakum and Waiilatup
Sec. 28, Twp. 24 N., R. 17 E., W. M., under and subject to provisions contained in
Appropriation Permit No. 12125 issued by the State Supervisor of Water Resources, and
that said right to the use of said waters has been perfected in accordance with the laws of Washington,
and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of
record in Volume 17, at Page 8105, on the 25th day of April, 1961
that the priority date of the right hereby confirmed: June 20, 1940; that the
amount of water under the right hereby confirmed, for the following purposes is limited to an amount
actually beneficially used and shall not exceed 1.50 cubic feet per second for municipal
supply.

A description of the lands under such right to which the water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

Area served by City of Leavenworth, Washington.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1921.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this

25th day of April, 1961

WATER RIGHT

Chapter 122, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.)

I certify that CITY OF LEAVENWORTH
Leavenworth, State of Washington, has made

satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use
of Wenatchee River, a tributary of Columbia River,

points of diversion within the W. 1/2 NW 1/4

Twp. 24 N., R. 17 E., W. M., under and subject to provisions contained in

Permit No. 13946 issued by the State Supervisor of Water Resources, and

the use of said waters has been perfected in accordance with the laws of Washington,

confirmed by the State Supervisor of Water Resources of Washington and entered of

Volume 20, at Page 9707, on the 5th day of August, 1966

the date of the right hereby confirmed is June 4, 1965; that the

water under the right hereby confirmed, for the following purposes is limited to an amount

beneficially used and shall not exceed 0.54 cubic foot per second, 100 acre-foot per

year for the irrigation of 27 acres.

Description of the lands under such right to which the water right is appurtenant, and the
land to which such water is put to beneficial use, is as follows:

E 1/2 NE 1/4 of Sec. 14, T. 24 N., R. 17 E.W.M.

the use of the water aforesaid hereby confirmed is restricted to the lands or place of
described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

~~3200 MEC WASH DC 98101 WASH DC 98101 (509) 535-2800~~
15 West Yakima Avenue, Suite 200 • Yakima, Washington 98902-3401 • (509) 575-2800

August 11, 1995

City of Leavenworth
PO Box 287
Leavenworth WA 98826-0287

RE: Surface Water Application No. S4-28122

Enclosed is Permit No. S4-28122P. Our information indicates you have begun construction of your project. We are enclosing a Notice of Completion of Construction which must be filed when you have finished the work.

If you cannot complete your project by June 1, 2006, you must contact this office.

Please read the enclosed information sheet as well as both sides of your permit.

Sincerely,

Shorelands and Water Resources Program
Central Region Office

ska

Enclosures: Permit
Information Sheet
Completion of Construction form

p-7b:Form
(02/94)

FILE COPY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

file

PERMIT

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

- Surface Water** (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)
- Ground Water** (Issued in accordance with the provisions of Chapter 203, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE January 28, 1983	APPLICATION NUMBER S4-28122	PERMIT NUMBER S4-28122P	CERTIFICATE NUMBER
-----------------------------------	--------------------------------	----------------------------	--------------------

NAME City of Leavenworth			
ADDRESS (STREET) PO Box 287	(CITY) Leavenworth	(STATE) Washington	(ZIP CODE) 98826-0287

The applicant is, pursuant to the Report of Examination which has been accepted by the applicant, hereby granted a permit to appropriate the following described public waters of the State of Washington, subject to existing rights and to the limitations and provisions set out herein.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE Icicle Creek		
TRIBUTARY OF (IF SURFACE WATERS) Wenatchee River		
MAXIMUM CUBIC FEET PER SECOND 3.18	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR 636

QUANTITY, TYPE OF USE, PERIOD OF USE
3.18 cfs (primary instantaneous) to be used for municipal supply (year-round when not interrupted). The annual quantity of up to 546 acre-feet diverted under this authorization is supplemental (not in addition to the pre-existing rights). The annual quantity of up to 90 acre-feet is primary (in addition to pre-existing rights) but is not in addition to the 90 acre-feet of annual primary duty allocated under Application No. G4-29958.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL
1200 feet north and 1240 feet west from the southeast corner of Section 28

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) SE $\frac{1}{4}$ SE $\frac{1}{4}$	SECTION 28	TOWNSHIP N. 24	RANGE (E OR W) W.M. 17 E.	W.R.I.A. 45	COUNTY Chelan
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RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
-----	-------	------------------------------------

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by the City of Leavenworth as defined in 1988 Comprehensive Water Plan as revised in 1993. Water use under this right shall be within the place of use described in the most current Comprehensive Water Plan.

FILE COPY

DESCRIPTION OF PROPOSED WORKS

City of Leavenworth water treatment plant and municipal distribution system, (see adopted Comprehensive Water Plan).

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE: Begun	COMPLETE PROJECT BY THIS DATE: June 1, 2006	WATER PUT TO FULL USE BY THIS DATE: June 1, 2014
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PROVISIONS

The primary allocation of up to 90 acre-feet per year shall be perfected to the extent of actual use in excess of 1,375 acre-feet per year allocated under pre-existing water rights. For purposes of administering the Wenatchee River instream flow regulations, the City will be required to report the locations, purposes and quantities of water used under the primary water right allocation.

The public water system shall comply with all applicable provisions of the Interim Guidelines for Public Water Systems regarding water use reporting, demand forecasting methodology, and conservation programs or rules later adopted for implementing the interim guidelines.

This authorization is subject to the implementation of the minimum requirements established in the Interim Guidelines for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology and Conservation Programs, July 1990.

This authorization is subject to Washington Department of Fisheries juvenile salmon screening criteria (pursuant to RCW 75.20.040) and/or Washington Department of Wildlife gamefish screening criteria.

Withdrawal of water under this right may be limited or otherwise regulated in favor of senior rights.

This authorization is subject to the provisions of Chapter 173-545 WAC as adopted and the general rules of the Department of Ecology as specified in Chapter 173-500 WAC.

Instream flows as established at monitoring station 12.4585.00 (Icicle Creek) at river mile 1.5, Section 24, T. 24 N., R. 17 E.W.M., and as presented in the table below shall be protected by regulation of diversions.

Provisions continued on page 3.

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or fail to give notice to the Department of Ecology on forms provided by that Department documenting such compliance.

Given under my hand and the seal of this office at Yakima, Washington,

this 11th day of August, 1995.

Department of Ecology

by Darlene M. Frye
Darlene M. Frye, Section Manager

ENGINEERING DATA
OK df
24x109 ska

Provisions Continued

Instream flow hydrographs, as represented in the document entitled "Wenatchee River Basin Instream Resources Protection Program" dated February 1983 shall be used for definition of instream flows on those days not specifically identified below.

Primary Control Station: 12.4585.00 (Icicle Creek)
River Mile: 1.5

Instream Flows in the Wenatchee River Basin
(instantaneous cubic feet per second)

	Wenatchee River at Plain	Icicle Creek near Leavenworth	Wenatchee River at Peshastin	Mission Creek near Cashmere	Wenatchee River at Monitor
STATION:	12.4570.00	12.4585.00	12.4590.00	12.4620.00	12.4625.00
RIVER MILE:	(46.2)	(1.5)	(21.5)	(1.5)	(7.0)
Jan 1	550	120	700	6	820
Jan 15	550	120	700	6	820
Feb 1	550	120	700	6	820
Feb 15	550	120	700	6	800
Mar 1	550	150	750	6	800
Mar 15	700	170	940	11	1040
Apr 1	910	200	1300	22	1350
Apr 15	1150	300	1750	40	1750
May 1	1500	450	2200	40	2200
May 15	2000	660	2800	40	2800
Jun 1	2500	1000	3500	28	3500
Jun 15	2000	660	2600	20	2400
Jul 1	1500	450	1900	14	1700
Jul 15	1200	300	1400	10	1200
Aug 1	880	200	1000	7	800
Aug 15	700	170	840	5	700
Sep 1	660	130	820	4	700
Sep 15	620	130	780	4	700
Oct 1	580	130	750	4	700
Oct 15	520	130	700	5	700
Nov 1	550	150	750	6	800
Nov 15	550	150	750	6	800
Dec 1	550	150	750	6	800
Dec 15	550	150	750	6	800

No diversion of water under this authorization shall take place when the streamflow at this station is below the above flows.

This authorization is subject to all downstream control stations and instream flow requirements that may also become controlling and critical to the use of water.



file

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

3601 W. Washington • Yakima, Washington 98903-1164 • (509) 575-2800

April 12, 1995

CERTIFIED MAIL
Z 744 402 019

City of Leavenworth
PO Box 287
Leavenworth WA 98826-0287

RE: Surface Water Application No. **S4-28122** - Amended Report

Your application has been approved and a permit will be issued in accordance with the enclosed Amended Report of Examination upon payment of the statutory fee of \$20.00. Please make your check payable to the Department of Ecology.

This letter and enclosed Amended Report of Examination constitute our determination and order. You have the right to obtain review of this order. Request for review must be made, within thirty (30) days of receipt of this order, to the Washington Pollution Control Hearings Board, PO Box 40903, Olympia, Washington 98504-0903. Concurrently, a copy of the request must be sent to the Department of Ecology, PO Box 47600, Olympia, Washington 98504-7600. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

Please send your permit fee within 30 days.

Sincerely,

Darlene M. Frye, Section Manager
Shorelands and Water Resources Program
Central Regional Office
ska

Enclosure(s): Amended Report of Examination

cc: Colville Confederated Tribes
Yakama Indian Nation

f-2:Form
(08/13/92)



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

file

Amends REPORT OF EXAMINATION dated June 10, 1993
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE January 28, 1983	APPLICATION NUMBER S4-28122	PERMIT NUMBER	CERTIFICATE NUMBER
-----------------------------------	--------------------------------	---------------	--------------------

NAME City of Leavenworth			
ADDRESS (STREET) PO Box 287	(CITY) Leavenworth	(STATE) Washington	(ZIP CODE) 98826-0287

PUBLIC WATERS TO BE APPROPRIATED

SOURCE Icicle Creek		
TRIBUTARY OF (IF SURFACE WATERS) Wenatchee River		
MAXIMUM CUBIC FEET PER SECOND 3.18	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR 636

QUANTITY, TYPE OF USE, PERIOD OF USE
3.18 cfs (primary instantaneous) to be used for municipal supply (year-round when not interrupted). The annual quantity of up to 546 acre-feet diverted under this authorization is supplemental (not in addition to the pre-existing rights). The annual quantity of up to 90 acre-feet is primary (in addition to pre-existing rights) but is not in addition to the 90 acre-feet of annual primary duty allocated under Application No. G4-29958.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL
1200 feet north and 1240 feet west from the southeast corner of Section 28

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) SE $\frac{1}{4}$ SE $\frac{1}{4}$	SECTION 28	TOWNSHIP N. 24	RANGE, (E. OR W.) W.M. 17 E.	W.R.L.A. 45	COUNTY Chelan
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RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
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LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by the City of Leavenworth as defined in 1988 Comprehensive Water Plan as revised in 1993. Water use under this right shall be within the place of use described in the most current Comprehensive Water Plan.

DESCRIPTION OF PROPOSED WORKS

City of Leavenworth water treatment plant and municipal distribution system, (see adopted Comprehensive Water Plan).

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE: Begun	COMPLETE PROJECT BY THIS DATE: June 1, 2006	WATER PUT TO FULL USE BY THIS DATE: June 1, 2014
--------------------------------------	--	---

AMENDED REPORT

BACKGROUND:

This amended report is written in response to the Stipulation and Agreed Order of Dismissal (Pollution Control Hearings Board No. 93-149) dated February 9, 1994. This amended report supersedes the original report dated June 10, 1993. The stipulated amendments include changing 90 acre-feet of the original supplemental annual allocation to a primary water right allocation. Also, requirements are described for conservation and efficiency measures to be developed and implemented.

On January 28, 1983, the City of Leavenworth (City) filed an application for a water right permit to appropriate 7.8 cubic feet per second (cfs) of Icicle Creek water. It was assigned application number S4-28122. The original request was accompanied by a request for exemption from the base flow provisions of the Wenatchee River Instream Resources Protection Plan (WRIRPP) Chapter 173-545 Washington Administrative Code (WAC). On January 9, 1990 the City amended its water right application withdrawing the request for exemption from the instream flow program. The application was filed in response to discussions between the City and the Department of Ecology (Department) because the City was diverting water in excess of their authorized allocations.

Public notice was published in the Leavenworth Echo for two consecutive weeks starting on February 23, 1983.

The City currently has two water rights authorizing diversion of a total of 3.02 cfs from Icicle Creek; they want additional water rights at the treatment plant diversion equal to the treatment plant's capacity. One of the existing water rights, Surface Water Certificate No. 8105, authorized the diversion of 1.50 cfs from an infiltration gallery on Icicle Creek about 300 yards downstream of where the City diverts water for the treatment plant. In 1982 the City filed an application to change the point of diversion for Certificate No. 8105 to the treatment plant diversion point. The change application was approved in January of 1990 and a superseding certificate to reflect the current point of diversion issued August 30, 1993.

Comments on Application

The Washington State Departments of Fisheries (WDF) and Wildlife (WDW) commented on the proposed appropriation (S4-28122). The WDF recommended that the diversion be subject to the adopted WRIRPP flows and that the applicant contact WDW for screening criteria.

The Fish and Wildlife Service, United States Department of Interior, operates a fish hatchery on Icicle Creek. On February 23, 1990, the City provided the Department with a copy of a letter from Mr. Greg Pratschner, Hatchery Complex Manager, stating that in order to prevent adverse affects on the hatchery's water supply, the U.S. Fish and Wildlife Service will object to upstream development until a water budget model for the Icicle Canyon is complete. The purpose of the model would be to quantify the effects of any diversion that may impact the hatchery's water rights.

Compliance with the State Environmental Policy Act (SEPA) for this action was satisfied on January 10, 1990 when the City issued a Determination of Nonsignificance (DNS) for the proposed action of taking additional water from Icicle Creek for municipal water supply.

In talking with Mike Cecka (Administrator for the City), he clarified the City's intent that the pending application for 7.8 cfs be amended such that the total rights for the Icicle diversion equal the capacity of the municipal water treatment plant. The design capacity of the treatment plant is 4 million gallons per day (mgd). Four mgd is about 6.2 cfs. 6.2 cfs minus the current authorization of 3.02 (discussed in detail later) leaves a request for 3.18 cfs.

INVESTIGATION:

The following information was obtained from office research, conversations with Mr. Cecka, input from the City's consultant, meetings with the City council and Mayor and study of the City of Leavenworth Comprehensive Water Plan (1988), and review of recently revised water demand forecasts. The projected population to be served by the City in 2011 is 3,823 people. Service was provided to approximately 2,418 people in 1991. Growth at 10 homes per year since then would be a reasonable projection.

This application as it now stands is for a 3.18 cfs diversion from Icicle Creek at a point located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. At the time that the City withdrew their request for exemption from the instream flow provisions, it was understood that the Icicle Creek permit would be subject to regulation in favor of minimum flows.

A temporary permit for water use during the pendency of application review was issued on August 31, 1988, as part of the PCHB stipulated settlement. This temporary permit was extended on March 30, 1989. No further extensions were requested by the City.

Existing City of Leavenworth Water Rights

A Chelan County Superior Court General Adjudication decree signed on October 28, 1929 confirmed the City's right to take up to 1.52 cfs of water for municipal supply (Certificate No. 4 of the Icicle Creek Adjudication) from Icicle Creek. The priority date of that right is 1912. The point of diversion confirmed by the Court Decree is within the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. Since the City's diversion is located within the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, it appears that an application for change of point of diversion is needed. The water right is appurtenant to all property within the corporate limits of the City of Leavenworth.

Ground Water Certificate No. 437-A authorizes withdrawal of 1,000 gpm, 1,100 acre-feet per year for irrigation and domestic supply from an infiltration gallery located within the SW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 14, T. 24 N., R. 17 E.W.M. for municipal use within the corporate limits of the City. This water right defines the total annual diversion as 1,100 acre-feet for a projected population of 2,000 under the two water rights or 490 gpd per capita. The priority date is March 14, 1949. The infiltration gallery is located along the north bank of the Wenatchee River. The intent of this authorization in 1949 was to supplant the use of water from Icicle Creek as confirmed in the adjudication. However, the diversion of water by the City on Icicle Creek continued subsequent to the development of the infiltration gallery. The Icicle Creek source is and always has been an integral part of the City's system. Since the City has continuously used the Icicle Creek diversion, made continuous beneficial use of the water and did not relinquish it, Ecology recognizes both the Icicle Creek adjudicated right and the authorization pursuant to Certificate No. 437-A as valid. The City filed an application for change to add a point of withdrawal and change the place of use on Certificate No. 437-A on March 16, 1989. The request was approved in a decision issued on January 12, 1990. A Superseding Certificate has not yet been issued. There is no instream flow provision attached to this water right.

Certificate No. 8105 (Certificate Record No. 17, Page No. 8105), authorizes diversion of 1.50 cfs from Icicle Creek and seepage waters from an infiltration gallery adjacent to the creek channel for the purposes of municipal supply within the area served by the City of Leavenworth. The Certificate was issued on April 25, 1961, priority date of June 20, 1960. The points of diversion are located within the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. An application for change of water right was filed for this right on January 28, 1983 to change the point of diversion upstream to the place the City was actually taking the water. On January 12, 1990 the Department issued a decision on the application for change in point of diversion. A change in the point of diversion was authorized. The location of the point of diversion is now 1,200 feet north and 1,240 feet west of the southeast corner of Section 28, being within the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. Although no value was identified for the total acre-feet per year, a reasonable quantity can be calculated based upon the per capita demand used for Certificate No. 437-A and multiplying by the projected 2,500 population for 1980. Thus 275 acre-feet should be used in addition to the previous rights totaling 1,100 acre-feet per year.

Surface Water Certificate No. 9707, priority date of June 4, 1965, authorizes the diversion of 0.54 cfs, 106 acre-feet per year from the Wenatchee River, for the irrigation of 27 acres (golf course), the water being appurtenant to the E $\frac{1}{2}$ E $\frac{1}{2}$ NE $\frac{1}{4}$ of Section 14, T. 24 N., R. 17 E.W.M. The point of diversion is located in the W $\frac{1}{2}$ W $\frac{1}{2}$ NW $\frac{1}{4}$ of Section 13, T. 24 N., R. 17 E.W.M. There is no instream flow provision attached to this water right.

In March 1989 the City filed Ground Water Application No. G4-29958 seeking additional water rights from a well field to be constructed near the infiltration trench authorized by Certificate No. 437-A. The City also filed a request to be exempt from the instream flow requirements of the WRIRPP pursuant to WAC 173-545-070(2). A decision for that application is to be issued concurrently with this decision. While the deliberative process for G4-29958 is separate from this action, a better understanding of the history of this application and the City's water right issues can be gained from a review of that Report of Exam.

Amended Report Continued

Water Treatment Plant

The City's water treatment plant is an approved system, however, it does not currently have an operating permit. The Department of Health (DOH) needs to conduct a survey to rate the plant's capacity prior to the granting of the operating permit. The DOH has not scheduled the necessary survey at this time.

Under gravity feed, the plant as built can treat about 1.3 mgd (2 cfs), however, the plant has two pumps, a 125 horsepower and a 25 horsepower pump to use for its operation if more volume is needed. Use of the 125 horsepower pump increases the capacity of the plant.

The City recently (1990) made improvements to the way it treats Icicle Creek water. A 133,000 gallon chlorine contact basin was constructed along with piping to facilitate backwashing of the filters. Currently, the plant can treat 2.6 mgd under an agreement with DOH. The City's consultant indicated that present hydraulic capacity is 2.9 mgd, however, the City can adequately treat only 2.6 mgd. To increase the plant capacity would require plant modification or a change in the finish water quality that the City must meet. How much water is actually treated on a daily basis is driven by the finish water quality. If the finish water quality is not adequate, the plant must increase the residency time for the water in the plant, therefore less water is treated on daily basis. Because of recent changes to the Safe Drinking Water Act and the development of State rules to implement the law, the City does not know what the ultimate finish water quality standards will be for the plant.

The City may be able to treat up to 3.4 mgd without major modifications, however, the extent of those modifications cannot be estimated until the State informs the City of its treatment requirements. Tom Justus of the DOH indicated that major treatment plant changes would have to be made to treat 4.0 mgd. Apparently, to treat 4.0 mgd the City would have to increase the size of the coagulation chambers to get better flocculation and change the filters to get a higher gallon per minute per square foot of filter value. At 3.4 mgd the filters would have to operate at 5 gpm/square foot of filter.

With the uncertainty regarding treatment standards the City will have to meet for finish water, and in light of the fact that improvements were recently made to the treatment plant, a long period of time may be required by the City to put the full 3.18 cfs requested under this application to use. However, the applicant has verbally agreed that ten years should be sufficient time.

Water Use

The City started to collect water meter data in the spring of 1989 and billing for metered water use in 1990. Generally, the City reads commercial meters once a month, and the residential meters monthly from May through October. The following tables present average per capita water use, maximum day water use, and monthly water production for a time period which starts prior to meter installation and subsequent to meter installation. The purpose of this data is to document the water use of the City and show the dramatic reduction in water use subsequent to meter installation.

Average Daily Per Capita Water Use In Gallons

Month	1983	1986	1990	1991	1992
June	600	580	223	223	295
July	580	628	367	313	280
August	600	741	323	279	
September	442	386	279	271	
October	358	266	152	231	

Maximum Daily Use In MGD

Month	1983	1986	1990	1991	1992
June	3.2	3.4	1.4	1.3	1.6
July	2.7	3.5	1.8	1.8	1.7
August	2.8	3.6	1.7	1.8	
September	2.1	2.7	1.5	1.4	

Amended Report Continued

Total Monthly Water Production In MGD

Month	1985	1986	1987	1988	1989	1990
May	50	48	56	46	45	23
June	63	72	72	48	63	28
July	100	78	77	77	73	46
August	72	92	86	74	67	41
September	41	48	65	47	51	35
October						

Future Demands

The City based future water demand projections on a per dwelling water use of 2,017 gallons per unit (peak instantaneous demand and 1,345 gallons per peak day). The peak instantaneous demand is valuable for design of reservoir storage and transmission pipe sizing. The 1,345 gallons of water per residential hook-up includes outside watering.

The City currently has 1,375 acre-feet in water rights. If the projected 3,823 population is realized, the current 1,375 acre-feet would allow delivery of up to 320 gallons per capita based on an average day. That figure matches the gallons per capita per day (GPCD) annual average for 1990. The City and Ecology have agreed to use 342 GPCD or 1,465 acre-feet per year for Leavenworth's projected population of 3,823 by the year 2011. The annual primary water right authorization will be 90 acre-feet per year. Leavenworth will work with its water users to attempt to reduce GPCD below 342 by the year 2000 with a goal of attaining 320 GPCD by the year 2014. In the event the goal is not achieved, there shall be no adverse consequence to the city of Leavenworth. Leavenworth will at all times make a good faith effort to enhance water conservation.

Leavenworth shall develop and implement a program for encouraging conservation and water efficiency by its water users. The program shall include a conservation plan, a water efficiency plan, a system improvement plan and an action plan and schedule for implementation. The program shall be submitted to Ecology for approval by June 1, 1997. Leavenworth shall provide Ecology with an annual progress report including: compliance with each of the program plans, amount of annual water use (total and GPCD) and future plans.

Leavenworth shall develop and implement a program for identifying and reducing unaccounted water uses to 15% of water use. The program shall include an identification plan, a system improvement plan and an action plan and schedule for implementation. The program shall be submitted to Ecology for approval by June 1, 1997. Leavenworth shall provide Ecology with an annual progress report including: compliance with each of the program plans, and amount and percentage of unaccounted use. Reports shall be provided to: Water Resources Section Supervisor, Department of Ecology, Central Regional Office, 3601 West Washington, Yakima, WA 98903, or its successor.

Icicle Creek Flows

The flow in Icicle Creek in most years is adequate to meet the City's needs and the irrigation district's existing senior rights only because the water stored in upstream lakes is released to satisfy the fish hatchery and irrigation demands. However, during years of below normal precipitation, the flow in Icicle Creek could be low enough that there may not be sufficient water to satisfy both Icicle Creek irrigation rights and the City's. The natural flow of Icicle Creek is expected to fall below the instream flows established in WAC 173-545 for several months during at least one year out of ten and for shorter periods of time as frequently as five years out of ten. During the years 1986 through 1989 Icicle Creek flowed below the established minimums approximately 53 days per year. River water in excess of that necessary to satisfy existing rights is available for appropriation during the time period June through September on a very limited basis.

There could be periods of time when, in order for the irrigation district to satisfy its senior rights, the City will have to limit its diversion to the water treatment plant.

The concerns of the USFWS relate to appropriations which would impair their water right. Any water right issued pursuant to this application would be junior to the USFWS's, therefore it would be regulated should a conflict arise.

CONCLUSIONS:

Use of water for municipal supply is a beneficial use of water. By granting the City of Leavenworth sufficient water to operate the treatment plant at design capacity the City's investment in the facility will be fully realized.

Amended Report Continued

Development in the region will be able to use municipal water instead of small private systems thereby realizing greater efficiency and reliability. Development of municipal supply systems as opposed to a proliferation of small systems is encouraged, see RCW 90.54.020(7).

To perfect the water right recommended, the City must pursue upgrading of the treatment plant filters or convince DOH to relax the treatment requirements. A 10 year time frame for these actions was agreed upon with the applicant and is considered reasonable diligence in perfecting the permit by the Department.

Based on the available information the proposed withdrawal is not detrimental to the public interest, and will not impair existing rights, including Icicle Creek instream flows, if the instream flow provisions of the permit are complied with.

RECOMMENDATIONS:

I recommend that a permit be issued to the City of Leavenworth permitting the withdrawal and beneficial use of up to 3.18 cfs (additional primary instantaneous), 636 acre-feet (assuming operation at full capacity for up to 100 days, with up to 546 acre-feet per year of this 636 acre-feet per year to be supplemental to existing City rights, and up to 90 acre-feet per year of this 636 acre-feet per year to be a primary right but not in addition to the 90 acre-feet per year of primary duty allocated under application No. G4-29958), for municipal supply within the service area of the City of Leavenworth, as defined in their Comprehensive Water Plan; subject to the following provisions:

The primary allocation of up to 90 acre-feet per year shall be perfected to the extent of actual use in excess of 1,375 acre-feet per year allocated under pre-existing water rights. For purposes of administering the Wenatchee River instream flow regulations, the City will be required to report the locations, purposes and quantities of water used under the primary water right allocation.

The public water system shall comply with all applicable provisions of the Interim Guidelines for Public Water Systems regarding water use reporting, demand forecasting methodology, and conservation programs or rules later adopted for implementing the interim guidelines.

This authorization is subject to the implementation of the minimum requirements established in the Interim Guidelines for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology and Conservation Programs, July 1990.

This authorization is subject to Washington Department of Fisheries juvenile salmon screening criteria (pursuant to RCW 75.20.040) and/or Washington Department of Wildlife gamefish screening criteria. Please contact the Department of Wildlife, 600 Capitol Way N, Olympia, Washington 98501-1091, Attention: Habitat Management Division, Phone: (206)-753-3318 to obtain specific gamefish (trout, bass, etc.) requirements for your project. Washington Department of Fisheries juvenile salmon screening criteria are attached to the Report of Examination if applicable to your diversion.

Withdrawal of water under this right may be limited or otherwise regulated in favor of senior rights.

This authorization is subject to the provisions of Chapter 173-545 WAC as adopted and the general rules of the Department of Ecology as specified in Chapter 173-500 WAC.

Instream flows as established at monitoring station 12.4585.00 (Icicle Creek) at river mile 1.5, Section 24, T. 24 N., R. 17 E.W.M., and as presented in the table below shall be protected by regulation of diversions.

Instream flow hydrographs, as represented in the document entitled "Wenatchee River Basin Instream Resources Protection Program" dated February 1983 shall be used for definition of instream flows on those days not specifically identified below.

Amended Report Continued

Primary Control Station: 12.4585.00 (Icicle Creek)
River Mile: 1.5

Instream Flows in the Wenatchee River Basin
(instantaneous cubic feet per second)

	Wenatchee River at Plain	Icicle Creek near Leavenworth	Wenatchee River at Peshastin	Mission Creek near Cashmere	Wenatchee River at Monitor
STATION:	12.4570.00	12.4585.00	12.4590.00	12.4620.00	12.4625.00
RIVER MILE:	(46.2)	(1.5)	(21.5)	(1.5)	(7.0)
Jan 1	550	120	700	6	820
Jan 15	550	120	700	6	820
Feb 1	550	120	700	6	820
Feb 15	550	120	700	6	800
Mar 1	550	150	750	6	800
Mar 15	700	170	940	11	1040
Apr 1	910	200	1300	22	1350
Apr 15	1150	300	1750	40	1750
May 1	1500	450	2200	40	2200
May 15	2000	660	2800	40	2800
Jun 1	2500	1000	3500	28	3500
Jun 15	2000	660	2600	20	2400
Jul 1	1500	450	1900	14	1700
Jul 15	1200	300	1400	10	1200
Aug 1	880	200	1000	7	800
Aug 15	700	170	840	5	700
Sep 1	660	130	820	4	700
Sep 15	620	130	780	4	700
Oct 1	580	130	750	4	700
Oct 15	520	130	700	5	700
Nov 1	550	150	750	6	800
Nov 15	550	150	750	6	800
Dec 1	550	150	750	6	800
Dec 15	550	150	750	6	800

No diversion of water under this authorization shall take place when the streamflow at this station is below the above flows.

This authorization is subject to all downstream control stations and instream flow requirements that may also become controlling and critical to the use of water.

REPORT BY:

Doug Clausing
Doug Clausing

DATE:

4/10/1995

APPROVED BY:

Darlene M. Frye
Darlene M. Frye, Section Manager

DATE:

April 10, 1995

24x109 ska

pollution Control Hearings Board
shorelines Hearings Board
Forest Practices Appeals Board
Hydraulics Appeals Board



CR0

(206) 439-6327
(SCAN) 585-6327
(FAX) (206) 438-7699

STATE OF WASHINGTON
ENVIRONMENTAL HEARINGS OFFICE

4224 - 6th Avenue SE, Bldg. 2, Rowe Six
P.O. Box 40903, Lacey, WA 98504-0903

February 11, 1994

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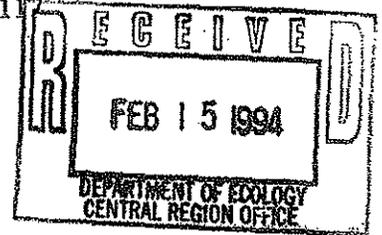
FEB 14 1994

DEPARTMENT OF ECOLOGY
WATER RESOURCES

Terrence M. McAuley
City Attorney
City of Leavenworth
100 North Division Street
P. O. Box 836
Cashmere, WA 98815-0836

Jo Messex Casey
Assistant Attorney General
Department of Ecology
P. O. Box 40117
Olympia, WA 98504-0117

RE: PCHB NO. 93-149
CITY OF LEAVENWORTH v. DOE



Dear Parties:

Enclosed is the Stipulation and Agreed Order of Dismissal, thereby cancelling the hearing scheduled for May 12, 1994.

The efforts of the parties in reaching this settlement are appreciated.

Sincerely,

Robert V. Jensen
Presiding Officer

RVJ/jg/col

Enc.

cc: Linda Pilkey-Jarvis - DOE

I mailed a copy of this document
to the parties on 2-11-94
per [unclear] in a [unclear] for [unclear]
Sincerely,
2-11-94
[Signature]

NOV 13 1994
GENERAL IN
DEPARTMENT

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**BEFORE THE POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON**

CITY OF LEAVENWORTH)	
)	
Petitioner,)	PCHB No. 93-149
)	
v.)	STIPULATION AND AGREED
)	ORDER OF DISMISSAL
STATE OF WASHINGTON,)	
DEPARTMENT OF ECOLOGY,)	
)	
Respondent.)	

Appellant, City of Leavenworth (Leavenworth), appearing by and through its attorney, Terrence M. McCauley; and Respondent State of Washington, Department of Ecology (Ecology), by and through its attorneys, Christine O. Gregoire, Attorney General, and Jo Messex Casey, Assistant Attorney General, agree to the entry of this Stipulation and Agreed Order of Dismissal in the form attached.

I. BACKGROUND

A. On January 28, 1983, Leavenworth filed an application to appropriate public surface waters. The application was assigned number S4-28122.

B. On April 14, 1989, Leavenworth filed an application to appropriate public ground waters. The application was assigned number G4-29958.

1 C. On June 10, 1993, Ecology issued Reports of
2 Examination (ROE) recommending approval of both application S4-
3 28122 and G4-29958, subject to specified conditions and
4 limitations.

5 D. Leavenworth has existing water rights which are not
6 the subject of, nor affected by, this appeal, to wit:

7 1) A Chelan County Superior Court General
8 Adjudication decree dated October 28, 1929
9 for up to 1.52 cfs of water for municipal
10 supply (Certificate No. 4 of the Icicle
11 Creek Adjudication) from Icicle Creek. The
12 priority date is 1912.

13 2) Ground Water Certificate No. 437-A
14 authorizes withdrawal of 1,000 gpm, 1,100
15 acre-feet per year for irrigation and
16 domestic supply from an infiltration gallery
17 along the north bank of the Wenatchee River.
18 The priority date is March 14, 1949.

19 3) Surface Water Certificate No. 8105
20 (Certificate Record No. 17, page No. 8105)
21 authorizes diversion of 1.50 cfs from Icicle
22 Creek and seepage waters from an
23 infiltration gallery adjacent to the creek
24 channel for the purposes of municipal
25 supply. The priority date is June 20, 1960.

26 4) Surface Water Certificate No. 9707
authorizes the diversion of 0.54 cfs, 106
acre-feet per year from the Wenatchee River
for irrigation of 27 acres. The priority
date is June 4, 1965.

21 D. On July 19, 1993, Leavenworth filed an appeal of the
22 June 10, 1993 ROES for S4-28122 and G4-29958. The appeal was
23 assigned PCHB No. 93-149.

24 E. The parties agree that the principal issue of
25 contention is the annual aggregate quantity of water.

1 F. Water conservation and increased water efficiency are
2 mandated by Ecology policies. The parties agree that reduced
3 per capita water usage is in Leavenworth's long term best
4 interest. The parties agree that approximately 25% of
5 Leavenworth's water use is not accounted for and Ecology's
6 principal concern is identification and correction of that
7 problem.

8 **II. STIPULATION**

9 The parties wish to avoid the time or cost in further
10 litigation of this matter, and therefore, without admitting
11 guilt or liability, stipulate and agree as follows:

12 A. Ecology shall issue amended ROE for S4-28122 and G4-
13 29958. The amended ROE shall reflect corrections and
14 clarifications as agreed to by the parties and the reporting
15 requirements indicated in paragraphs C and D below.

16 B. The amended ROES referenced in paragraph A above,
17 shall reflect approval of 342 GPCD (gallons per capita per day)
18 or 1465 acre-feet/year for the Leavenworth's projected
19 population of 3,823 by the year 2011. The annual primary water
20 right authorization will be 90 acre-feet/year. The ROES will
21 include a statement that Leavenworth will work with its water
22 users to attempt to reduce GPCD below 342 by the year 2000 with
23 a goal of attaining 320 GPCD by the year 2011. In the event the
24 goal is not achieved, there shall be no adverse consequence to
25 the city of Leavenworth. Leavenworth will at all times make a
26 good faith effort to enhance water conservation.

STIPULATION AND AGREED
COPIES OF AGREEMENT

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
DAY (360) 432-7742

1 C. Leavenworth shall develop and implement a program for
2 encouraging conservation and water efficiency by its water
3 users. A goal of the program shall be to reduce GPCD below 342
4 by the year 2000 with a target of attaining 320 GPCD by the year
5 2011. The program shall include a conservation plan, a water
6 efficiency plan, a system improvement plan and an action plan
7 and schedule for implementation. The program shall be submitted
8 to Ecology for approval ^{TMM June} by ~~March~~ 1, 1994. Leavenworth shall
9 provide Ecology with an annual progress report including:
10 compliance with each of the program plans, amount of annual
11 water use (total and GPCD) and future plans.

12 D. Leavenworth shall develop and implement a program for
13 identifying and reducing unaccounted water uses to 15% of water
14 use. The program shall include an identification plan, a system
15 improvement plan and an action plan and schedule for
16 implementation. The program shall be submitted to Ecology for
17 approval ^{TMM June} by ~~March~~ 1, 1994. Leavenworth shall provide Ecology
18 with an annual progress report including: compliance with each
19 of the program plans, and amount and percentage of unaccounted
20 use.

21 E. The reports identified in paragraphs C and D
22 immediately above are due to Ecology on March 1 of each year.
23 The Reports shall be provided to: Water Resources Section
24 Supervisor, Department of Ecology, Central Regional Office, 3601
25 West Washington, Yakima, WA 98903, or its successor.

26

1 F. This stipulation resolves all disputes arising from
2 Ecology's Reports of Examination S4-28122 and G4-29958, issued
3 June 10, 1993, and this appeal. The parties agree that the
4 Board may enter the following Order of Dismissal.

5 RESPECTFULLY SUBMITTED this 5 day of February,
6 1994.

7 STATE OF WASHINGTON
8 DEPARTMENT OF ECOLOGY
9 Respondent

Appellant

10 Doug Clausing
11 DOUG CLAUSING
12 Water Resources
13 Section Supervisor

14 Terrence M. McCauley
15 TERRENCE M. MCCAULEY
16 Attorney for
17 City of Leavenworth

18 Approved as to form and content:

19 CHRISTINE O. GREGOIRE
20 ATTORNEY GENERAL

21 Jo Messex Casey
22 JO MESSEX CASEY, WSBA #19161
23 Assistant Attorney General
24 Attorneys for St. of Washington
25 Department of Ecology

26

ORDER OF DISMISSAL

27 Having reviewed the foregoing Stipulation and the file and
28 pleadings herein, and it appearing that the parties have reached
29 an agreement;

30 IT IS HEREBY ORDERED that the foregoing Stipulation is
31 entered as an order of this Board, and this case, City of
32 Leavenworth v. Ecology, PCHB No. 93-149, is hereby DISMISSED

33

STIPULATION AND AGREED
ORDER OF DISMISSAL

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117

1 with prejudice and without costs or attorneys fees.

2 DATED this 9th day of February, 1994.

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POLLUTION CONTROL HEARINGS BOARD

Robert V. Jensen
ROBERT V. JENSEN, Presiding

Richard C. Kelley
RICHARD C. KELLEY, Member

Presented by:

Jo Messex Casey
JO MESSEX CASEY, WSBA #19161
Assistant Attorney General

Approved as to form; notice
of presentation waived:

Terrence M. McCauley
TERRENCE M. MCCAULEY
Attorney for
City of Leavenworth

t3\leavenwo.sao

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

file

REPORT OF EXAMINATION
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

- Surface Water** (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)
- Ground Water** (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE January 28, 1983	APPLICATION NUMBER S4-28122	PERMIT NUMBER	CERTIFICATE NUMBER
NAME City of Leavenworth			
ADDRESS (STREET) PO Box 287	(CITY) Leavenworth	(STATE) Washington	(ZIP CODE) 98826-0287

PUBLIC WATERS TO BE APPROPRIATED

SOURCE Icicle Creek		
TRIBUTARY OF (IF SURFACE WATERS) Wenatchee River		
MAXIMUM CUBIC FEET PER SECOND 3.18	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR 636 supplemental only
QUANTITY, TYPE OF USE, PERIOD OF USE		

3.18 cfs (primary instantaneous) to be used for continuous municipal supply.
The 636 acre-feet per year annual quantity diverted under this authorization is not in addition to the existing water rights.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL
1200 feet north and 1240 feet west from the southeast corner of Section 28

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) SE $\frac{1}{4}$ /SE $\frac{1}{4}$	SECTION 28	TOWNSHIP N. 24	RANGE (E. OR W.) W.M. 17 E.	W.R.L.A. 45	COUNTY Chelan
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RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
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LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by the City of Leavenworth as defined in 1988 Comprehensive Water Plan as revised in 1993. Water use under this right shall be within the place of use described in the most current Comprehensive Water Plan.

DESCRIPTION OF PROPOSED WORKS

City of Leavenworth water treatment plant and municipal distribution system, (see adopted Comprehensive Water Plan).

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Begun	June 1, 2003	June 1, 2011

REPORT

BACKGROUND:

On January 28, 1983, the City of Leavenworth (City) filed an application for a water right permit to appropriate 7.8 cubic feet per second (cfs) of Icicle Creek water. It was assigned application number S4-28122. The original request was accompanied by a request for exemption from the base flow provisions of the Wenatchee River Instream Resources Protection Plan (WRIRPP) Chapter 173-545 Washington Administrative Code (WAC). On January 9, 1990 the City amended its water right application withdrawing the request for exemption from the instream flow program. The application was filed in response to discussions between the City and the Department of Ecology (Department) because the City was diverting water in excess of their authorized allocations.

Public notice was published in the Leavenworth Echo for two consecutive weeks starting on February 23, 1983.

The City currently has two water rights authorizing diversion of a total of 3.02 cfs from Icicle Creek; they want additional water rights at the treatment plant diversion equal to the treatment plant's capacity. One of the existing water rights, Surface Water Certificate No. 8105, authorized the diversion of 1.50 cfs from an infiltration gallery on Icicle Creek about 300 yards downstream of where the City diverts water for the treatment plant. In 1982 the City filed an application to change the point of diversion for Certificate No. 8105 to the treatment plant diversion point. The change application was approved in January of 1990. A proof of appropriation form has been completed and filed and issuance of a superseding certificate to reflect the current point of diversion is pending.

Comments on Application

The Washington State Departments of Fisheries (WDF) and Wildlife (WDW) commented on the proposed appropriation (S4-28122). The WDF recommended that the diversion be subject to the adopted WRIRPP flows and that the applicant contact WDW for screening criteria.

The Fish and Wildlife Service, United States Department of Interior, operates a fish hatchery on Icicle Creek. On February 23, 1990, the City provided the Department with a copy of a letter from Mr. Greg Pratschner, Hatchery Complex Manager, stating that in order to prevent adverse affects on the hatchery's water supply, the U.S. Fish and Wildlife Service will object to upstream development until a water budget model for the Icicle Canyon is complete. The purpose of the model would be to quantify the effects of any diversion that may impact the hatchery's water rights.

Compliance with the State Environmental Policy Act (SEPA) for this action was satisfied on January 10, 1990 when the City issued a Determination of Nonsignificance (DNS) for the proposed action of taking additional water from Icicle Creek for municipal water supply.

In talking with Mike Cecka (Administrator for the City), he clarified the City's intent that the pending application for 7.8 cfs be amended such that the total rights for the Icicle diversion equal the capacity of the municipal water treatment plant. The design capacity of the treatment plant is 4 million gallons per day (mgd). Four mgd is about 6.2 cfs. 6.2 cfs minus the current authorization of 3.02 (discussed in detail later) leaves a request for 3.18 cfs.

INVESTIGATION:

The following information was obtained from office research, conversations with Mr. Cecka, input from the City's consultant, meetings with the City council and Mayor and study of the City of Leavenworth Comprehensive Water Plan (1988), and review of recently revised water demand forecasts. The projected population to be served by the City in 2011 is 3,823 people. Service was provided to approximately 2,418 people in 1991. Growth at 10 homes per year since then would be a reasonable projection.

This application as it now stands is for a 3.18 cfs diversion from Icicle Creek at a point located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. At the time that the City withdrew their request for exemption from the instream flow provisions, it was understood that the Icicle Creek permit would be subject to regulation in favor of minimum flows.

A temporary permit for water use during the pendency of application review was issued on August 31, 1988, as part of the PCHB stipulated settlement. This temporary permit was extended on March 30, 1989. No further extensions were requested by the City.

Existing City of Leavenworth Water Rights

A Chelan County Superior Court General Adjudication decree signed on October 28, 1929 confirmed the City's right to take up to 1.52 cubic feet per second (cfs) of water for municipal supply (Certificate No. 4 of the Icicle Creek Adjudication) from Icicle Creek. The priority date of that right is 1912. The point of diversion confirmed by the Court Decree is within the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. Since the City's diversion is located within the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, it appears that an application for change of point of diversion is needed. The water right is appurtenant to all property within the corporate limits of the City of Leavenworth.

Ground Water Certificate No. 437-A authorizes withdrawal of 1,000 gpm, 1,100 acre-feet per year for irrigation and domestic supply from an infiltration gallery located within the SW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 14, T. 24 N., R. 17 E.W.M. for municipal use within the corporate limits of the City. This water right defines the total annual diversion as 1,100 acre-feet for a projected population of 2,000 under the two water rights or 490 gpd per capita. The priority date is March 14, 1949. The infiltration gallery is located along the north bank of the Wenatchee River. The intent of this authorization in 1949 was to supplant the use of water from Icicle Creek as confirmed in the adjudication. However, the diversion of water by the City on Icicle Creek continued subsequent to the development of the infiltration gallery. The Icicle Creek source is and always has been an integral part of the City's system. Since the City has continuously used the Icicle Creek diversion, made continuous beneficial use of the water and did not relinquish it, Ecology recognizes both the Icicle Creek adjudicated right and the authorization pursuant to Certificate No. 437-A as valid. The City filed an application for change to add a point of withdrawal and change the place of use on Certificate No. 437-A on March 16, 1989. The request was approved in a decision issued on January 12, 1990. A Superseding Certificate has not yet been issued. There is no instream flow provision attached to this water right.

Surface Water Certificate No. 8105 (Certificate Record No. 17, Page No. 8105), authorizes diversion of 1.50 cfs from Icicle Creek and seepage waters from an infiltration gallery adjacent to the creek channel for the purposes of municipal supply within the area served by the City of Leavenworth. The Certificate was issued on April 25, 1961, priority date of June 20, 1960. The points of diversion are located within the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. An application for change of water right was filed for this right on January 28, 1983 to change the point of diversion upstream to the place the City was actually taking the water. On January 12, 1990 the Department issued a decision on the application for change in point of diversion. A change in the point of diversion was authorized. The location of the point of diversion is now 1,200 feet north and 1,240 feet west of the southeast corner of Section 28, being within the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. Although no value was identified for the total acre-feet per year, a reasonable quantity can be calculated based upon the per capita demand used for Certificate No. 437-A and multiplying by the projected 2,500 population for 1980. Thus 275 acre-feet should be used in addition to the previous rights totaling 1,100 acre-feet per year.

Surface Water Certificate No. 9707, priority date of June 4, 1965, authorizes the diversion of 0.54 cfs, 106 acre-feet per year from the Wenatchee River, for the irrigation of 27 acres (golf course), the water being appurtenant to the E $\frac{1}{2}$ E $\frac{1}{2}$ NE $\frac{1}{4}$ of Section 14, T. 24 N., R. 17 E.W.M. The point of diversion is located in the W $\frac{1}{2}$ W $\frac{1}{2}$ NW $\frac{1}{4}$ of Section 13, T. 24 N., R. 17 E.W.M. There is no instream flow provision attached to this water right.

Report Continued

In March 1989 the City filed Ground Water Application No. G4-29958 seeking additional water rights from a well field to be constructed near the infiltration trench authorized by Certificate No. 437-A. The City also filed a request to be exempt from the instream flow requirements of the WRIRPP pursuant to WAC 173-545-070(2). A decision for that application is to be issued concurrently with this decision. While the deliberative process for G4-29958 is separate from this action, a better understanding of the history of this application and the City's water right issues can be gained from a review of that Report of Exam.

Water Treatment Plant

The City's water treatment plant is an approved system, however, it does not currently have an operating permit. The Department of Health (DOH) needs to conduct a survey to rate the plant's capacity prior to the granting of the operating permit. The DOH has not scheduled the necessary survey at this time.

Under gravity feed, the plant as built can treat about 1.3 mgd (2 cfs), however, the plant has two pumps, a 125 horsepower and a 25 horsepower pump to use for its operation if more volume is needed. Use of the 125 horsepower pump increases the capacity of the plant substantially, but causes problems of too much pressure in the transmission mains.

The City recently (1990) made improvements to the way it treats Icicle Creek water. A 133,000 gallon chlorine contact basin was constructed along with piping to facilitate backwashing of the filters. Currently, the plant can treat 2.6 mgd under an agreement with DOH. The City's consultant indicated that present hydraulic capacity is 2.9 mgd, however, the City can adequately treat only 2.6 mgd. To increase the plant capacity would require plant modification or a change in the finish water quality that the City must meet. How much water is actually treated on a daily basis is driven by the finish water quality. If the finish water quality is not adequate, the plant must increase the residency time for the water in the plant, therefore less water is treated on daily basis. Because of recent changes to the Safe Drinking Water Act and the development of State rules to implement the law, the City does not know what the ultimate finish water quality standards will be for the plant.

The City may be able to treat up to 3.4 mgd without major modifications, however, the extent of those modifications cannot be estimated until the State informs the City of its treatment requirements. Tom Justus of the DOH indicated that major treatment plant changes would have to be made to treat 4.0 mgd. Apparently, to treat 4.0 mgd the City would have to increase the size of the coagulation chambers to get better flocculation and change the filters to get a higher gallon per minute per square foot of filter value. At 3.4 mgd the filters would have to operate at 5 gpm/square foot of filter.

With the uncertainty regarding treatment standards the City will have to meet for finish water, and in light of the fact that improvements were recently made to the treatment plant, a long period of time may be required by the City to put the full 3.18 cfs requested under this application to use. However, the applicant has verbally agreed that ten years should be sufficient time.

Water Use

The City started to collect water meter data in the spring of 1989 and billing for metered water use in 1990. Generally, the City reads commercial meters once a month, and the residential meters monthly from May through October. The following tables present average per capita water use, maximum day water use, and monthly water production for a time period which starts prior to meter installation and subsequent to meter installation. The purpose of this data is to document the water use of the City and show the dramatic reduction in water use subsequent to meter installation.

Average Daily Per Capita Water Use In Gallons

Month	1983	1986	1990	1991	1992
June	600	580	223	223	295
July	580	628	367	313	280
August	600	741	323	279	
September	442	386	279	271	
October	358	266	152	231	

Report Continued

Maximum Daily Use In MGD

Month	1983	1986	1990	1991	1992
June	3.2	3.4 ²	1.4	1.3	1.6
July	2.7	3.5	1.8	1.8	1.7
August	2.8	3.6	1.7	1.8	
September	2.1	2.7	1.5	1.4	

Total Monthly Water Production In MGD

Month	1985	1986	1987	1988	1989	1990
May	50	48	56	46	45	23
June	63	72	72	48	63	28
July	100	78	77	77	73	46
August	72	92	86	74	67	41
September	41	48	65	47	51	35
October						

Future Demands

The City based future water demand projections on a per dwelling water use of 2,017 gallons per unit (peak instantaneous demand and 1,345 gallons per peak day). The peak instantaneous demand is valuable for design of reservoir storage and transmission pipe sizing. The 1,345 gallons of water per residential hook-up includes outside watering.

While projecting water demand is an inexact art, reasonable attempts must be made. Department quantity allocation guidelines are 450 gallons per average day per hook-up. This includes water for outside watering. This figure is consistent compared to other eastern Washington cities for which data exists. For example, the City of Yakima's average per capita daily water use is 464 gallons (this figure includes lawn watering and a significant ratio of commercial uses) and the City of Walla Walla's is 445 gallons. Peak use periods in the summer can be accommodated if the instantaneous capacities are adequate.

The City currently has 1,375 acre-feet in water rights. The City's currently authorized annual quantities exceed all reasonable expectations of demand by the year 2011. If the projected 3,823 population is realized, the current 1,375 acre-feet would allow delivery of up to 320 gallons per capita based on an average day. That figure matches the GPCD annual average for 1990 and the demand trend is dropping. Based on these figures no additional annual authorization is needed until after 2011.

Icicle Creek Flows

The flow in Icicle Creek in most years is adequate to meet the City's needs and the irrigation district's existing senior rights only because the water stored in upstream lakes is released to satisfy the fish hatchery and irrigation demands. However, during years of below normal precipitation, the flow in Icicle Creek could be low enough that there may not be sufficient water to satisfy both Icicle Creek irrigation rights and the City's. The natural flow of Icicle Creek is expected to fall below the instream flows established in WAC 173-545 for several months during at least one year out of ten and for shorter periods of time as frequently as five years out of ten. During the years 1986 through 1989 Icicle Creek flowed below the established minimums approximately 53 days per year. River water in excess of that necessary to satisfy existing rights is available for appropriation during the time period June through September on a very limited basis.

There could be periods of time when, in order for the irrigation district to satisfy its senior rights, the City will have to limit its diversion to the water treatment plant.

The concerns of the USFWS relate to appropriations which would impair their water right. Any water right issued pursuant to this application would be junior to the USFWS's, therefore it would be regulated should a conflict arise.

Report Continued

CONCLUSIONS:

Use of water for municipal supply is a beneficial use of water. By granting the City of Leavenworth sufficient water to operate the treatment plant at design capacity the City's investment in the facility will be fully realized.

Development in the region will be able to use municipal water instead of small private systems thereby realizing greater efficiency and reliability. Development of municipal supply systems as opposed to a proliferation of small systems is encouraged, see RCW 90.54.020(7).

To perfect the water right recommended, the City must pursue upgrading of the treatment plant filters or convince DOH to relax the treatment requirements. A 10 year time frame for these actions was agreed upon with the applicant and is considered reasonable diligence in perfecting the permit by the Department.

Based on the available information the proposed withdrawal is not detrimental to the public interest, and will not impair existing rights, including Icicle Creek instream flows, if the instream flow provisions of the permit are complied with.

RECOMMENDATIONS:

I recommend that a permit be issued to the City of Leavenworth permitting the withdrawal and beneficial use of up to 3.18 cfs (additional primary instantaneous), 636 acre-feet (supplemental to existing City rights operating at full capacity for 100 days), for municipal supply within the service area of the City of Leavenworth, as defined in their Comprehensive Water Plan; subject to the following provisions:

The public water system shall comply with all applicable provisions of the Interim Guidelines for Public Water Systems regarding water use reporting, demand forecasting methodology, and conservation programs or rules later adopted for implementing the interim guidelines.

This authorization is subject to the implementation of the minimum requirements established in the Interim Guidelines for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology and Conservation Programs, July 1990.

This authorization is subject to Washington Department of Fisheries juvenile salmon screening criteria (pursuant to RCW 75.20.040) and/or Washington Department of Wildlife gamefish screening criteria. Please contact the Department of Wildlife, 600 Capitol Way N, Olympia, Washington 98501-1091, Attention: Habitat Management Division, Phone: (206)-753-3318 to obtain specific gamefish (trout, bass, etc.) requirements for your project. Washington Department of Fisheries juvenile salmon screening criteria are attached to the Report of Examination if applicable to your diversion.

Withdrawal of water under this right may be limited or otherwise regulated in favor of senior rights.

This authorization is subject to the provisions of Chapter 173-545 WAC as adopted and the general rules of the Department of Ecology as specified in Chapter 173-500 WAC.

Instream flows as established at monitoring station 12.4585.00 (Icicle Creek) at river mile 1.5, Section 24, T. 24 N., R. 17 E.W.M., and as presented in the table below shall be protected by regulation of diversions.

Report Continued

Instream flow hydrographs, as represented in the document entitled "Wenatchee River Basin Instream Resources Protection Program" dated February 1983 shall be used for definition of instream flows on those days not specifically identified below.

Primary Control Station: 12.4585.00 (Icicle Creek)
River Mile: 1.5

Instream Flows in the Wenatchee River Basin
(instantaneous cubic feet per second)

	Wenatchee River at Plain	Icicle Creek near Leavenworth	Wenatchee River at Peshastin	Mission Creek near Cashmere	Wenatchee River at Monitor
STATION:	12.4570.00	12.4585.00	12.4590.00	12.4620.00	12.4625.00
RIVER MILE:	(46.2)	(1.5)	(21.5)	(1.5)	(7.0)
Jan 1	550	120	700	6	820
Jan 15	550	120	700	6	820
Feb 1	550	120	700	6	820
Feb 15	550	120	700	6	800
Mar 1	550	150	750	6	800
Mar 15	700	170	940	11	1040
Apr 1	910	200	1300	22	1350
Apr 15	1150	300	1750	40	1750
May 1	1500	450	2200	40	2200
May 15	2000	660	2800	40	2800
Jun 1	2500	1000	3500	28	3500
Jun 15	2000	660	2600	20	2400
Jul 1	1500	450	1900	14	1700
Jul 15	1200	300	1400	10	1200
Aug 1	880	200	1000	7	800
Aug 15	700	170	840	5	700
Sep 1	660	130	820	4	700
Sep 15	620	130	780	4	700
Oct 1	580	130	750	4	700
Oct 15	520	130	700	5	700
Nov 1	550	150	750	6	800
Nov 15	550	150	750	6	800
Dec 1	550	150	750	6	800
Dec 15	550	150	750	6	800

No diversion of water under this authorization shall take place when the streamflow at this station is below the above flows.

This authorization is subject to all downstream control stations and instream flow requirements that may also become controlling and critical to the use of water.

WRITTEN BY: Doug Clausing DATE: 6/10/1993
for Steve Hirschey

APPROVED BY: Doug Clausing DATE: 6/10/1993
Doug Clausing, Section Manager

24x109 ska



APPLICATION FOR PERMIT
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

SURFACE WATER GROUND WATER

\$10.00 MINIMUM STATUTORY EXAMINATION FEE REQUIRED WITH APPLICATION
(GRAY BOXES FOR OFFICE USE ONLY)

APPLICANT'S NAME - PLEASE PRINT
CITY OF LEAVENWORTH
ADDRESS (STREET)
P.O. BOX 287
DATE & PLACE OF INCORPORATION IF APPLICANT IS A CORPORATION

CITY (CITY)
LEAVENWORTH

STATE (STATE)
WASHINGTON

ZIP CODE (ZIP CODE)
98826

BUSINESS TEL. **509-548-5276**
HOME TEL.

1. SOURCE OF SUPPLY

IF SURFACE WATER	IF GROUND WATER
SOURCE (NAME OF STREAM, LAKE, SPRING, ETC.) (IF UNNAMED, SO STATE)	SOURCE (WELL, TUNNEL, INFILTRATION TRENCH, ETC.)
ICE CREEK BIBRARY OF WENATCHEE RIVER	SIZE AND DEPTH

2. USE

USE TO WHICH WATER IS TO BE APPLIED (DOMESTIC SUPPLY, IRRIGATION, MINING, MANUFACTURING, ETC.)
MUNICIPAL SUPPLY

ENTER QUANTITY OF WATER REQUESTED USING UNITS OF: CUBIC FEET PER SECOND OR GALLONS PER MINUTE ACRE FEET PER YEAR

7.8 CFS OR **3000**

TIMES DURING YEAR WATER WILL BE REQUIRED
YEAR-ROUND
CONTINUOUS MUNICIPAL SUPPLY

IF IRRIGATION, NUMBER OF ACRES	IF DOMESTIC USE, NUMBER OF UNITS BY TYPE, E.G. 1-HOME, 1-MOBILE HOME, 2-CAMPSITES, ETC.	IF MUNICIPAL USE, ESTIMATED POPULATION 20 YEARS FROM TODAY
	CURRENT POPULATION SERVED: 1900	2200
DATE PROJECT WAS OR WILL BE STARTED	DATE PROJECT WAS OR WILL BE COMPLETED	

3. LOCATION OF POINT OF DIVERSION/WITHDRAWAL

3A. IF IN PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)	SECTION	TOWNSHIP	RANGE	ALSO, PLEASE ENCLOSE A COPY OF THE PLAT AND MARK THE POINT(S) OF WITHDRAWAL OR DIVERSION

3B. IF NOT IN PLATTED PROPERTY

ON ACCOMPANYING SECTION MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION. SHOW NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER OR PROPERTY CORNER. **SEE ATTACHED DRAWING**

ALSO, ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL.

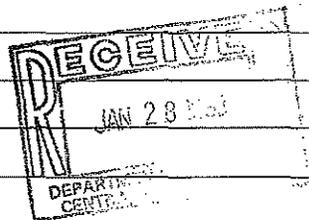
LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
SE 1/4 SE 1/4	28	24N	17E	CHELAN

4. DO YOU OWN THE LAND ON WHICH THIS SOURCE IS LOCATED. IF NOT, INSERT NAME & ADDRESS OF OWNER
WENATCHEE NATIONAL FOREST, 600 SHERBOURNE, LEAVENWORTH, WASHINGTON 98826

5. LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

ATTACH A COPY OF THE LEGAL DESCRIPTION OF THE PROPERTY (ON WHICH THE WATER WILL BE USED) TAKEN FROM A REAL ESTATE CONTRACT, PROPERTY DEED OR TITLE INSURANCE POLICY, OR, COPY CAREFULLY IN THE SPACE BELOW.

AREA SERVED BY CITY OF LEAVENWORTH MUNICIPAL WATER SYSTEM - INCLUDES CITY LIMITS & ICE CREEK ROAD & EAST LEAVENWORTH ROAD.



ARE THERE ANY EXISTING WATER RIGHTS RELATED TO THE LAND ON WHICH THE WATER IS TO BE USED (INCLUDING WATER PROVIDED BY IRRIGATION DISTRICTS OR DITCH COMPANIES.) YES NO

IF YES, FROM WHAT SOURCE (i.e. SURFACE OR GROUND WATER) AND UNDER WHAT AUTHORITY
SURFACE WATER CERTIFICATES 4, 8105, & GROUND WATER CERTIFICATE 437.

6. DESCRIPTION OF SYSTEM PROPOSED OR INSTALLED

(FOR EXAMPLE: SIZE OF PUMP, CAPACITY OF PUMP, PUMP MOTOR HORSE POWER, PIPE DIAMETER, NUMBER OF SPRINKLERS, ETC.)

APPROXIMATELY 16 MILES OF WATER MAINS VARYING IN DIAMETER FROM 4" TO 18." WATER FROM FILTRATION PLANT IS SUPPLIED TO THE SYSTEM PRIMARILY BY GRAVITY BUT DURING HIGH DEMAND PERIODS FLOW IS AUGMENTED BY A 20HP AND A 125 HP PUMP. RESERVOIR CAPACITY IS 750,000 GALLONS.

REMARKS

7. LAND AT INTAKE IS OCCUPIED UNDER A SPECIAL USE PERMIT TO THE CITY FROM THE WENATCHEE NATIONAL FOREST.

IF 10 ACRE-FEET OR MORE OF WATER IS TO BE STORED AND/OR IF THE WATER DEPTH WILL BE 10 FEET OR MORE AT THE DEEPEST POINT, A STORAGE PERMIT MUST BE FILED IN ADDITION TO THIS PERMIT. THESE FORMS CAN BE SECURED, TOGETHER WITH INSTRUCTIONS, FROM THE DEPARTMENT OF ECOLOGY.

SIGNATURES

WENATCHEE NATIONAL FOREST
LEGAL LANDOWNER'S NAME
(PLEASE PRINT)

E. Jordan Young
APPLICANT'S SIGNATURE
Stephen L. Morton, D.R.
LEGAL LANDOWNER'S SIGNATURE
Leavenworth Ranger District
600 SHERBOURNE, LEAVENWORTH, WA.
LEGAL LANDOWNER'S ADDRESS 98826

FOR OFFICE USE ONLY

STATE OF WASHINGTON }
DEPARTMENT OF ECOLOGY } SS.

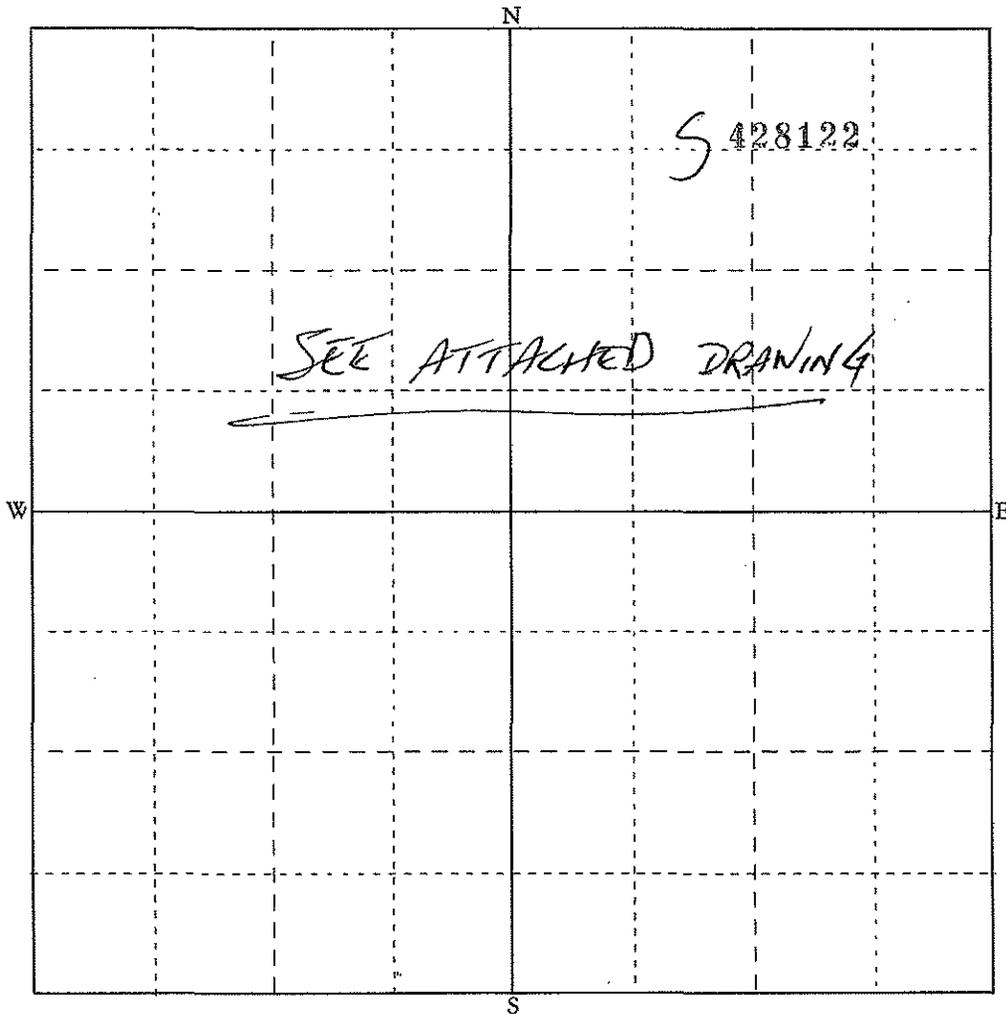
This is to certify that I have examined this application together with the accompanying maps and data, and am returning it for correction or completion as follows:

In order to retain its priority date, this application must be returned to the Department of Ecology, with corrections, on or before....., 19.....

Witness my hand this.....day of....., 19.....

SECTION MAP

Sec. 28 Twp. 24N N. R. 17E



Scale: 1 inch = 800 feet (each small square = 10 acres)

Show by a cross (X) the location of point of diversion (surface water source) or point of withdrawal (ground water source). For ground water applications, show by a circle (O) the locations of other wells or works within a quarter of a mile. Indicate traveling directions from nearest town in space below.

APPROXIMATELY 4 1/2 MILES FROM HIGHWAY 2 ALONG
TRILLE ROAD (CASCADE ORCHARDS ROAD).

Detach here

Fold along scale



Detach this scale at the perforation, fold excess paper under or cut off excess by cutting along the scale line. This scale corresponds to the SECTION MAP above. You can read feet directly from this scale to outline property and locate points of diversion or withdrawal on the SECTION MAP. Enclose this map along with the application and \$10.00 examination fee.



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

3601 W. Washington • Yakima, Washington 98903-1164 • (509) 575-2800

April 12, 1995
CERTIFIED MAIL
Z 744 402 019

City of Leavenworth
PO Box 287
Leavenworth WA 98826-0287

RE: Ground Water Application No. G4-29958 - Amended Report

Your application has been approved and a permit will be issued in accordance with the enclosed Amended Report of Examination upon payment of the statutory fee of \$20.00. Please make your check payable to the Department of Ecology.

This letter and enclosed Amended Report of Examination constitute our determination and order. You have the right to obtain review of this order. Request for review must be made, within thirty (30) days of receipt of this order, to the Washington Pollution Control Hearings Board, PO Box 40903, Olympia, Washington 98504-0903. Concurrently, a copy of the request must be sent to the Department of Ecology, PO Box 47600, Olympia, Washington 98504-7600. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

Please send your permit fee within 30 days.

Sincerely,

Darlene M. Frye, Section Manager
Shorelands and Water Resources Program
Central Regional Office
ska

Enclosure(s): Amended Report of Examination

cc: Colville Confederated Tribes
Yakama Indian Nation

f-2:Form
(08/13/92)



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Amends REPORT OF EXAMINATION dated June 10, 1993

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

Surface Water

(Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

Ground Water

(Issued in accordance with the provisions of Chapter 253, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE April 14, 1989	APPLICATION NUMBER G4-29958	PERMIT NUMBER	CERTIFICATE NUMBER
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NAME City of Leavenworth			
ADDRESS (STREET) PO Box 287	(CITY) Leavenworth	(STATE) Washington	(ZIP CODE) 98826-0287

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
three (3) wells

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE 2,000	MAXIMUM ACRE-FEET PER YEAR 900
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QUANTITY, TYPE OF USE, PERIOD OF USE

2,000 gpm (primary instantaneous) to be used for municipal supply (year-round when not interrupted). The annual quantity of up to 810 acre-feet is supplemental (not in addition to pre-existing rights). The annual quantity of up to 90 acre-feet is primary (in addition to pre-existing rights) but is not in addition to the 90 acre-feet of annual primary duty allocated under Application No. S4-28122.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL

1,000 feet west and 2,800 feet north of the southeast corner of Section 14.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) SW¼SE¼NE¼	SECTION 14	TOWNSHIP N. 24	RANGE, (E. OR W.) W.M. 17 E.	W.R.L.A. 45	COUNTY Chelan
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RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
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LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Service area of the City of Leavenworth as described in Comprehensive Water Plan 1988 as revised in 1993. Water use under this right shall be within the place of use described in the most current Comprehensive Water Plan.

DESCRIPTION OF PROPOSED WORKS

Three wells; 12" x 102', 16" x 200', 8" x 84.5'

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Begin	June 1, 2006	June 1, 2014

AMENDED REPORT

BACKGROUND:

This amended report is written in response to the Stipulation and Agreed Order of Dismissal (Pollution Cont Hearings Board No. 93-149) dated February 9, 1994. This amended report supersedes the original report dated June 10, 1993. The stipulated amendments include changing 90 acre-feet of the original supplemental annual allocation to a primary water right allocation. Also, requirements are described for conservation and efficient measures to be developed and implemented.

On April 14, 1989 the City of Leavenworth (City) filed an application (G4-29958) to appropriate 3,000 gallons per minute (gpm) of water, 2,400 acre-feet per year for continuous municipal use, from three wells (a well field adjacent to the Wenatchee River. Because of the proximity of the well field to the Wenatchee River and the regional geology, the City was advised that in all likelihood water withdrawn from the well field would be hydraulic continuity with the Wenatchee River. If there was hydraulic continuity, any permit issued by the Department of Ecology (Department) would be conditioned with the low flow provisions of chapter 173-50 Washington Administrative Code (WAC). In response, the City filed a request to be exempt from the instream flow requirements of WAC 173-545.

The City of Leavenworth has two previously authorized sources of water for municipal supply, a surface diversion on Icicle Creek and an infiltration gallery near the Wenatchee River. They also have a surface water application (S4-28122) which is being evaluated concurrently. These applications were filed as part of the City plan to resolve long-standing water system problems. While the deliberative process for this application is separate and distinct from that of Surface Water Application No. S4-28122, a better understanding of Leavenworth's needs can be gained by reviewing the Department's determination on that application.

INVESTIGATION:

The following facts were obtained from office research, conversations with Mr. Mike Cecka (City of Leavenworth Administrator) and Tom Justus (Department of Health, Spokane), the City of Leavenworth's Comprehensive Water Plans for 1988 (revised in 1993), and revised water demand forecasts (memorandum dated August 13, 1991), and a field inspection conducted July 8, 1992.

Public notice of the proposed appropriation was published in the Leavenworth Echo for two consecutive weeks starting on May 10, 1989 and ending on May 17, 1989.

No public protests were received, however, the Washington State Departments of Fisheries and Wildlife commented on the proposed appropriation.

A temporary permit was issued on February 1, 1990, for water use during the pendency of application review. The temporary permit authorized the diversion of 2,000 gpm, 1,700 acre-feet, within the time period March 1 to September 30, for the purposes of municipal supply, subject to instream flow requirements of WAC 173-545. That temporary permit authorization will be rescinded concurrently with issuance of the permit recommended by this report and order.

Existing Rights Held By The City

A Chelan County Superior Court General Adjudication decree signed on October 28, 1929 confirmed the City's right to take up to 1.52 cubic feet per second (cfs) of water for municipal supply (Certificate No. 4 of the Icicle Creek Adjudication) from Icicle Creek. The priority date of that right is 1912. The point of diversion confirmed by the Court Decree is within the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. Since the City's diversion is located within the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, it appears that an application for change of point of diversion is needed. The water right is appurtenant to all property within the corporate limits of the City of Leavenworth.

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Ground Water Certificate No. 437-A authorizes withdrawal of 1,000 gpm, 1,100 acre-feet per year for irrigation and domestic supply from an infiltration gallery located within the SW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 14, T. 24 N., R. 17 E.W.M. for municipal use within the corporate limits of the City. This water right defines the total annual diversion as 1,100 acre-feet for a projected population of 2,000 under the two water rights or 490 gpd per capita. The priority date is March 14, 1949. The infiltration gallery is located along the north bank of the Wenatchee River. The intent of this authorization in 1949 was to supplant the use of water from Icicle Creek as confirmed in the adjudication. However, the diversion of water by the City on Icicle Creek continued subsequent to the development of the infiltration gallery. The Icicle Creek source is and always has been an integral part of the City's system. Since the City has continuously used the Icicle Creek diversion, made continuous beneficial use of the water and did not relinquish it, Ecology recognizes both the Icicle Creek adjudicated right and the authorization pursuant to Certificate No. 437-A as valid. The City filed an application for change to add a point of withdrawal and change the place of use on Certificate No. 437-A on March 16, 1989. The request was approved in a decision issued on January 12, 1990. A Superseding Certificate has not yet been issued. There is no instream flow provision attached to this water right.

Surface Water Certificate No. 8105 (Certificate Record No. 17, Page No. 8105), authorizes diversion of 1.50 cfs from Icicle Creek and seepage waters from an infiltration gallery adjacent to the creek channel for the purpose of municipal supply within the area served by the City of Leavenworth. The Certificate was issued on April 2, 1961, priority date of June 20, 1960. The points of diversion are located within the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 2, T. 24 N., R. 17 E.W.M. An application for change of water right was filed for this right on January 28, 1988 to change the point of diversion upstream to the place the City was actually taking the water. On January 1, 1990 the Department issued a decision on the application for change in point of diversion. A change in the point of diversion was authorized. The location of the point of diversion is now 1,200 feet north and 1,240 feet west of the southeast corner of Section 28, being within the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28, T. 24 N., R. 17 E.W.M. Although no value was identified for the total acre-feet per year, a reasonable quantity can be calculated based upon the per capita demand used for Certificate No. 437-A and multiplying by the projected 2,500 population for 1980. Thus 275 acre-feet should be used in addition to the previous rights totaling 1,100 acre-feet per year.

Surface Water Certificate No. 9707, priority date of June 4, 1965, authorizes the diversion of 0.54 cfs, 106 acre feet per year from the Wenatchee River, for the irrigation of 27 acres (golf course), the water being appurtenant to the E $\frac{1}{2}$ E $\frac{1}{2}$ NE $\frac{1}{4}$ of Section 14, T. 24 N., R. 17 E.W.M. The point of diversion is located in the W $\frac{1}{2}$ W $\frac{1}{2}$ NW $\frac{1}{4}$ of Section 13, T. 24 N., R. 17 E.W.M. There is no instream flow provision attached to this water right.

Well Field

The existing 16 and 12 inch wells together can produce 2,100 gpm of which 1,000 gpm is authorized by the change to Certificate No. 437-A. While the pumps in the old infiltration gallery can be operated, they are not used routinely by the City. The City will maintain the infiltration gallery as a backup emergency source only.

The City developed a well field for several reasons:

- o To replace regular use of the infiltration gallery due to its age, probable lack of significant water quality protection, and inability to fully use existing Certificate No. 437-A. Well field supply in excess of the amount needed to replace the collector well will be developed to meet peak demands projected to exceed present supply capacity, and
- o To supplement and/or replace the Icicle Creek supply during periods of high turbidity in Icicle Creek or during emergency shut-down of the filter plant, or reduction of the Icicle Creek diversion during periods when instream flows are not being satisfied.

The City proposed three wells on the application form with the intent to both replace the 1,000 gpm under Certificate No. 437-A and to add instantaneous capacity of up to 2,000 gpm.

What the City has done varies from what was proposed on the application. The City constructed four wells in the vicinity of the old collector well. The well field is located approximately 1,000 feet west and 2,800 feet north of the southeast corner of Section 14, T. 24 N., R. 17 E.W.M. All of the wells are within 200 feet of each other. Two wells, a 12 inch and 16 inch, are currently producing ground water, one of the wells, an 8 inch, can be fitted with a pump and hooked into the pumphouse when needed, and the fourth well is an observation well.

A summary of the four wells, as constructed, is as follows:

- o Six (6) inch observation well, Start Card No. 16144, drilled to 204 feet, completed at 196 feet, constructed in June of 1988.

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- o Eight (8) inch well, Start Card No. 16170, no pump currently, but plans are for a 60 horsepower submersible, drilled to 85 feet, completed to 84½ feet, screened interval from 66 to 81½ feet, constructed in August of 1988.
- o Twelve (12) inch well, Start Card No. 6340, 125 horsepower line-shaft turbine, 1300 gpm, drilled 104 feet, screened interval from 93.5 to 102 feet, constructed in 1989.
- o Sixteen (16) inch well, 75 horsepower submersible, 800 gpm, constructed in September of 1989.

The pumphouse is constructed for three wells and that is all the City anticipates using for water production this time.

The temporary permit which issued was for the time period March 1 through September 30. The City would like to use the full capacity of the well field year-round to provide base demand when the filter plant is out of operation and as an emergency source.

Fisheries Issues

On April 26, 1989, the Department of Wildlife requested that the diversion be subject to the low flow provision of WAC 173-545.

On May 26, 1989 the Department of Fisheries requested that the diversion be subject to the low flow provision of WAC 173-545.

Hydraulic Continuity

To assist the City's consultant in design and location of the well field, Bob Barwin from the Department made preliminary assessments of the potential hydraulic continuity between the various proposed well field sites and the Wenatchee River. The goal was to find and develop a well field not in hydraulic continuity with the Wenatchee River. The assessment indicated that in all likelihood any high yield wells developed would be in significant hydraulic continuity with the Wenatchee River.

The well field developed by the City is situated within a bend of the Wenatchee River with the river about 1,000 feet west, 120 feet south and 2,000 feet east of the wells. Approximately 2,500 linear feet of river channel lie within a 1,000 foot radius of well field.

The two wells in production penetrate an unconfined aquifer about 3.15 square miles in area that underlies the confluence of Icicle Creek and the Wenatchee River. The aquifer is surrounded by bedrock ridges and the depth to bedrock in the valley fill appears to be no more than 200 feet. The aquifer terminates up the Wenatchee River just above the City and up Icicle Creek about three miles south of the City. Both the Wenatchee River and Icicle Creek emerge from bedrock canyons at these locations. The aquifer appears to pinch-out about one-half mile downstream of the City where the valley narrows and the Wenatchee River cuts near bedrock.

The aquifer is not part of any larger, regional ground water system. Rather, it is recharged by precipitation and streambed leakage from Icicle Creek and the Wenatchee River and discharges back to the Wenatchee River below Leavenworth. Because the aquifer discharges to the Wenatchee River, any water removed from the aquifer and not returned to the river will cause a decrease in streamflow.

The City and the City's consultants believe, based on analysis of data collected during a January, 1989, 50-hour aquifer pump test of the 12 inch well that the majority of water will come from aquifer storage. The storage is assumed to be replenished during the high-flow, winter season. The consultants describe the valley fill as composed of two aquifers, one at a depth of 30 to 90 feet below land surface and the other at 140 to 180 feet deep. They believe these aquifers are separated by a semi-confining layer and are separated from the Wenatchee River by a semi-impervious streambed.

Department review of the time-drawdown curves for the aquifer test data and the drawdown recovery data demonstrates similar drawdown response in all wells and their rapid recovery indicates little confinement between the upper and lower portions of the saturated zone. One aquifer is evident, albeit one that is non-homogeneous with non-continuous lenses of differing hydraulic conductivity. Therefore, pumping at any depth in the aquifer will influence, in a relatively short time, the hydraulic head throughout the depth of this single unit. This conclusion is reinforced by the similar static water levels recorded by the consultant for all observation wells.

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Hydraulic continuity between the aquifer and the river is dependent on whether the Wenatchee River is isolated from the aquifer by a streambed of low permeability. The Department discovered nothing during site visits in any of the well logs analyzed that would indicate sediments of low permeability in the riverbed or the aquifer in this vicinity. In addition, the static water levels in the subject wells are not only similar to one another, but are also similar to the surface of the Wenatchee River and fluctuate with the river levels. This indicates that the river and the aquifer are hydraulically connected, and that the hydraulic conductivity of the riverbed is not so low as to significantly isolate the two. As discussed earlier, we believe this aquifer is not extensive (regional). Recharge is primarily from the Wenatchee River and Icicle Creek in the upper stretch of the aquifer and discharge is to the Wenatchee River at the basin outlet.

As a first approximation to the question of continuity, the Department ran through the calculations present by Jenkins (1968) in "Computation of Rate and Volume of Stream Depletion by Wells." This procedure assumes the river is a recharge boundary that fully penetrates the aquifer and recharge from the river is directly proportional to the aquifer transmissivity (T). That is, recharge is not limited by a streambed of low permeability.

For this calculation, the Department used the data from the consultant's March 28, 1989 report. T was 60,000 sq.ft./day, specific yield (S) was 0.009, the distance to the river was 120 feet, at the pumping rate was 1,000 gpm. The Jenkins method predicted that within 3.5 minutes 50% of the water pumped from a well at this location would be extracted from the river. Furthermore, within five hours river depletion would equal 95% of the pumping rate.

The consultant's data indicate that this did not occur. The drawdown did not reach equilibrium during the two-day test, as the Jenkins Method would predict. However, the tendency to reach equilibrium may have been retarded in this case by the opposite effects of the nearby barrier boundary (bedrock) and a permeability of the riverbed less than the hydraulic conductivity of the aquifer. The Jenkins method calculation indicates how rapidly the effects of the pumping reach the vicinity of the river. Recognition must be made of the variations of field conditions from ideal textbook conditions when applying mathematical analyses. The variations do not negate the utility of the method, but rather dictate caution in its use.

The lack of equilibration does not, by itself, prove that the pumping was not inducing recharge from the river or diminishing aquifer discharge to the river, only that the recharge rate was not yet equal to the pumping rate. If pumping had continued longer than two days, equilibrium may have been reached as the cone of depression spread farther along the river. It is the Department's opinion that the two-day aquifer test was too short, an pumping until equilibrium was reached would have been more appropriate.

When the drawdown in an aquifer caused by pumping reaches an equilibrium condition, all water pumped from that time on is being replaced by some form of recharge. In this aquifer, the source of summer recharge is limited to Icicle Creek and the Wenatchee River. There is no significant throughflow of ground water that can replenish the aquifer. Extraction of ground water flow is simply intercepting water that normally feeds the Wenatchee River at some point downstream, probably near the basin outlet below Leavenworth, or it represents extraction of water which directly infiltrates into the aquifer from the river.

Norris, in a 1983 paper on aquifer tests along the Scioto River in Ohio, found stream-leakage rates between 76 gallons/minute/acre/feet and 1,100 gallons/minute/acre/feet. Like the Wenatchee, the Scioto River passes through a bedrock valley filled with sand and gravel deposits of glacial and fluvial origin.

Even at relatively low rates, induced recharge from the river can be large. According to interpretation of the consultant's data, the radius of influence of the production well was about 1,000 feet after two days of pumping. The minimum length of river channel within this radius is about 2,500 feet. Assuming a width of 100 feet results in a wetted area (within the radius) of about 5.75 acres of influence. If we further assume that the depth of the river (1.5 feet) is the only head difference causing leakage (a conservative approach) and that the leakage rate is 87 gallons/minute/acre/feet, then the stream-leakage is 720 gpm. This is not quite equal to the 1,000 gpm pumping rate, but it is close and would seem to be consistent with a slowly expanding cone of depression.

As drawdown increases, and the cone of depression expands, more of the channel will fall within the radius of influence. Even with this low leakage rate, only an additional 1,000 feet of river channel is required to provide 100% of the pumping rate via streambed leakage. Induced recharge would be significantly greater if a greater leakage rate or a higher head differential to drive the leakage were assumed.

The calculations presented here are admittedly less than definitive, however, the proposition that pumping will induce recharge from the river is much more likely, than the proposition that the streambed is sealed. The Wenatchee River is a high energy system with large spring floods. The bed sediments are relatively coarse, move frequently, and should be difficult to seal. Few fine sediments are carried by this river when compared to many rivers of lower energy.

Amended Report Continued

Even if the consultant is correct in concluding that the induced recharge from the river was less than 20% the pumping rate after two days of pumping, there is little reason to believe that it will remain that percentage. As pumping continues beyond two days, the Department expects the induced recharge to exceed 50% of the pumping rate and to approach 100%.

It is the Department's opinion that upon reaching steady state conditions the proposed well would be extracting more than 50% of the pumped water from the Wenatchee River. Furthermore, we believe that steady state conditions would be reached at some point during the anticipated minimum flow conditions on the Wenatchee River at which time 100% of the pumped water would be impacting river flows. In any case whether the impact is 20% or some higher percentage, there would be an adverse effect upon the minimum flow level in the Wenatchee River.

Future Water Demand Projection

The future water needs of the City are addressed in the Comprehensive Water Plans and an August 13, 1993 letter to the Department from Mr. Cecka. While the 1988 Comprehensive Water Plan talks about future water requirements, the discussion does not factor in information from the metering program nor contemplate lifting of the moratoriums on water hook-ups. The August 13 letter was requested by the Department as part of the information base to assess the exemption request and was to include information from the metering program as well as demand projections if the moratoriums were lifted. The 1993 revisions to the City's Comprehensive Water Plan take these factors into account.

The City used the following assumptions to calculate future service connections outside the City limits and within its service area:

- o The 60% growth rate for the Leavenworth-Lake Wenatchee County Census Division experienced between 1980 and 1990 is representative of the area which overlaps with the City's service area,
- o The 60% growth rate will continue for the next ten years, and
- o There are approximately 400 dwelling units (1990 figure) within the City's service area, outside the City limits and 75% of these will want City water.

Based on the above, the City projects a population of 3,823 by 2011 or 1,687 services. Summing up the growth inside and outside City projected growth results in 683 additional services by 2011. The City based future water demand projections on a per dwelling water use of 2,017 gallons per unit (peak instantaneous demand at 1,345 gallons per peak day). The peak instantaneous demand is valuable for design of reservoir storage and transmission pipe sizing. The 1,345 gallons peak day of water per residential hook-up includes outside watering.

The City currently has 1,375 acre-feet in water rights. The City's currently authorized annual quantities exceed all reasonable expectations of demand by the year 2011. If the projected 3,823 population is realized, the current 1,375 acre-feet would allow delivery of up to 320 gallons per capita based on an average day. The current figure matches the gallons per capita per day (GPCD) annual average for 1990 and the demand trend is dropping. The City and Ecology have agreed to use 342 GPCD or 1,465 acre-feet per year for Leavenworth's projected population of 3,823 by the year 2011. The annual primary water right authorization will be 90 acre-feet per year. Leavenworth will work with its water users to attempt to reduce GPCD below 342 by the year 2000 with a goal of attaining 320 GPCD by the year 2014. In the event the goal is not achieved, there shall be no adverse consequence to the city of Leavenworth. Leavenworth will at all times make a good faith effort to enhance water conservation.

Leavenworth shall develop and implement a program for encouraging conservation and water efficiency by its water users. The program shall include a conservation plan, a water efficiency plan, a system improvement plan and an action plan and schedule for implementation. The program shall be submitted to Ecology for approval by June 1, 1997. Leavenworth shall provide Ecology with an annual progress report including: compliance with each of the program plans, amount of annual water use (total and GPCD) and future plans.

Leavenworth shall develop and implement a program for identifying and reducing unaccounted water uses to 15% of water use. The program shall include an identification plan, a system improvement plan and an action plan and schedule for implementation. The program shall be submitted to Ecology for approval by June 1, 1997. Leavenworth shall provide Ecology with an annual progress report including: compliance with each of the program plans, and amount and percentage of unaccounted use. Reports shall be provided to: Water Resources Section Supervisor, Department of Ecology, Central Regional Office, 3601 West Washington Yakima, WA 98903, or its successor.

Amended Report Continued

Instream Flow Exemption Request

The Wenatchee River can be expected to fall below the established instream-flow levels for several months during at least one year out of ten and for short periods of time as frequently as five years out of ten. River withdrawals during these times are not allowed. Ground water withdrawal from wells in significant continuities are subject to the same restrictions.

A request for the proposed water withdrawal under G4-29958 to be exempt from the instream flows was submitted by the City on June 21, 1989. The request was submitted in case the Department made a determination that the proposed well field will significantly affect Wenatchee River flows.

To support its exemption request, the City was asked by the Department to document the following:

- o A list of other existing sources and quantities withdrawn by the supplier,
- o The water supply service area and the number and type of customers to be served by the proposed withdrawal,
- o A water conservation plan outlining means for effecting a significant reduction of water demand during the low flow periods,
- o Alternative sources of water considered and the analysis performed leading to rejecting alternatives in favor of the applied for withdrawal, and
- o All other data necessary, as determined by the Department, to evaluate the merits of the requested exemption.

The requested exemption was evaluated in accordance with the following criteria:

- o Have alternative sources been explored by the proponent? If so, were they rejected for good reasons (economic, environmental, or engineering nonfeasibility)?
- o Would exemption of the proposed withdrawal result in maximization of net benefits in the use of public water? Specifically, would the benefits of a virtually assured water source outweigh the losses occurring to instream values?
- o Would overriding considerations of the public interest be served through exempting the proposed withdrawal from the instream flows?
- o Would rejection of the exemption result in undue hardship to the recipients of water from the proposed withdrawal resulting from a cutoff of water to meet basic human needs? Does the proponent have other existing firm sources available that could be used to meet basic human needs (in-house domestic use) during the periods in which the proposed withdrawal would be shut down due to low instream flows?
- o Does the proposed exemption request incorporate an emergency water conservation plan outlining measures for reducing withdrawals to that level necessary to meet basic human needs during times of drought?

The City's letter of June 21, 1989 satisfied part of the above requirements. On September 15, 1989 the Department informed the City that the exemption request as submitted did not satisfy the criteria for granting an exemption to the Wenatchee River Instream Resources Protection Program and outlined additional information needs. The letter of September 15, 1989 requested additional information on:

- o The number of single family residences using significant amounts of City water to irrigate lawns larger than 1/2 acre in area, and the type of future expansion Leavenworth was planning for. The City was informed that an exemption to the instream flows could only be granted for essential water uses, and that they needed to document that the water withdrawn under the exemption would be used to meet basic human needs.
- o How the water conservation plan would be implemented, education programs, and enforcement techniques should voluntary compliance fail.
- o What potential well sites were evaluated, why they were rejected, and the purchase and transfer of existing water rights held by others to the City.

Amended Report Continued

The City was requested to demonstrate through its conservation, efficiency, and water demand projection efforts that waters withdrawn under the exemption would not be wasted, and in fact be the highest and best use water. It was the Department's position that the City could not do this, until it could account for the water currently used under existing rights and demonstrate a need for additional water to meet basic human needs. The City was advised on September 15, 1989 that the Department could not make a determination on the requested exemption until the metering program was finished. Only after the metering program was complete and water use data collected could the City show that water used under the exemption would be for essential purposes and provide an accurate future water demand projection. The revised demand projections developed with data gathered from the metering program do not demonstrate that water withdrawn under an exemption would be used to meet basic human needs.

The City responded to the September 15, 1989 letter regarding the information submitted and the adequacy of that information through numerous letters, conversations, and a meeting on September 28, 1989. The City maintains that water use under the exemption would occur for a short time period, only three to five weeks a year, during the months of August and September.

The alternative sources of water potentially available to the City were evaluated in a letter to the Department dated August 13, 1991. The alternatives assessed were:

- o Purchase of additional water rights from Icicle Creek Irrigation District, Cascade Orchards Irrigation Company or others;
- o Participate in irrigation system improvements to reduce leakage losses thereby reducing the amount of water diverted for irrigation. This would in-turn aid instream flows and delay or avoid the restriction of the conditional water rights;
- o Transfer water rights held by people in the Cascade Orchards Irrigation Company who irrigate with City water and do not use ditch water;
- o Participate in a repair of Eight Mile Lake's outlet valve to provide additional storage in the lake for release and use in the late summer.

The purchase of additional water rights from Icicle Creek Irrigation District, Cascade Orchards Irrigation Company or others did not appear reasonable to the City. Icicle Creek Irrigation District told the City they were fully using their water right and would not sell water at any price. No discussion is provided as to how much the City would be willing to pay for additional water from the irrigation district and said there would be an adverse economic impact associated with taking land out of orchard production to serve domestic users. Cascade Orchards Irrigation serves pasture land within the City's water service area. The City thinks purchase of these rights would be counter-productive because lawn watering/pasture irrigation would have to be done with City water. In either case, the City states the purchase of irrigation rights would be expensive, would generate ill-will with neighbors, and would have adverse land use and economic impacts. No quantitative assessment of economic impacts created by moving water or the cost of irrigation water was provided. Without cost assessments it is impossible for the Department to determine if these alternative sources are reasonable.

To participate in irrigation system improvements to reduce leakage would involve substantial costs to the City and the City is unsure the benefits derived would justify the costs. Again, the City did not estimate what those costs might be and stated that City capital investments are needed elsewhere for water system improvements.

The City states the transfer of Cascade Orchards Irrigation Company water to the City for those who irrigate with City water and do not use ditch water is not viable. Since the metering program, the City states outside-city water users have used less water than in-city residents and that those outside-city water users have converted to using ditch water.

The repair of the Eight Mile Lake outlet valve and use of additional storage by the City was not assessed. The City stated that this option depends on the ability of the City and irrigation company negotiating an agreement and costs being within reason. That is reasonable, and the Department maintains it is reasonable to explore this option to, at a minimum, determine the cost and volume of water potentially available.

An exemption of the proposed withdrawal from regulation in favor of base flow would not result in maximization of net benefits in the use of public water. In all likelihood, water withdrawn under an exemption would be used for lawn irrigation. The granting of an exemption for use of water that is not to meet basic human needs is not in the public's interest when critical instream flows would be diminished.

Amended Report Continued

Rejection of the exemption request will not result in undue hardships to City water users. For the next 20 years and probably to full build-out, the City has existing firm sources available to meet in-house domestic needs in addition to their industrial/commercial obligations during the months of July, August, and September. Rehabilitation of the existing reservoir along with construction of additional storage would enable the City to meet peak hour demand without exceeding their water rights.

The proposed exemption request did not incorporate an emergency water conservation plan outlining measures for reducing withdrawals to that level necessary to meet basic human needs during times of drought. The City did not make an assessment of what level of water is necessary to meet basic human needs.

In assessing the responses of the City to the various criteria used to judge the exemption request, the Department does not find that the City has demonstrated that overriding considerations of the public interest exist upon which to grant an exemption.

CONCLUSIONS:

The development of the well field and use of water under the proposed application would provide the City with flexibility in system operation and provide emergency backup facilities should the primary source (Icicle Cree) not be available.

Significant hydraulic continuity exists between the well field and the Wenatchee River. While the collection of more data, especially a pump test on each of the City's wells until drawdown reaches equilibrium, would clarify the extent of hydraulic continuity between the Wenatchee River and the well field, the Department views the existing data as adequate to demonstrate hydraulic continuity.

The natural flow of the Wenatchee River at Plain, Washington is expected to fall below the instream flow established in WAC 173-545 for several months during at least one year out of ten and for short periods of time as frequently as five years out of ten. River water in excess of that necessary to satisfy existing rights is available for appropriation during the time period June through September on a limited basis.

There has been no demonstration that overriding considerations of the public interest will be served by an exemption of the City's water right from WAC 173-545.

The Department recognizes the limited availability of water in the entire Wenatchee basin. When the City can demonstrate they in fact need water to meet basic human needs, and that water should come at the expense of instream uses, then they should make an application for an exemption.

The temporary permit which issued on February 1, 1990 will be canceled concurrently with issuance of a permit under application G4-29958.

Reasonable use of water for the City's municipal supply is a beneficial use of water. Based on available information, the withdrawal as recommended will not impair existing rights nor be contrary to the public interest so long as permit provisions are adhered to.

RECOMMENDATIONS:

I recommend that a permit be issued to the City of Leavenworth permitting the withdrawal of up to 2,000 gpm or 900 acre-feet per year (assuming operation at full capacity for 100 days, with up to 810 acre-feet per year of this 900 acre-feet per year to be supplemental to existing City rights, and up to 90 acre-feet per year of this 900 acre-feet per year to be a primary right but not in addition to the 90 acre-feet per year of primary duty allocated under Surface Water Application No. S4-28122), for continuous municipal supply subject to provisions of the permit. The recommended amount is a reduction from the 3,000 gpm requested.

The applicant is advised that this permit approval is subject to the following provisions:

The primary allocation of up to 90 acre-feet per year shall be perfected to the extent of actual use in excess of 1,375 acre-feet per year allocated under pre-existing water rights. For purposes of administering the Wenatchee River instream flow regulations, the City will be required to report the locations, purposes and quantities of water used under the primary water right allocation.

The public water system shall comply with all applicable provisions of the Interim Guidelines for Public Water Systems regarding water use reporting, demand forecasting methodology, and conservation programs or rules later adopted for implementing the interim guidelines.

This authorization is subject to the implementation of the minimum requirements established in the Interim Guidelines for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology and Conservation Programs, July 1990.

Amended Report Continued

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-16⁰ (Minimum Standards for Construction and Maintenance of Water Wells).

This authorization is subject to the provisions of Chapter 173-545 WAC as adopted and the general rules of the Department of Ecology as specified in Chapter 173-500 WAC.

Instream flows as established at monitoring station 12.4590.00 (Wenatchee River at Peshastin) at river mile 21.5, Section 8, T. 24 N., R. 18 E.W.M., and as presented in the table below shall be protected by regulation and diversions.

Instream flow hydrographs, as represented in the document entitled "Wenatchee River Basin Instream Resource Protection Program" dated February 1983 shall be used for definition of instream flows on those days not specifically identified below.

Primary Control Station: 12.4590.00 (Wenatchee River at Peshastin)
River Mile: 21.5

Instream Flows in the Wenatchee River Basin
(instantaneous cubic feet per second)

	Wenatchee River at Plain	Icicle Creek near Leavenworth	Wenatchee River at Peshastin	Mission Creek near Cashmere	Wenatchee River at Monitor
STATION:	12.4570.00	12.4585.00	12.4590.00	12.4620.00	12.4625.00
RIVER MILE:	(46.2)	(1.5)	(21.5)	(1.5)	(7.0)
Jan 1	550	120	700	6	820
Jan 15	550	120	700	6	820
Feb 1	550	120	700	6	820
Feb 15	550	120	700	6	800
Mar 1	550	150	750	6	800
Mar 15	700	170	940	11	1040
Apr 1	910	200	1300	22	1350
Apr 15	1150	300	1750	40	1750
May 1	1500	450	2200	40	2200
May 15	2000	660	2800	40	2800
Jun 1	2500	1000	3500	28	3500
Jun 15	2000	660	2600	20	2400
Jul 1	1500	450	1900	14	1700
Jul 15	1200	300	1400	10	1200
Aug 1	880	200	1000	7	800
Aug 15	700	170	840	5	700
Sep 1	660	130	820	4	700
Sep 15	620	130	780	4	700
Oct 1	580	130	750	4	700
Oct 15	520	130	700	5	700
Nov 1	550	150	750	6	800
Nov 15	550	150	750	6	800
Dec 1	550	150	750	6	800
Dec 15	550	150	750	6	800

No diversion of water under this authorization shall take place when the stream flow at this station is below the above flows.

This authorization is subject to all downstream control stations and instream flow requirements that may also become controlling and critical to the use of water.

REPORT BY: Doug Clausing DATE: 4/10/1995
Doug Clausing

APPROVED BY: Darlene M. Frye DATE: April 10, 1995
Darlene M. Frye, Section Manager

23x109 ska

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PERMIT

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

- Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)
- Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE April 14, 1989	APPLICATION NUMBER G4-29958	PERMIT NUMBER G4-29958P	CERTIFICATE NUMBER
---------------------------------	--------------------------------	----------------------------	--------------------

NAME City of Leavenworth			
ADDRESS (STREET) PO Box 287	(CITY) Leavenworth	(STATE) Washington	(ZIP CODE) 98826-0287

The applicant is, pursuant to the Report of Examination which has been accepted by the applicant, hereby granted a permit to appropriate the following described public waters of the State of Washington, subject to existing rights and to the limitations and provisions set out herein.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE three (3) wells
TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE 2,000	MAXIMUM ACRE-FEET PER YEAR 900
-------------------------------	-------------------------------------	-----------------------------------

QUANTITY, TYPE OF USE, PERIOD OF USE

2,000 gpm (primary instantaneous) to be used for municipal supply (year-round when not interrupted). The annual quantity of up to 810 acre-feet is supplemental (not in addition to pre-existing rights). The annual quantity of up to 90 acre-feet is primary (in addition to pre-existing rights) but is not in addition to the 90 acre-feet of annual primary duty allocated under Application No. S4-28122.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL

1,000 feet west and 2,800 feet north of the southeast corner of Section 14.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) SW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	SECTION 14	TOWNSHIP N. 24	RANGE, (E. OR W.) W.M. 17 E.	W.R.L.A. 45	COUNTY Chelan
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RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
-----	-------	------------------------------------

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Service area of the City of Leavenworth as described in Comprehensive Water Plan 1988 as revised in 1993. Water use under this right shall be within the place of use described in the most current Comprehensive Water Plan.

FILE COPY

DESCRIPTION OF PROPOSED WORKS

Three wells; 12" x 102', 16" x 200', 8" x 84.5'

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE: Begun	COMPLETE PROJECT BY THIS DATE: June 1, 2006	WATER PUT TO FULL USE BY THIS DATE: June 1, 2014
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PROVISIONS

The primary allocation of up to 90 acre-feet per year shall be perfected to the extent of actual use in excess of 1.375 acre-feet per year allocated under pre-existing water rights. For purposes of administering the Wenatchee River instream flow regulations, the City will be required to report the locations, purposes and quantities of water used under the primary water right allocation.

The public water system shall comply with all applicable provisions of the Interim Guidelines for Public Water Systems regarding water use reporting, demand forecasting methodology, and conservation programs or rules later adopted for implementing the interim guidelines.

This authorization is subject to the implementation of the minimum requirements established in the Interim Guidelines for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology and Conservation Programs, July 1990.

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells).

This authorization is subject to the provisions of Chapter 173-545 WAC as adopted and the general rules of the Department of Ecology as specified in Chapter 173-500 WAC.

Instream flows as established at monitoring station 12.4590.00 (Wenatchee River at Peshastin) at river mile 21.5 Section 8, T. 24 N., R. 18 E.W.M., and as presented in the table below shall be protected by regulation or diversions.

Provisions continued on page 3.

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or fail to give notice to the Department of Ecology on forms provided by that Department documenting such compliance.

Given under my hand and the seal of this office at Yakima, Washington,

this 11th day of August, 1995.

Department of Ecology

by Darlene M. Frye
Darlene M. Frye, Section Manager

ENGINEERING DATA
OK sk
23x109 ska

Provisions Continued

Instream flow hydrographs, as represented in the document entitled "Wenatchee River Basin Instream Resources Protection Program" dated February 1983 shall be used for definition of instream flows on those days not specifically identified below.

Primary Control Station: 12.4590.00 (Wenatchee River at Peshastin)
River Mile: 21.5

Instream Flows in the Wenatchee River Basin
(instantaneous cubic feet per second)

	Wenatchee River at Plain	Icicle Creek near Leavenworth	Wenatchee River at Peshastin	Mission Creek near Cashmere	Wenatchee River at Monitor
STATION:	12.4570.00	12.4585.00	12.4590.00	12.4620.00	12.4625.00
RIVER MILE:	(46.2)	(1.5)	(21.5)	(1.5)	(7.0)
Jan 1	550	120	700	6	820
Jan 15	550	120	700	6	820
Feb 1	550	120	700	6	820
Feb 15	550	120	700	6	800
Mar 1	550	150	750	6	800
Mar 15	700	170	940	11	1040
Apr 1	910	200	1300	22	1350
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Jun 15	2000	660	2600	20	2400
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Jul 15	1200	300	1400	10	1200
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Oct 1	580	130	750	4	700
Oct 15	520	130	700	5	700
Nov 1	550	150	750	6	800
Nov 15	550	150	750	6	800
Dec 1	550	150	750	6	800
Dec 15	550	150	750	6	800

No diversion of water under this authorization shall take place when the stream flow at this station is below the above flows.

This authorization is subject to all downstream control stations and instream flow requirements that may also become controlling and critical to the use of water.

**Ground Water**

Issued in accordance with the provisions of Chapter 90A, Code of Washington for 1949, and amendments thereto, and the rules and regulations of the Department of Ecology.

ISSUANCE DATE
June 20, 1960**APPLICATION NUMBER**
16124**PERMIT NUMBER**
12125**CERTIFICATE NUMBER**
8105**NAME**
City of Leavenworth**ADDRESS (PROPERTY)**
PO Box 287**CITY**
Leavenworth**STATE**
Washington**CIP CODE**
98826-0287

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount normally beneficially used.

PUBLIC WATERS TO BE APPROPRIATED**PLACE**
Ice Lake Creek**TERRITORY OF SURFACE WATERS**
Wenatchee River**MAXIMUM CUBIC FEET PER SECOND**
1.50**MAXIMUM GALLONS PER MINUTE****MAXIMUM ACRE-FEET PER YEAR****QUANTITY, TYPE OF USE, PERIOD OF USE**

Municipal supply

LOCATION OF DIVERSION/WITHDRAWAL**APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL**

1200 feet north and 1240 feet west of the southeast corner of Section 28

LOCATED WITHIN PARALLEL LEGAL SUBDIVISION
SE 1/4 SE 1/4**SECTION**
28**TOWNSHIP N.**
24**RANGE (E. OR W.) W.**
17 E.**MERID.**
45**COUNTY**
Chelan**RECORDED PLATTED PROPERTY****LOT****BLOCK****OF (OR) NAME OF PLAT OR ADDITION****LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED**

Area served by the City of Leavenworth.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Yakima, Washington,

this 30th day of August, 1993.

Department of Ecology

ENGINEERING DATA
OK W. Massie
17x110 HRP:ska

by Doug Clausing
Doug Clausing, Section Manager

CERTIFICATE RECORD NO. 17 PAGE NO. 103

STATE OF WASHINGTON, COUNTY OF Chelan

CERTIFICATE OF SURFACE WATER RIGHT

(In accordance with the provisions of Chapter 90A, Laws of Washington for 1971, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources.)

This is to certify that CITY OF LEAVENWORTH

of Leavenworth State of Washington has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the waters of Ice Lake Creek and seepage tributary of Wenatchee River with point or points of diversion within the SE1/4 and NE1/4

Sec. 28 Twp. 24 N., R. 17 E., W. M., under and subject to provisions contained in Appropriation Permit No. 22123 issued by the State Supervisor of Water Resources, and that said right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington, and entered of record in Volume 17, at Page 103, on the 25th day of April, 1961, that the priority date of the right hereby confirmed is June 20, 1960, that the

amount of water under the right hereby confirmed, for the following purposes is limited to an amount actually beneficially used and shall not exceed 1.50 cubic feet per second for municipal supply.

A description of the lands under such right to which the water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

Area owned by City of Leavenworth, Washington.

STATE OF WASHINGTON, COUNTY OF Cole

CERTIFICATE OF SURFACE WATER RIGHT

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.)

This is to certify that CITY OF LEAVENWORTH

of Leavenworth, State of Washington, has made

proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the waters of Islela Creek and sewage water tributary of Nemah River with point or points of diversion within the State and District

Sec. 28, Twp. 24 N., R. 17 E., W. M., under and subject to provisions contained in

Appropriation Permit No. 12185 issued by the State Supervisor of Water Resources, and that said right to the use of said waters has been perfected in accordance with the laws of Washington,

and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume 17, at Page 8103, on the 29th day of April, 1961

that the priority date of the right hereby confirmed is June 20, 1960; that the amount of water under the right hereby confirmed, for the following purposes is limited to an amount actually beneficially used and shall not exceed 1.50 cubic feet per second for municipal supply.

A description of the lands under such right to which the water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

Area served by City of Leavenworth, Washington.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this 29th day of April, 1961

M. W. ...
State Supervisor of Water Resources.

ENGINEER'S DATA
D.K. *Sh*

City of Leavenworth
 700 Hwy 2, PO Box 287
 Leavenworth, WA 98826



STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT
 Issued June 28, 1950

Document Title: Certificate of Water Right

Agency: Department of Ecology
 Central Regional Office
 15 W. Yakima Avenue, Suite 200
 Yakima, WA 98902

Applicant: City of Leavenworth
 700 Hwy 2, PO Box 287
 Leavenworth, WA 98826

Reference Number:

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 14, 1949	1079	1044	437-A

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)		
A well			
MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FOOT PER YEAR	
	1000	1100	

QUANTITY/TYPE OF USE/PERIOD OF USE

Irrigation and domestic supply.

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4 SE 1/4 NE 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.L.A.	COUNTY
	14	24	17 E	45	Chelan
PARCEL # 241714111000					

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.L.A.	COUNTY
PARCEL #					

ADDITIONAL LEGAL IS ON PAGE 2

FILE COPY

CONTINUED LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

Well No. 1 (S04) is 12" in diameter, drilled 102 feet deep, and located approximately 950 feet W. and 2800 feet N. of the SE corner of Section 14, T. 24 N., R. 17 E.W.M.

Well Log ID No. 125247.

CONTINUED LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

The area served by the City of Leavenworth municipal water system.

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells).

Installation and maintenance of an access port as described in Ground Water Bulletin No. 1 is required. An air line and gauge may be installed in addition to the access port.

An approved measuring device shall be installed and maintained in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC. Water use data shall be recorded daily and shall be submitted annually to Ecology by January 31" of each calendar year.

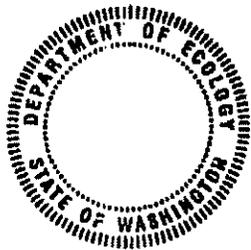
The rule above describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications to some of the requirements. Information on installation, operation and maintenance requirements are attached.

(Provisions continued on page 3)

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.100.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in Chapter 90.14 RCW.

Given under my hand and the seal of this office at Yakima, Washington,
this 12th day of February, 2002.



Tom Fitzsimmons
Department of Ecology

By RF Barwin
Robert F. Barwin, Section Manager

ENGINEERING DATA
OK D.
ECY 040-1-2 (Rev. 8-97)

(Provisions for Certificate No. 437-A, continued)

At a minimum, the following information shall be included with each submittal of water use data: Owner, Contact Name if Different, Mailing Address, Daytime Phone Number, WRIA, Certificate #, Source Name, Annual Quantity Used (including units), Maximum Rate of Withdrawal (including units).

FILE COPY

CERTIFICATE OF WATER RIGHT.

THIS IS TO CERTIFY:

That by virtue of a decree of the Superior Court of the State of Washington in and for Chelan County, made and entered on the twenty-eighth day of October, 1929, and recorded in Volume 15 of the Superior Court Journal of said county at page 12, which decree determined the rights of all known claimants to the use of the waters of Icicle Creek, a tributary of the Wenatchee River, the CITY OF LEAVENWORTH, a municipal corporation, is entitled to use, subject to the laws of the State of Washington, the waters of said Icicle Creek for the purpose of a municipal water supply continuously throughout the year.

That the amount of water to which said water right is entitled is limited to the quantity which is reasonably and actually necessary for the purpose aforesaid and shall not exceed 1.52 second feet.

That the date of priority of said water right is 1912; that the decree aforesaid establishes said right in Class Four, which said class includes a total maximum of 1.79 second feet.

That the point of diversion of said water right is as follows:

The NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Sec. 28, Twp. 24 N., Rge 17 E. W. M., and cannot be changed except as provided in Section 39, Chapter 117, Session Laws of 1917.

That said water right was adjudged by said decree to be and is appurtenant to the following described real property situated in Chelan County, Washington, to wit:

All property within the corporate limits of the City of Leavenworth.

This instrument is recorded in the office of the Supervisor of Hydraulics, at Olympia, Washington, in Volume 5-F of Water Right Certificates at page 4.

mailed 10-26-31

WITNESS the seal and signature of the Supervisor of
Hydraulics affixed this 14th day of September, 1931.

ENGINEERING DATA

O.K. *J. M. [Signature]*

Charles B. [Signature]
Supervisor of Hydraulics of the
State of Washington.

APPENDIX D

Ordinances & Resolutions,
Leavenworth Municipal Code (excerpts),
Council Meeting Minutes (Meeting of Consumers & WUE Goal),
Coliform Monitoring Plan,
Emergency Response Plan,
Operation & Maintenance Procedures,
Potential Contaminant Source Inventory Update Documentation,
Reservoir Inspection Reports,
IntregriTech WTP Intake Piping Assessment (excerpts)

RESOLUTION NO. 03-2016

**A RESOLUTION OF THE CITY OF LEAVENWORTH, WASHINGTON,
AMENDING RATES AND FEES.**

BE IT RESOLVED by the Mayor and the City Council of the City of Leavenworth, as follows:

Section 1. The rates, fees and charges as set forth on the attached Exhibit "A" which is incorporated herein, are hereby adopted by this reference and new charges, fees, and rates will be effective February 23, 2016 unless otherwise noted within a specific item/section.

Section 2. Resolution 11-2015 is hereby amended to be consistent with this resolution.

Section 3. This resolution and any amendment thereto shall be published in summary form in the official newspaper of the City of Leavenworth.

Passed by the City Council of the City of Leavenworth and approved by the Mayor in an open public meeting on the 23rd day of February 2016.

APPROVED:



Cheryl K. Farivar, Mayor

ATTEST:



Chantell R. Steiner, Finance Director/City Clerk

CITY OF LEAVENWORTH FEE SCHEDULE

Exhibit A

Each Department Head shall be granted the authority of interpretation of the portions of this resolution, which fall under the authority of their Department.

DEVELOPMENT SERVICES DEPARTMENT

RATES, FEES, AND CHARGES

GENERAL INFORMATION ON FEES

- A. Payment of the base fee for applications is required at the time of application submission. Payment of base fees for annexations, vacations, and other related activities, which do not require submittal of permit applications, are due prior to commencement of any staff work on the activity. Typically, this would be following submission of an initial letter of interest and/or petition. Payment of all fees will also be required regardless of approval/non-approval of the activity.
- i. Hourly fees are in addition to the underlying permit/action base fees.
 - ii. Hourly fees are typically billed on a monthly basis.
 - iii. Any billing more than 30 days overdue shall result in progress on the application ceasing and/or withholding of final approval/permit issuance.

B. Outsourcing:

The City may outsource work to agencies, firms, and individuals at its discretion for any type of permit related activities. The types of activities include, but are not limited to, the work of attorneys, planners, engineers, geotechnical experts, biologists, etc. Outsourcing *typically* occurs when a project has a component which requires review by persons with special expertise, the city must outsource based on staffing and/or workloads, or an applicant has requested and has been granted expedited review.

Outsourcing based on City Determination of Need:

If the City determines that work must be outsourced based on the need for specialized study, input from persons with expertise, or for other reasons; the City retains the authority to determine that this action is required, but will provide notification in either email or written format to the applicant of the action prior to authorizing the expenditure. The City is not required to receive an authorization from the applicant prior to authorizing to proceed, but simply to notify. The following shall apply:

The applicant shall be responsible for all consultant costs, any related staff time and a ten percent administrative fee for other City expenses involved in administering the work of the consultant.

If the City determines that work must be outsourced based on staffing levels, workload, or for other reasons (not including permit expedition requests), the consultant's work will be billed to the applicant at the same rate as City staff time. If the fee schedule indicates there is no hourly fee charged for a specific type of application, even if outsourced, hourly fees will not be charged.

Please note that all other requirements of the City's fee schedule apply.

Outsourcing by Request of the Applicant:

An applicant may submit a written request to outsource a permit application (or portions thereof) for purposes of permit expedition or for other reasons. The City reserves the right to approve, approve with conditions, or deny outsourcing requests. If approved, the following shall apply:

The applicant shall be responsible for all consultant costs, any related staff time and a ten percent administrative fee for other City expenses involved in working with the consultant and the applicant.

Please note that all other requirements of the City's fee schedule apply.

- C. Any direct cost beyond \$550.00 or four (4) hours of the Hearing Examiner's work on a case shall be billed to and paid by the applicant. This shall be in addition to any other fees.
- D. Applications that require both City and County approval are still subject to the City's fees.
- E. All project types may not be listed here. If they are not, fees will be applied as determined by the Development Services Director.

BUILDING PERMITS FEES

The following fees are for review performed by the plans examiner, additional review by other staff and departments will be charged at \$50 per hour. Exception: single-family and multi-family structures, with four units or less, and commonly associated residential structures and permits, including, but not limited to, permits for decks, garages, outbuildings, fences, demolition, and earthwork, shall be exempt from hourly fees.

1. Building fee structure valuation shall be calculated utilizing the most current edition of the International Code Council Building Safety Journal Building Valuation Data (BVD) Table for Average Construction Costs per Square Foot. The permit fee shall then be calculated utilizing the 1997 Uniform Building Code Table 1-A with the following provisions:
 - a. If an applicant submits plans for two (2) or more identical buildings within the same project, within 180 days of each other, the plan review fee shall be calculated as a percentage of the building permit fee as shown in Table 1-A for each plan after the first one. The percentage reduction shall be determined at the discretion of the building official.
2. Plan review fees shall be calculated pursuant to the 1997 Uniform Building Code, Section 107.3 "Plan Review Fees".
3. Mechanical permit fees shall be calculated pursuant to the 1997 Edition of the Uniform Mechanical Code, Section 115, Table 1-A.
4. Plumbing permit fees shall be calculated pursuant to the 1997 Edition of the Uniform Plumbing Code, Section 103.4, Table 1-1.
5. Manufactured structure permit fee: Support systems including typical concrete elongated pads are factored in. Concrete foundations for modular structures and daylight basements are factored separately based on value:
 - a. Single unit\$300.00
 - b. Double unit:\$400.00
 - c. Triple unit:\$500.00
 - d. Each additional unit:\$75.00
6. Footing and Foundation Permit (allowed only at the discretion of the City):
 - a. Residential.....\$200.00
 - b. Commercial.....5% of the total estimated building and plan review permit feesNote: This is an additional charge and shall not be deductible from future permit fees, and any adjustment based on the actual permit fee will be added at the time of permit issuance.
7. Work without a permit Double the basic permit fee (excludes taxes, plan review, and other fees)
8. Modifications to reviewed plan..... One-half of value of modification (see No. 1 above, the valuation shall be determined utilizing one-half of the fair market value of the change, regardless if the change is higher or lower value than the original).
9. Demolition Permit\$100.00
10. Excavation, Grading, and Fill Permit (IBC Appendix J)\$150.00
11. Inspections for which no fee is specifically indicated.....\$50/hr (min ½ hr)

Fire Code:

- 12. Liquid Petroleum Gas (LPG) and Fuel Tank installation (per tank).
 - a. 500 gallons or less.....\$150.00
 - b. 501 to 5000 gallons.....\$300.00
 - c. 5001 gallons or more.....\$450.00
- 13. Commercial kitchen hood fire suppression system.....\$100.00
- 14. Residential Fire sprinkler **plan review**.....\$75.00
- 15. Residential Fire sprinkler **inspections**.....\$75.00
- 16. Fire sprinkler system plan review for more than 10 heads.....\$150.00
+ \$1.50 per device
- 17. Fire sprinkler system inspection for more than 10 heads.....\$150.00
+ \$2.50 per device
- 18. Fire sprinkler system **plan review and inspections** 10 heads or less \$150.00 + \$1.50 per device.
- 19. Fire hydrants and mains plan review.....\$150.00
- 20. Fire hydrants and mains inspection.....\$75.00 per each hydrant or main
- 21. Commercial IFC application plan review \$150.00 per building application or \$75 if single component.
- 22. Commercial IFC component inspections.
 - High piled storage.....\$75.00
 - Tents and temporary membrane structures.....\$75.00
 - Fireworks stand.....\$100.00
 - Fireworks display.....\$100.00
 - Exhibitions (Miscellaneous).....\$75.00
- 23. Fire alarm & smoke detection system **plan review** for more than 10 devices.....\$150.00
+ \$1.50 per device
- 24. Fire alarm & smoke detection system **inspections** for more than 10 devices.....\$150.00
+ \$2.00 per device
- 25. Fire alarm & smoke detection system **plan review and inspections** for 10 devices or less \$150 + \$1.50 per device
- 26. Reinspection fee.....\$100.00

Residential Misc.:

- 27. Factory built wood/gas heating appliances, log lighters and inserts.....\$45.00
- 28. Masonry fire place including chimney.....\$45.00
- 29. LPG tanks and gas lines for heating and cooking appliances.....\$75.00
- 30. Roofing replacement permit including sheathing if necessary.....\$200.00

Commercial Misc.:

- 31. Commercial kitchen hood Type 1 or 2.....\$75.00
- 32. Building Permit for sign placement including review of all structural attachments and or foundation.....\$75.00
- 33. Roofing replacement permit including sheathing if necessary.....\$200.00
- 34. Factory built fireplace/heating appliances, log lighters wood or gas (per unit).....\$45.00
- 35. LPG gas lines for heating and cooking appliances.....\$45.00

LAND USE AND LEGISLATIVE PERMIT FEES

Calculation of fees begins following the release of the pre-application meeting notes. If the pre-application meeting requirement has been waived by the Development Services Manager, fees will be calculated immediately upon receipt of the application/request. In addition to the base fee, a charge of \$50 per hour will be assessed for each hour of staff time for reviewing the project; however, 50% of the base fee will be credited toward the total dollar amount of the staff hours billed to the applicant. For example, if the base fee is \$800, \$400 worth of staff hours (8 hours) will be credited toward the total dollar amount of staff hours billed. Revisions to any permit will be billed at half the original submission fee and charged at the hourly rate..

<u>State Environmental Policy Act Review</u>	<u>Fee</u>
1. Environmental Impact Statement	\$1,000.00
2. SEPA compliance for non-exempt activities not addressed herein	\$350.00
3. Co-lead or assumption of lead status (for projects outside of the City's jurisdiction) following assumption of lead or co-lead status.....	\$50/hr
• Recovery of all consultant costs, plus a ten percent administration fee for clerical work related to contract administration	
4. Revisions to approved permits within this category	50% of the Original Fee

Miscellaneous land use actions/permits

1. Parking Lot Permit (with SEPA).....	\$350.00
2. Parking Lot Permit	\$50.00
3. Conditional Use Permits.....	\$1,650.00 (includes HE and SEPA)
4. Home Occupations, Group A	No Charge
5. Home Occupations, Group B	\$100.00
6. Variances (Commercial).....	\$1,350.00 (includes HE)
7. Variances (Residential)	\$950.00 (includes HE)
8. Development Agreement	\$1,800.00 (includes SEPA)
9. Floodplain Elevation Certificate	\$200.00
10. Critical Areas Checklist	\$100.00
11. Lighting Permit	\$50.00
12. Administrative Deviation.....	\$25.00
13. Administrative Interpretation which require written policy.....	\$350.00
14. Revisions to approved permits within this category (as necessary) 50% of the Original Fee	

Subdivision permits

1. Short Subdivisions.....\$800.00 (or \$1,100 with SEPA), plus \$50.00 per lot
2. Major Subdivisions.....\$1,650.00 (includes HE and SEPA), plus \$50.00 per lot
3. Final Plat (Short or Major Subdivision).....\$100.00
4. Cluster Subdivision (Short).....
..... \$400.00 (or \$550 with SEPA) (addition to SS), plus \$25.00 per lot
5. Cluster Subdivision (Major).....\$775.00 (addition to MS), plus \$25.00 per lot
6. Planned Development.....\$1,650.00 (includes HE and SEPA), plus \$50.00 per lot
7. Binding Site Plans\$1,100.00 (includes SEPA), plus \$50.00 per lot
8. Binding Site Plans (when within new building.....\$800.00, plus \$50 per lot
9. Plat Alteration.....\$1,650.00 (includes HE and SEPA), plus \$50.00 per lot
10. Boundary Line Adjustments\$300.00
11. Boundary Line Adjustments - Lot line elimination / consolidation\$150.00
12. Revisions to approved permits within this category 50% of the Original Fee

Shoreline permits

1. Substantial Development Permit.....\$1,650.00 (includes HE and SEPA)
2. Shoreline Conditional Use Permit
(in addition to the SDP fee)\$1,350.00 (includes HE and SEPA)
3. Shoreline Variance
(in addition to the SDP fee).....\$1,350.00 (includes HE and SEPA)
4. Shoreline Exemption.....\$100.00
5. Revisions to approved permits within this category 50% of the Original Fee

Legislative Action

1. Right-of-way vacation investigation\$100.00
 - Appraisal costs, legal fees, and cost of property will be due if approved for vacation
 - If multiple property owners initiate vacation activity the activity will be treated as a joint application with the cost split among property owners.
2. Annexation\$1,100.00 (includes SEPA)
 - Costs for annexation studies shall be fully reimbursed by the applicant
3. Developer reimbursement and collection agreements.....\$1,100.00 (includes SEPA)
 - Costs for consultant work shall be fully reimbursed by the applicant
4. Comprehensive Plan amendment/rezone

- a. Phase 1 – Initial Application for Docket.....\$300.00
- b. Phase 2 – If approved for docket, fee for next steps in approval process
.....\$800 (includes SEPA)

(Note: Payment Phase 1 and 2 fees does not constitute approval of a proposed amendment)

- 5. LMC text amendment (includes zoning, subdivision, development regulations, etc.)
.....\$1,100.00 (includes SEPA)
- 6. LMC text amendments (non-land use)\$600.00 (includes SEPA)
- 7. Shoreline Master Program text amendment\$1,100.00 (includes SEPA)
- 8. Shoreline Master Program environment designation amendment\$800.00
- 9. Revisions to approved permits within this category50% of the Original Fee

Appeals to the Hearing Examiner:

- 1. Appeal\$500.00*
- 2. Motion for Reconsideration.....\$100.00

* Appeal fees do not apply for a first hearing on the record in a city initiated enforcement case.

PRE-APPLICATION MEETING FEES

- A. Payment of the pre-application fee is required at the time of pre-application submittal.
- B. A pre-application meeting fee shall be charged for each of the permit types below. If multiple permits are sought, the fee shall be based on the highest single pre-application fee.
- C. The Development Services Director will determine which category of pre-application fee applies to each project.

The City will perform a Courtesy Consultation Meeting prior to the required pre-application meeting at the request of the applicant. Items discussed at this meeting will be for information gathering purposes only. Attendance at a Courtesy Consultation Meeting does not eliminate the requirement to attend a pre-application meeting. Please note: the City will not provide notes from this meeting, but will provide a copy of the City's Fee Schedule to the applicant.

Pre-Application Meeting (s):

Single-family Residential (including duplexes).....	No Charge
Boundary Line Adjustment.....	No Charge
Group A Home Occupation:	No Charge
Excavation, Grading and Filling:.....	No Charge
Parking Lot:	No Charge
Floodplain elevation/development:.....	No Charge
Work in a right-of-way.....	No Charge
Interpretation of Codes and Ordinances.....	No Charge
Shoreline Exemption	No Charge
Fence.....	No Charge
Sign and Design.....	No Charge
All others.....	No Charge

DESIGN REVIEW FEES

1. Design review book
 - a. Refundable deposit..... \$100
 - b. Purchase\$100
 - c. CD:\$5

Architectural Design:

2. New design for, or changes to, a structure valued under \$5K.....\$100
3. New design for, or changes to, a structure valued \$5K - \$50K \$150
4. New design for, or changes to, a structure valued \$50,001 + \$200
5. Changes to building color, roofing, or murals (includes mural additions), or other individual elements - when no other improvements are proposed.....\$50
6. Submittal of revisions to a design approved in the prior 12 months \$100
7. Re-submittal of projects after being cited for non-compliance with original design approval.....\$175
8. Fence design, tables, chairs, umbrellas, or other similar elements when no other improvements are proposed.....\$25
9. Administrative Approval, change of design or of individual elements such as landscaping structures, lighting, fences or fence-type walls, garbage enclosures, walkways, plazas, or similar structures when they are not proposed in conjunction with a larger project or that would require design review board review.....\$25

Sign:

10. Sign - first sign:\$75
11. Each additional sign (applied for at the same time)\$35
12. Sign permit revision.....\$25

Miscellaneous:

Any time an application requires a second meeting by the Design Review Board due to actions of the applicant, including withdrawal, requesting continuance, design changes, or non-attendance, payment shall be made prior to further review by the Design Review Board in the amount of

..... ½ of original application fee

Any time an application requires more than two meetings by the Board in order to review changes, whether proposed by the applicant or requested by the Design Review Board, payment shall be made prior to further review by the Board in the amount of

.....\$50

WATER RATES, FEES AND CHARGES

The charges that each property owner shall pay to the City for access to the City main shall include a system buy-in charge, a charge to cover the cost of labor, equipment, and materials to install the meter, a Utility Reimbursement Agreement charge if applicable to the property location, and a surcharge for customers located outside City limits.

Monthly fees include a base rate and 7,500 gallons of water. Use above 7,500 gallons per month is subject to an overage charge.

Charges to be paid by new customers to receive service (applicable to all customer classes):

1. System Development Charge (SDC) for Residential and Commercial:

Meter Size based on ERU

5/8" or 3/4" (1.0 ERU).....	\$3,898.80
1" (1.7 ERU).....	\$6,510.75
1 1/2" (3.3 ERU).....	\$12,983.30
2" (5.3 ERU).....	\$20,780.90
3" (11.7 ERU).....	\$45,498.80
4" (20 ERU).....	\$77,976.15
6" (41.7 ERU).....	\$162,424.80

2. Meter charge (not including installation)

Meter Size

3/4".....	\$ 550.00
1".....	\$ 700.00
1 1/2".....	\$ 1,000.00
2".....	\$ 1,500.00
3".....	\$ 2,840.00
4".....	\$ 5,530.00
6".....	\$ 8,625.00

3. Water service connection charges

- a. Labor, Equipment, Patching and Administrative charges \$1,172.30
- b. Titus Road Connection Charge.....\$225.00

Note: Beginning at north property line of lot 2, SS 3264 to north end of Aldea Village

4. Utility Reimbursement Agreements

- a) Leavenworth 24, LLC Utility Reimbursement Agreement (URA) (see Leavenworth 24, LLC agreement), this flat fee includes the 10% administrative fee as defined in the URA:

For each water service hookup (1.0 ERU)\$2,781.27

- b) DNR, LLC Utility Reimbursement Agreement (URA) (see DNR, LLC agreement for flat fee as identified for various parcels, this flat fee includes the 10% administrative fee as defined in the URA.)
- c) Cascade Medical Center (CMC) Utility Reimbursement Agreement (URA) (see CMC agreement for flat fee as identified for various parcels, this flat fee includes the 10% administrative fee as defined in the URA.)

- 5. Irrigation meter - An irrigation meter fee is the same as a meter charge. No additional buy-in fee will be charged if the property already has a meter, and the irrigation represents no increase in water use based on billing data.
- 6. Upon receipt of proof of payment (canceled check), a credit equal to the cost of construction of water main line extension dedicated to the City will be reduced from the "System Development Charge" not to exceed the value of one ERU. This credit shall be applied to subdivisions which create two to four lots.

Residential Water Rates

- 7. The monthly minimum residential charge includes an allowance of 7,500 gallons per month per meter. Qualifying low-income senior and disabled citizens receive a discount off the monthly minimum residential charge. To qualify for the discount, applicants must be 62 years of age or older or disabled, and must have a total household income of \$24,000 per year or less. To qualify for the additional hardship low income senior or disabled discount, you must have an income of \$12,000 or less per year with no other assets, to apply for either discount, applicants must fill out and return an application for a utility discount, for review and approval by the City.

- a. Inside city limits

- i. ¾"meter.....\$59.24
- ii. Qualified low income seniors or disabled.....\$29.01
- iii. Additional hardship low income seniors or disabled.....\$15.11
- iv. 1" meter.....\$61.77
- v. 1 ½" meter.....\$74.39

- b. Outside city limits (rates are 25% higher than inside city rates)

- i. ¾"meter.....\$74.05
- ii. Qualified low income senior or disabled\$36.26
- iii. Additional hardship low income seniors or disabled.....\$18.88
- iv. 1" meter.....\$77.21
- v. 1 ½" meter.....\$92.98

c. Overage: For water use above the allotted 7,500 gallons per month, the following rates shall apply:

i.	0 - 7,500	\$0.00 per 1,000 gallons
ii.	7,501 – 15,000.....	\$0.85 per 1,000 gallons
iii.	15,001 – 25000.....	\$1.86 per 1,000 gallons
iv.	Above 25,000.....	\$2.31 per 1,000 gallons

Commercial Water Rates

8. The monthly minimum commercial charge includes an allowance of 7,500 gallons per month per meter.

a. Inside city limits - monthly minimum charge per meter:

i.	¾" meter.....	\$59.24
ii.	1" meter	\$61.77
iii.	1 ½" meter	\$74.39
iv.	2" meter	\$76.92
v.	3" meter	\$228.16
vi.	2" x 6" fire service meter	\$369.42

b. Outside city limits (rates are 25% higher than inside city rates):

i.	¾" meter	\$74.05
ii.	1" meter.....	\$77.21
iii.	1 ½" meter	\$92.98
iv.	2" meter.....	\$96.15
v.	3" meter	\$285.20
vi.	2" x 6" fire service meter	\$461.78

c. Commercial overage: For water use in the commercial zone above the allotted 7,500 gallons per month, the following rates shall apply to commercial users:

i.	Inside City commercial:.....	\$1.55 1,000 gallons
ii.	Outside City commercial:.....	\$1.94 1,000 gallons

Miscellaneous fees

- 9. Fire hydrant use fee..... \$3.30 per 1000 gallons / minimum charge of \$10.00 per day
- 10. Fire hydrant meter installation/removal charge.....\$54.60
- 11. Fire hydrant installation charge \$343.90 inspection and buy in
- 12. Fire flow installation charge \$334.20(\$212.20 buy-in, \$122.00 inspection)
- 13. Seasonal turn on/off charge
 - a. In City:\$10.90 each trip
 - b. Outside City:\$16.40 each trip
- 14. Late fee.....\$10.90
- 15. Late payment turn on fee\$27.30 (\$54.60 for after hours turn on)
- 16. Charge to remove / reinstall meter..... \$27.30 removal or reinstallation
- 17. Installed, with a meter and no consumption
 - a. In City:\$17.82
 - b. Outside City:\$22.28

Final or closing utility bill: The City does not pro-rate utility bills. Accounts involving new owners, the pro-ration is between the previous owner and the new owner. In the event a previous balance is on the account, the City will make every effort to collect from the previous owner. However, the new owner is ultimately responsible for the bill, as the utility account stays with the property. The City suggests contacting the title company used in the real estate transaction for further remedy. In a landlord-tenant situation the landlord is ultimately responsible for the utility bill.

SANITARY SEWER RATES, FEES AND CHARGES

The charges that each property owner shall pay to the City for access to the City main shall include a system buy-in charge, a Utility Reimbursement Agreement charge if applicable to the property location, and a charge to cover the cost of labor, equipment, and materials to hook-up.

Charges to be paid by new customers to receive service (applicable to all customer classes):

1. System Development Charge (SDC):
 - a. Residential: For the purposes of calculating the sewer SDC the definition of an ERU is one residential dwelling unit at 175 gallons per day.
 - b. Multifamily: Dwelling units in multifamily residential structures are assigned an ERU value of less than one to reflect the fewer number of occupants typically residing in each unit, and an assumed proportionate resulting reduction in wastewater production (1990 US Census Report and 1996 Comprehensive Plan).
 - c. Motels, Restaurants, Bars: ERU's are based on the number of motel rooms and the number of seats respectively as defined in the Washington State Department of Ecology *Criteria for Sewage Works Design*.
 - d. Other Commercial: For other types of non-residential sewer connections, each equivalent 3/4 inch water meter is considered one ERU using American Water Works Association defined meter capacity to determine the factor for the number of ERU's for each non-residential meter size above 3/4 inch. In no case shall less than 1 ERU be assigned to any proposed connection.
 - e. Summary: Based on the above figures, the following charges shall apply:

Restaurant Category 1 – Take Out / Ice Cream shop / Yogurt shop (no dishwasher, no fryer, no public restrooms less than 400 sq. ft.) (1.0 ERU).....\$2,620.40

For Category 1 - Additional square foot areas beyond 400 sq. ft. are calculated at \$6.55/sq. ft.

Restaurant Category 2 – Average Size (If two of the three following criteria apply: dishwasher required, fryer, public restrooms required then restaurant is considered a Category 2) (Up to 1,000 sq. ft. including kitchen, dining area and restrooms) (4.0 ERU)\$10,481.70

Bakery (retail) - (Up to 1,000 sq. ft. including kitchen, dining area and restrooms) (4.0 ERU)\$10,481.70

For Category 2 and Bakeries – For additional areas in excess of 1,000 sq. ft. which includes the kitchen and restrooms square footage; the additional square foot areas are calculated at \$6.55/ sq. ft.

Bars - (yes-dishwasher, no food /no fryer, yes-public restrooms) (Up to 1,000 sq. ft. including seating area and restrooms) (1.17 ERU)\$3,065.90

For Bars larger than 1,000 sq. ft as described above - Additional square foot areas are calculated at \$6.55/ sq. ft.

Motel (.5 ERU/Room).....\$1,310.15/RM

Over 4 Units (.54 ERU/DU).....	\$1,414.20/DU
5/8" or 3/4" (1.0 ERU, includes single, duplex, 3-plex, 4-plex).....	\$2,620.45
1" (1.7 ERU).....	\$4,376.20
1 1/2" (3.3 ERU).....	\$8,725.90
2" (5.3 ERU).....	\$13,966.75
3" (11.7 ERU).....	\$30,580.45
4" (20 ERU).....	\$52,408.45
6" (41.7 ERU).....	\$109,166.60

f. Special conditions: For special conditions the city will determine the SDC based on either the ERU table, on estimated wastewater flow, or on a combination of both methods at the city's sole discretion. Flow will be based on either estimated peak day flow or maximum month average day flow at the sole discretion of the city. Special conditions include the following:

- i. Structures with more than one of the occupancy types listed above.
- ii. As determined by the city upon review of an applicant's administrative appeal.
- iii. As determined by the city upon its sole judgment that the specifics of the proposed occupancy and/or its characteristics warrant special determination of the SDC.

g. Administrative Appeal: An applicant for sewer connection may appeal the SDC determination to the Mayor or City Administrator within thirty (30) working days of receiving the initial SDC determination from the City. The decision of the Mayor or City Administrator shall be provided within thirty (30) working days of the appeal and shall serve as the final SDC determination.

h. Change of Occupancy Type: If, in the sole judgment of the city, a proposed change in occupancy type for an existing structure already connected to the sewer system will substantially increase the amount or character of wastewater flow over that for the previous occupancy, and the SDC for the proposed occupancy would result in a greater SDC than for the previous occupancy, and the change of occupancy requires a building permit, then the use of the structure for the proposed occupancy type shall be contingent upon payment to the city of an SDC determined in accordance with this resolution. The additional SDC charge shall be added to any city permit fees or charges applicable to the proposed occupancy.

i. Inspection, patching and administrative charge.....\$694.90

ii. Titus Road Connection Charge.....\$225.00

Note: Beginning at north property line of lot 2, SS 3264 to north end of Aldea Village

iii. City/Clennon Utility Reimbursement Agreement(URA) (see Clennon agreement, Exhibit A)

Full\$5,469.41

Half.....\$2,734.70

i. Upon receipt of proof of payment (canceled check), a credit equal to the cost of construction of sanitary sewer main line extension dedicated to the City will be reduced from the "System Development Charge" not to exceed the value of one ERU. This credit shall be applied to subdivisions which create two to four lots.

Residential Monthly Rates

2. For monthly sewer rate purposes, each unit of a multi-family dwelling is considered a dwelling unit. Qualifying low-income senior and disabled citizens receive a discount off the monthly minimum residential charge. To qualify for the discount, applicants must be 62 years of age or older or disabled, and must have a total household income of \$24,000 per year or less. To qualify for the additional hardship low income senior or disabled discount, you must have an income of \$12,000 or less per year with no other assets, to apply for either discount applicants must fill out and return an application for a utility discount, for review and approval by the City.

- a. Residential Customers:.....\$55.64 per dwelling unit
- b. Low-income senior or disabled citizen.....\$31.25 per dwelling unit
- c. Additional hardship low income senior or disabled.....\$11.60 per dwelling unit
- d. Outside of City limits:.....twenty-five percent (25%) surcharge on the above rates.

Commercial Monthly Rates

3. Base rate: Monthly charge of \$55.64 per Equivalent Residential Unit (ERU) of water used, with a minimum charge of one ERU per month. Water use shall be based on the average monthly water use between October 1 of the previous year and September 30 of the current year. One ERU is equivalent to 7,500 gallons of water use.

4. Food Service Surcharge: An additional surcharge will be assessed to food service establishments with grease fryers to account for the loading of the sewer plant associated with grease. The surcharge shall be fifty percent (50%) of the base rate as calculated above. Food service establishments without an individual water meter (a shared meter) shall be based on a calculation of one ERU per 5 seats or fifty percent (50%) of the total water use associated with the shared meter, as decided by the building owner.

5. School District: Monthly charge of \$55.64 per Equivalent Residential Unit (ERU) of water used, excluding irrigation meters and water use in June, July, and August associated with watering ball fields.

6. City Pool: During the months of January through May and October through December when the pool is not in use there will be no sewer rate applied. For the months of June through September, the pool rate charged will be equivalent to 10% of the monthly charge of \$55.64 (Residential Customer Charge) per Equivalent Residential Unit (ERU) of water used will apply. Water use shall be based on the average monthly water use between October 1 of the previous year and September 30 of the current year. One ERU is equivalent to 7,500 gallons of water use.

Miscellaneous fees

- 7. Late Fee.....\$10.90
- 8. Non-Compliance Fee: Food Service Establishments without grease traps per month..\$200.00
(Non-Compliance Fee will be effective starting on July 1, 2016)

Final or closing utility bill: The City does not pro-rate utility bills. Accounts involving new owners, the pro-ration is between the previous owner and the new owner. In the event a previous balance is on the account, the City will make every effort to collect from the previous owner. However, the new owner is ultimately responsible for the bill, as the utility account stays with the property. The City suggests contacting the title company used in the real estate transaction for further remedy. In a landlord-tenant situation the landlord is ultimately responsible for the utility bill.

STORM SEWER FEES, RATES AND CHARGES

The charges that each property owner shall pay to the City for Storm Sewer access to the City main shall include a system buy-in charge, and a charge to cover the cost of labor, equipment, and materials to hook-up.

Charges to be paid by new customers to receive service (applicable to all customer classes):

1. System Development Charge for Residential & Commercial: (Per ERU) \$1,034.40
2. Street patching and Inspection.....\$477.40

For System Development Charges, one ERU equates to 4,000 square feet of impervious area. Residential lots developed will be charged as one ERU, unless determined otherwise by the City Engineer. Commercial properties developing an area larger than 4,000 square feet of impervious area will be charged based on the number of ERU's (calculated to one-tenth of an ERU) times the charge for one ERU. Example, if a property has 10,000 square feet of impervious area $10,000/4,000 = 2.5$ ERU's, times the rate per ERU.

Monthly Residential and Commercial Rates

3. For monthly Storm Sewer rate purposes, each unit of a multi-family dwelling is considered a dwelling unit.
 - a. Residential..... \$2.50
 - b. Commercial Low Impact \$2.50
 - c. Commercial Medium Impact \$10.50
 - d. Commercial High Impact.....\$16.50
 - e. Late Fee \$10.90

The rates and service charges shall be based on the service provided and relative contribution of surface and storm water runoff from a given parcel to the storm water control facilities. The average estimated percentage of impervious surfaces on the parcel, the land use classification, the total parcel acreage and/or measured impervious surface area will be used to determine the relative contribution of surface and storm water runoff from the parcel. For detailed analysis and definitions required for residential and commercial low, medium and high impact rate structures see Leavenworth Municipal Code section 13.90.050.

50% Residential Rebate: For those single family residential property owners that have addressed and provided run off mitigation for the 25-year storm event onsite; a 50% reduction in the Storm Sewer monthly rate is available. Property owner must apply to the City for review and rebate approval. Renewal is required once every five years. Rebate is limited to fees paid after January 1, 2015.

Final or closing utility bill: The City does not pro-rate utility bills. Accounts involving new owners, the pro-ration is between the previous owner and the new owner. In the event a previous balance is on the account, the City will make every effort to collect from the previous owner.

However, the new owner is ultimately responsible for the bill, as the utility account stays with the property. The City suggests contacting the title company used in the real estate transaction for further remedy. In a landlord-tenant situation the landlord is ultimately responsible for the utility bill.

CEMETERY RATES, FEES AND CHARGES

Lot Prices

	<u>Inside City</u>	<u>Cascade School District</u>	<u>Outside Cascade S.D.</u>
1. Adult Lots.....	\$650.00.....	\$700.00.....	\$1075.00
2. Youth/Infant Lots.....	\$375.00.....	\$425.00.....	\$475.00
3. 18" x 24" Cremains Lots.....	\$375.00.....	\$425.00.....	\$590.00

***Endowment Care, Vase, Vase Setting fee, & Temporary Markers are all included in the total sale price of the above listed lots.**

4. Niches			
a. First Row (top).....	\$400.00.....	\$440.00.....	\$1050.00
b. Second Row.....	\$375.00.....	\$415.00.....	\$900.00
c. Third Row.....	\$350.00.....	\$390.00.....	\$800.00
d. Fourth Row.....	\$325.00.....	\$365.00.....	\$750.00

***Endowment Care is included in the total sale price of the above listed lots.**

***The City will allow the burial of one (1) adult casket and one (1) cremain in each burial lot. The City will also allow the burial of two (2) urns per cremains lot.**

5. Companion or extended use, per Niche, Cremains, or burial lot.....	\$275.00
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Opening and Closing Fees

	<u>Weekday</u>	<u>Saturday</u>
6. Adult/Youth lots.....	\$400.00.....	\$600.00
7. Infant lots	\$200.00.....	\$350.00
8. Cremains lots	\$175.00.....	\$350.00
9. Niches	\$125.00.....	\$300.00
10. Disinterment.....	\$650.00.....	\$800.00
11. Disinurnment (Ground).....	\$250.00.....	\$350.00
12. Disinurnment (Niche).....	\$125.00.....	\$200.00

Stone Setting/Miscellaneous

13. Single	\$85.00
14. Double - 12"x 36"	\$140.00
15. Single & Cremains - 12"x 24"	\$100.00
16. Infant & Cremains - 8"x 16"	\$85.00
17. Veterans Bronze Marker Setting	No Charge
18. Transfer of Ownership	\$15.00
19. Temporary Marker	\$25.00

Payment of Lots

A cemetery lot must be paid for in full before interment. The City will hold a cemetery lot for a purchaser upon receipt of a twenty percent (20%) down payment, provided the balance is paid within one (1) year. A service fee of \$15.00 shall be charged for the delayed payment.

Repurchase of Lots

In the event that the owner of a lot has been buried elsewhere and the lot is no longer needed, the City will repurchase the lot from the heir(s) at the original cost, minus a \$15.00 administrative fee. Certification of the owner's death is required prior to the repurchase by the heir(s).

GARBAGE RATES, FEES AND CHARGES

Residential (Weekdays pickup)

1. Scheduled Collections

- a. Residential (one 64 gallon tote container, once per week) \$25.50 per month
- b. Low-income senior citizen (one 64 gal tote container, 1x per week).....\$11.55 per month
 - i. Qualifying low-income senior or disabled citizens receive a discount off the monthly minimum charge. To qualify for the discount, applicants must be 62 years of age or older or disabled, and must have a total household income of \$24,000 per year or less, and must fill out and return an application for rate discount, for review and approval by the City. The additional hardship low income senior or disabled rate (less than \$12,000 per year) is currently the same as low income senior or disabled.
- c. Additional 64 gal tote containers: \$11.55 per month per 64 gal container
- d. Overloaded 64 gallon tote container \$3.50 per occurrence
- e. Per extra can or bag (up to 35 gal each can or bag) per collection..\$3.50

Residential Recycling Rebate:

The City offers a \$5.00 per month rebate effective January 1, 2015 for those residential properties that have opted to participate in the Waste Management Residential Single Stream Recycling Program. Those wanting to participate in the rebate program must provide the City with proof of payment for the Waste Management Program. Reimbursements will be processed in January and July of each year starting with the first reimbursement process being available in July 2015 for January through June 2015 Services. July 2015 through December 2015 services may be reimbursed in January 2016.

Commercial and Multifamily Residential (Weekdays pickup)

1. Scheduled Collections

- a. 64 gallon tote container: \$25.50 per month multiplied by the number of times per week that the garbage is collected. Multifamily residential complexes not using a 300 gal container will be charged the base garbage rate for each housing unit.
- b. 96 gallon tote container: \$38.20 per month multiplied by the number of times per week that the garbage is collected. Multifamily residential complexes not using a 300 gal container will be charged the base garbage rate for each housing unit.
- c. Overloaded 64 gallon tote container \$3.50 per occurrence
- d. Overloaded 96 gallon tote container.....\$5.20 per occurrence
- e. 300 Gallon Containers: \$57.90 per month for each 300 gal (1.5 cubic yard) container, multiplied by the number of times per week that the container is emptied.
- f. Overloaded 300 gallon tote container \$9.25 per occurrence

2. Non-scheduled or additional collection of garbage in proper containers:

- a. Per 64 gal tote container.....\$6.95
- b. Per 96 gal tote container.....\$10.40

- c. Per can or bag (up to 35 gal each can or bag) per collection..\$3.50
- d. Per 300 gal container per collection.....\$28.95
- 3. 300 gallon Container Rental (for garbage) without caster wheels..... \$28.95 /container/ month
- 300 gallon Container Rental (for garbage) with caster wheels..... \$40.55 /container/ month
- 4. Commercial Cardboard collection: All commercial accounts will be assessed a \$6.95 monthly fee for the service of cardboard collection.
 - a. Purchase option for cardboard metal dumpster (1.5 cu. yd.) container painted blue and stenciled with "CARBBOARD ONLY" text \$173.70
 - b. Rental option for cardboard metal dumpster (1.5 cu. yd.) container painted blue and stenciled with "CARBBOARD ONLY" text..... \$28.95 per month
 - c. Special large quantity cardboard pick up requests (weekdays only)..... \$5.80 each time

Commercial (Weekends pickup)

- 1. Scheduled collections
 - a. 64 gallon tote container: \$33.60 per month
 - i. Entitles user to a collection of one 64 gal container, multiplied by the number of times per weekend that the garbage is collected.
 - b. 96 gallon tote container: \$50.35 per month
 - i. Entitles user to a collection of one 96 gal container, multiplied by the number of times per weekend that the garbage is collected.
 - c. 300 gallon container\$75.25 per month x number of times emptied on weekend.
- 2. Non-scheduled collection or additional collection of garbage in proper containers:
 - a. Per 64 gal tote container per collection\$9.25
 - b. Per 96 gal tote container per collection.....\$13.90
 - c. Per can or bag up to 35 gal per collection\$4.60
 - d. Per 300 gal container per collection\$37.05
- 3. 300 gallon Container Rental (for garbage) without caster wheels. ... \$28.95 /container/ month
- 300 gallon Container Rental (for garbage) with caster wheels.... \$40.55 /container/ month

Miscellaneous

Dirty refuse totes or containers: Customers are responsible for keeping their City issued refuse totes and containers clean and sanitary. If you wish to have the City clean your existing tote or container, there is an additional fee:

- 64/96 gallon Tote Container Cleaning Fee\$22.70
- 300 gallon Container Cleaning Fee.....\$45.45

Damaged or lost totes or containers replacement fees:

- 64/96 gallon Tote Container Replacement Fee.....\$69.45

300 gallon Container Replacement Fee\$312.55

Final or closing utility bill: The City does not pro-rate utility bills. Accounts involving new owners, the pro-ration is between the previous owner and the new owner. In the event a previous balance is on the account, the City will make every effort to collect from the previous owner. However, the new owner is ultimately responsible for the bill, as the utility account stays with the property. The City suggests contacting the title company used in the real estate transaction for further remedy. In a landlord-tenant situation the landlord is ultimately responsible for the utility bill.

Additional Charge For Pickup For Noncompliance: In the event any owner or occupant of premises within the City permits garbage to accumulate thereon, and fails or refuses to deposit such garbage in suitable containers in accordance with the provisions of this resolution, or fails to place the same conveniently for loading, the City, at its discretion, may collect and remove such garbage, and in such case the entire expense of the collection and removal thereof, as determined by the City, shall be charged against such premises, and against the owner or occupant, in addition to the regular charge for collection and disposal of such garbage.

**FEES AND CHARGES
FOR EQUIPMENT RENTAL, TRAFFIC CONTROL, WORK IN
THE RIGHT OF WAY**

- 1. Traffic control signs Deposit Required Rates Listed Below
- 2. Barricades with flashers Deposit Required Rates Listed Below
- 3. Wooden barricades Deposit Required Rates Listed Below
- 4. Traffic cones Deposit Required Rates Listed Below
- 5. Crew labor cost \$50.00 per hour per employee
- 6. Overtime labor cost \$75.00 per hour per employee
- 7. Heavy equipment (excluding operator) \$100.00 per hour
- 8. Right-of-way permit (temporary limited road/sidewalk closures)\$100.00
- 9. Right-of-way permit (specific for construction work, underground utilities, etc)\$300.00
- 10. Utility Extension permit outside City Right-of-way\$300.00

Deposit Fees for Traffic Control Signs, Barricades (with or without flashers) and Traffic Cones:
 Request for 1-5 signs/barricades/cones.....\$25.00
 Request for 6 or more signs/barricades/cones\$75.00

All such chargeable use of City time and equipment is at the City’s discretion. There is a minimum 4-hour requirement for any requests of city owned and operated heavy equipment.

POOL FEES

Day-Use Fees

	PRSA resident	Non-PRSA resident
Under two (2) years of Age	No Fee	No Fee
General Admission (Two (2) years and up	\$3.50	\$5.50
Senior Citizen (all swims)*	\$2.50	\$4.50
Lap Swims (All ages)	\$3.50	\$5.50

Season Passes

Family Pass	\$140.00	\$170.00
Individual Pass	\$80.00	\$100.00
Senior Pass	\$50.00	\$60.00

Swim Lessons

Class lessons	\$ 30.00/per student	\$35.00/per student
Private Lessons		\$35 per hour, per student

Kayaks

Individual Kayak Session.....	\$5.00/per person
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Pool Rental (Must be outside regular pool hours)

Rental charge of \$65.00 plus \$15.00 per lifeguard, per hour. The number of lifeguards shall be determined by the pool manager or assistant pool manager.

*Senior Citizen: age sixty-five (65) or older, proof of age required.

Swim teams required to provide required number of lifeguards or reimburse the City for lifeguard costs.

**LEAVENWORTH CIVIC CENTER
RENTAL AND DEPOSIT FEES
FOR CALENDAR YEAR 2016**

COMMERCIAL AND PRIVATE

			Minimum Cleaning Deposit
	Daily	With Setup	All Events
LOCAL: Sunday – Thursday	\$650	\$1,000	\$500
LOCAL: Friday – Saturday	\$900	\$1,400	\$500
NON-LOCAL : Sunday - Thursday	\$800	\$1,250	\$500
NON-LOCAL: Friday – Saturday	\$1,050	\$1,500	\$500

NON-PROFIT

			Minimum Cleaning Deposit
	Daily	With Setup	All Events
LOCAL: Sunday – Thursday	\$400	\$720	\$500
LOCAL: Friday – Saturday	\$625	\$950	\$500
NON-LOCAL : Sunday - Thursday	\$600	\$1,000	\$500
NON-LOCAL: Friday – Saturday	\$800	\$1,250	\$500

Other fees and charges for services related to the Festhalle rental of equipment, chairs, tables, security, kitchen amenities and janitorial services may apply and are defined within the Festhalle Use Policies.

**LEAVENWORTH CIVIC CENTER
RENTAL AND DEPOSIT FEES
FOR CALENDAR YEAR 2017**

COMMERCIAL AND PRIVATE

			Minimum Cleaning Deposit
	Daily	With Setup	All Events
LOCAL: Sunday – Thursday	\$900	\$1,250	\$500
LOCAL: Friday – Saturday	\$1,150	\$1,650	\$500
NON-LOCAL : Sunday - Thursday	\$1,050	\$1,500	\$500
NON-LOCAL: Friday – Saturday	\$1,300	\$1,750	\$500

NON-PROFIT

			Minimum Cleaning Deposit
	Daily	With Setup	All Events
LOCAL: Sunday – Thursday	\$400	\$720	\$500
LOCAL: Friday – Saturday	\$625	\$950	\$500
NON-LOCAL : Sunday - Thursday	\$600	\$1,000	\$500
NON-LOCAL: Friday – Saturday	\$800	\$1,250	\$500

Other fees and charges for services related to the Festhalle rental of equipment, chairs, tables, security, kitchen amenities and janitorial services may apply and are defined within the Festhalle Use Policies.

MISCELLANEOUS FEES AND CHARGES

Dog Licenses

1. Spayed/Neutered\$10.00
2. Unaltered\$15.00
3. If paid after March 1st (Spayed/Neutered) (Includes \$10.00 penalty).....\$20.00
4. If paid after March 1st (Unaltered) (Includes \$15.00 penalty)\$30.00

NSF / EFT Fee\$45.00

Invoice Late Fee (except for utility billing and parking).....12% per Annum

Copy and Transcription Services

Black and White Copies.....\$.15/page
Color Copies..... \$1.50/page
Cassette Tape, USB or CD Copy \$10.00/each

The City reserves the right to outsource copying of materials and transcription of tapes. If materials are outsourced, the actual cost for copying and transcription billed to the City shall be the cost reimbursed to the City by the requestor.

Fax Services

First page.....\$2.00
Additional page..... \$.50/each

Hearing Examiner and related Legal, Specialized Study and Staff Services (For proceedings and appeals not covered in the Development Services Section of the Fee Schedule):

The appellant, applicant, and/or involved party shall reimburse the City for all costs billed to the City by the Hearing Examiner, staff time, and if utilized, for City legal counsel and/or specialized study services reasonably required by the appeal. Staff time involved shall be billed at \$50/hr.*

* Appeal fees do not apply for a first hearing on the record in a city initiated enforcement case.

Consumer Price Index (CPI)

A general rule of the City's various contracts and agreements may include language for a CPI adjustment on an annual basis. The City will incorporate the use of the Seattle CPI-U for all Urban Consumers when incorporating such language.

Rafting

Commercial Rafting Launch/Take Out Fee\$2.50 per passenger
Commercial Tubing Launch/Take Out Fee4% of Gross Receipts

PARKING PERMITS, RESERVED PARKING RENTAL AND LOT FEES

Permit parking for overnight parking in designated lots only are for a 24-hour period beginning at 9:00 a.m. Lot Fees for lots with no overnight parking have operating hours beginning at 7:00 a.m. and ending at 2:00 a.m. and shall apply to designated areas owned, leased, managed, or maintained by the City. The Chelan County Sheriff is authorized to issue citations for civil infractions for cars in violation of the City’s pay parking requirements. The Chelan County Sheriff and Mayor’s Designee are authorized to issue citations for parking infractions that are in violation of any parking regulations within the Leavenworth Municipal Code. All cars parked in violation of the parking permits, lots fees and non-operating hours in designated lots are subject to towing and overtime parking fees as identified below.

OVERNIGHT PARKING PERMITS

- 1. RV/Trailer Overnight Parking Permit Festhalle Lot Only\$10.00
a.(Permits issued at City Hall, vehicle must be removed from lot by 9:00 a.m.)
- 2. Permitted Overnight Passenger Vehicle Parking Lot Fee at the Festhalle Lot Only\$10.00
a.(Permits issued at City Hall, vehicle must be removed from lot by 9:00 a.m.)

RESERVED PARKING PERMITS

- 3. Reserved Parking available at Festhalle Lot Only with Festhalle Rental per stall fee.....\$5.00

LOT FEES AND PARKING INFRACTION FEES

- 4. Municipal Parking Lot Fee (per stall per hour P1 & P4)\$1.75
- 5. Municipal Parking Lot Fee (per stall per day P2 & P3).....\$5.00
- 6. Municipal Parking Lot Fee (per stall per day rate P1 & P4 (over 5 hours).....\$10.00
- 7. Municipal Parking Lot Fee for Buses during Holiday and Festival days\$30.00
- 8. Parking Infraction – Illegal Parking Fee subject to all lots and designated on street parking locations and regulations\$25.00
- 9. Additional Parking Infraction – Illegal Parking Fee if not paid within 30 days.....\$25.00
- 10. Additional Parking Infraction – Illegal Parking Fee if not paid within 60 days.....\$25.00
- 11. If the penalty imposed for any parking violation is not paid within sixty days of the date it was imposed, the penalty may be turned over to a collection agency for collection and may be subject to an additional surcharge imposed by the collection agency.

OTHER PARKING REGULATIONS

- 12. No fee is required for use of the two hour parking limitation in the Pool Parking Lot for any 24-hour period, vehicles parking for longer than the two hour parking limitation are subject to the Overtime Parking Fee’s listed above.
- 13. No fee is required for use of the thirty minute designated on street parking location for any 24-hour period, vehicles parking for longer than the thirty minute parking limitation are subject to the Overtime Parking Fee’s listed above.
- 14. No fee is required for use of the one hour designated parking stalls located in the City Hall parking lot for any 24-hour period, vehicles parking for longer than the one hour (60 minute) limitation are subject to the Overtime Parking Fee’s listed above.
- 15. No fee is required for Municipal Lot P4 between the hours of 5:00 PM – 3:00 AM the following day; each day Sunday through Thursday.

16. No RV Parking in City owned lots with exception to the Festhalle Lot. RV Parking is available at no charge in the Washington State Department of Transportation Lot with a 24-hour limit.
17. Holiday & Festival Day rates to be determined by the City Administration without notice.

Other Licenses / Permits

Business Licenses:

Number of Persons	
1 to 12	\$115.00
13 and Over	\$300.00
Penalty within one month of city notification of delinquency.....	50 % of license fee
Penalty after one month of city notification of delinquency.....	100% of license fee
Peddler License (non-profits exempt).....	\$50.00
Transient Business.....	\$100.00
Temporary change of occupancy number.....	\$100.00

Vehicle for Hire Licenses:

Motorized vehicle for hire license initial application:	\$500.00
Any new business, part year after January 1 to June 30	½ Rate
Penalty after July 31 but on or before August 31	50 % of license fee
Penalty after August 31.....	100% of license fee

Licenses are renewed on or before July 1 of each year at a rate of \$75.00 per year, per vehicle.

Non-motorized vehicle for hire license:

	\$500.00
Any new business, part year after January 1 to June 30	½ Rate
Penalty after July 31 but on or before August 31	50 % of license fee
Penalty after August 31.....	100% of license fee

Licenses are renewed on or before July 1 of each year.

Special Use Permits:

Offering and/or selling of goods or services in public places and/or street license (year)....	\$50.00
Festival Fee per LMC 5.38.060.....	\$100.00
City Park Right-of-Way Square Footage Rate per Square Foot per month.....	40 cents
Sidewalk Right-of-Way Square Footage Rate per Square Foot per month.....	60 cents
Right-of Way Permit for Street Closure.....	\$100.00

Leasehold Excise Tax: Special Use Permits that exceed \$250, all necessary fees combined, are subject to the State Leasehold Excise Tax of 12.84% that will be added in addition to the fees of the Special Use Permit unless otherwise exempt under WAC 458-29A-400.

The City Council and/or City Administrator may reduce certain Special Use Permit fee's upon request.

LEAVENWORTH MUNICIPAL CODE

A Codification of the General Ordinances
of the City of Leavenworth, Washington

CODE PUBLISHING COMPANY | Seattle, Washington

Mobile Version

Title 13 WATER AND SEWERS

Chapters:

13.02 Water and Sewer System

I. Water

13.04 Water Utility and Water Distribution System

13.06 Cross Connection Control

13.14 Commercial Water Meters

II. Sewers

13.68 Use Required

13.72 Definitions

13.76 Sewer Construction Regulations

13.80 Sanitary Sewer Use Charges

13.81 Sanitary Sewer Connection Charges

13.82 Storm Sewer Use Charges

13.83 Storm Sewer Connection Charges

13.84 Control of Industrial Waste

13.88 Prohibited Discharges

13.90 Surface and Storm Water Management Program Rate Structure

13.92 Right of Entry

13.96 Violations

Mobile Version

Chapter 13.02 WATER AND SEWER SYSTEM

Sections:

- 13.02.010 Purposes.**
- 13.02.020 General intent.**
- 13.02.030 Revenues.**
- 13.02.040 Specifications for improvements.**
- 13.02.050 Cost of new installations within city limits.**

13.02.010 Purposes.

To ensure the orderly growth of the water and sanitary and storm sewer systems of the city, the city council has deemed it necessary and advisable to adopt a uniform policy for guidance of those employees of the city entrusted with the operation of such system, for future city councils and for other interested parties, and to that end the ordinance codified in this chapter has been prepared. [Ord. 613 § 1, 1978.]

13.02.020 General intent.

It is the express intent of the city council that the water and sewer utilities shall be self-supporting operated without drawing upon the general fund of the city. It is the aim of the city council by this chapter to provide that:

- A. The total revenue of the water and sewer utilities shall be such as to provide the necessary funds to ensure that they are self-supporting.
- B. The cost of installation of that portion of the utility which specially benefits the real property in the area served shall be assessed against such property on a proportionate basis.
- C. The cost of installation of that portion of the utility which does not specially benefit the real property in the area served but which benefits the community as a whole shall be borne by the revenues of the utility.
- D. The total annual revenues of the utility shall be contributed by users for whose use, need and benefit the facilities of the utility are provided approximately in proportion to the cost of providing the use and benefits of said utility. [Ord. 613 § 2, 1978.]

13.02.030 Revenues.

The rates to be charged for water and sewer service shall be fixed by ordinance and shall be adequate to provide for ordinary maintenance, bond redemption and operation costs of the system and for (A) a replacement reserve to be used to replace the present system, or parts thereof, as the same become worn out or obsolete and (B) a betterment reserve to provide for extensions and additions to the systems not otherwise provided for in this chapter. [Ord. 613 § 3, 1978.]

13.02.040 Specifications for improvements.

All specifications for extensions, expansions, additions, betterments and replacements to the existing water and sewer utility system shall be determined by the city engineer. [Ord. 613 § 4, 1978.]

13.02.050 Cost of new installations within city limits.

Whenever any area or areas within the city, which are not now served by the water and sewer utilities, shall request such service, the person or persons making such request shall provide for payment of the construction costs and related engineering, legal and administrative expenses by means of local improvement district in the manner provided by law or by contract with the city providing for direct installation under specifications and supervision of the city engineer. [Ord. 613 § 5, 1978.]

Mobile Version

I. Water**Chapter 13.04
WATER UTILITY AND WATER DISTRIBUTION SYSTEM**

Sections:

- 13.04.010 Purpose.
- 13.04.020 Scope.
- 13.04.030 Definitions.
- 13.04.040 Mandatory domestic service and private irrigation wells.
- 13.04.050 Application, contract and installation of new service.
- 13.04.060 Owner of rental properties responsibilities.
- 13.04.070 Meter reading, billing and adjustments.
- 13.04.080 Payment of bills.
- 13.04.090 Provisions for shutoff of water.
- 13.04.100 Service charges.
- 13.04.110 Monthly water rates and tap fees.
- 13.04.120 Mailing and receiving city communications.
- 13.04.130 Change of occupancy.
- 13.04.140 Transfer of previous unpaid accounts.
- 13.04.150 Resale.
- 13.04.160 Point of service, delivery, care and ownership of facilities.
- 13.04.170 Repair and maintenance of service lines.
- 13.04.180 Customer's responsibility for city property.
- 13.04.190 Right of access.
- 13.04.200 Inspection.
- 13.04.210 Meter tests.
- 13.04.220 Separate meter for each class of service.
- 13.04.230 Home occupations.
- 13.04.240 Water use during fire.
- 13.04.250 Fire protection piping.
- 13.04.260 Fire hydrant – Obstruction prohibited.
- 13.04.270 Fire hydrant – Unauthorized use prohibited.
- 13.04.280 Fire hydrant spacing – Installation required.
- 13.04.290 Right to restrict water use.
- 13.04.300 Water saver devices required.
- 13.04.310 Cross connection control.
- 13.04.320 Negligent use, condition of customer's facilities.
- 13.04.330 City representation by employees.
- 13.04.340 Violations and enforcement.

13.04.010 Purpose.

In accordance with the city's objective of providing the best possible service at the lowest possible cost consistent with sound business principles, it is the intent and purpose of this chapter to ensure that the water system operates in a safe and efficient manner, that the total revenue of the water utility will ensure that it is self-supporting, and that all water customers receive uniform and equitable consideration. [Ord. 860 § 1, 1990.]

13.04.020 Scope.

These service regulations are a part of all oral or written contracts for furnishing and receiving water service. Copies shall be available upon request at the clerk-treasurer's office located in the Leavenworth City Hall, during regular business hours of 9:00 a.m. to 5:00 p.m. on normal workdays (Monday through Friday, except holidays). [Ord. 860 § 3, 1990.]

13.04.030 Definitions.

For the purpose of this chapter, the words set out in this section shall have the following meanings:

"City" means the city of Leavenworth.

"Community water line" means a privately owned and maintained water distribution line network, connected to a city water main with the approval of the city.

"Customer" means any individual, firm or organization who receives water service and is responsible for paying the bill under one or more rate classifications, contracts or schedules.

"Department" means the city water department.

"Domestic service" means an approved connection to a city water main, consisting of a water service tap and a service lateral, intended for the full range of uses, including both inside plumbed uses and outside watering use.

"Fire service" means an approved connection to a city water main, consisting of a water service tap and a service lateral, intended exclusively for use by an emergency fire suppression system, such as sprinklers, or fire hose lines.

"Irrigation service" means an approved connection to a city water main, consisting of a water service tap and a service lateral, intended exclusively for outside watering use of landscaped or planted areas.

"Point of delivery" means the point at which water service is delivered to the customer's owned service line. Point of delivery is generally established as the meter location for residential customers, and the meter location or shutoff valve, whichever is closer to the main, in the case of commercial customers.

"Point of use" means the point at which water is used by the customer, normally a building, structure or irrigation distribution system.

"Service lateral" means a water pipe beginning at the city's water main and extending to the customer's point of use.

"Water distribution main" means a city-owned water pipe to which one or more water services may be connected.

"Water service area" means that area identified in the Leavenworth comprehensive water plan, including all revisions and addendums thereto, as being able to receive water service at appropriate standards of pressure and flow, given the current status of system improvements.

Water Service, Commercial. "Commercial water service" means a water service to all classes of customers except single-family water service customers.

Water Service, Single-Family. "Single-family water service" means a water service to a single-family dwelling, or to individual units in a single-family dwelling, or to individual units in a duplex, only when each unit is served by a separate tap.

"Water service tap" means an approved and authorized connection to the city's water distribution system, denoted and identified by a water tap number, assigned by the city.

"Water transmission main" means a large-diameter pipe (normally 10-inch or larger) connecting the city's distribution main network. [Ord. 860 § 2, 1990.]

13.04.040 Mandatory domestic service and private irrigation wells.

All individuals, firms or organizations located within city limits requiring domestic water service shall be required to be connected to the city's water system. Private domestic wells are not permitted. Private irrigation wells will be permitted within the city limit on parcels two acres or larger; provided, that the city reserves the right to deny approval of wells which may threaten the city's present or future domestic supplies. A permit signed by the city administrator must be obtained for such systems. Appropriate backflow prevention devices are required and inspection of the installation by the city is required for such systems. [Ord. 860 § 4, 1990.]

13.04.050 Application, contract and installation of new service.

A. Any individual, firm, or organization desiring water service from the city shall make application therefor upon a printed application form provided by the city, signed by the applicant and filed at the Leavenworth City Hall.

B. The application for a new service shall contain a location of the premises where such water services are desired, and all pertinent information covering type and characteristics of customer's water consumption use.

C. The application shall constitute a contract on the part of the customer making the same, to pay for the water services applied for at the rate, in the manner, and for the time specified in such contract.

D. The customer may terminate this contract in accordance with the provisions of LMC 13.04.070(D).

E. No person or agency other than city personnel will be allowed to tap or connect a new service to city water mains. All materials and methods used to install a new service from the water main to the point of use shall conform with standard specifications and requirements.

F. New service taps shall be made on city water mains only, and the property to be served must front on, or be contiguous with, a city water main. The only exception to this provision shall be for persons contiguous to a community water line existing prior to the effective date of the ordinance codified in this chapter, where the city may permit additional hookups; provided, that sufficient capacity exists on the community line. Customers not fronting on a city water main or acceptable community line will be required to pay for the installation of a new water main, including valves and hydrants as needed, to city standards and specifications, prior to being hooked up.

G. The city shall install all piping and related materials from the water main to the point of delivery, unless special arrangements are made for such situations as new plats and large diameter commercial services. In such cases, the city may permit contractor installation, subject to city inspection, with the customer paying for the cost of inspection. The customer shall be responsible for all such installation costs, including street excavation and restoration. These costs will normally be included in the water service tap fees. The water meter box will be installed at or near the property line adjacent to the street or alley whenever possible.

H. It shall be illegal for anyone to connect to the city water system without making application and receiving approval by the city, in accordance with the provisions of this chapter. It shall also be illegal to connect to a private service or service lateral. Illegal hookups within the city limits shall be charged a hookup fee and up to three years back water charges, at the current water rate. Illegal hookups outside city limits shall be given a 30-day notice that the service will be disconnected, and be billed up to three years back water use. Provided that no hookup moratorium is in effect at that time, reconnection may be authorized, upon payment of the reconnection fee. In determining excess water charges for illegal water hookups, the city is authorized to estimate such charges based on use by similar customers. [Ord. 860 § 5, 1990.]

13.04.060 Owner of rental properties responsibilities.

The owner and any lessee of leased or rented property are individually and jointly responsible for monthly payment for all charges for water serving the property. [Ord. 860 § 6, 1990.]

13.04.070 Meter reading, billing and adjustments.

A. Meters shall be read as near to the same time each month as possible and bills rendered on the first day of the following month. The reading and billing dates may vary from a standard month by as much as five days because of holidays, Saturdays, and Sundays. The city may estimate meter readings for billing purposes when its meter reader is unable to gain access to the premises on his/her regularly scheduled meter reading trip, or when the meter has been tampered with or is not functioning properly, or when circumstances beyond the control of the city make reading of meters impractical or impossible.

B. Base rate charged shall be billed in advance for service for the month that the bill becomes due. Consumption charges shall be for previous consumption subject to billing.

C. When it has been determined that a customer has received unmetered service or when the customer has caused the service furnished to be improperly or inaccurately metered, the city may render bills for such service based upon its reasonable estimate of the service actually furnished for the full period during which the service was unmetered or improperly metered.

D. Should a customer have service disconnected within five working days after the end of a month, that customer will not be required to pay minimum charges for the month that service was discontinued, but will be required to pay for water used during those days after the preceding billing period.

E. The city may alter or reroute its meter reading and billing cycle dates when such alteration or rerouting is in the best interest of the city.

F. Bills will be mailed by the city to the billing address furnished by the customer, and failure to receive a bill will not release the customer from obligation of payment when due.

G. Commercial water customers will be billed for excess water use year around. Residential water customers will be billed for excess water use only for the months of May through September, in recognition of the practice of flowing water for freeze protection during the winter months.

H. Charges Constitute a Lien. All charges for the use of water shall be the legal obligation of the owner of, and are a lien against the premises to which water has been furnished, and accounts will not be opened with individuals, tenants or occupants of any property unless they hold a lease, of at least one year's duration, and then only when served by a separate pipe from the water main. [Ord. 860 § 7, 1990.]

13.04.080 Payment of bills.

Bills are due and payable on the tenth day of each month. Accounts which are unpaid after the twentieth of the month are deemed past due, and subject to an additional charge of \$5.00. Water service will be subject to shutoff for all accounts which are still unpaid on the fifteenth day of the month following the original billing date, in accordance with the procedure outlined in LMC 13.04.090(C). [Ord. 860 § 8, 1990.]

13.04.090 Provisions for shutoff of water.

A. The city administrator or his designee may at any time order or cause water service to be cut off from any premises connected to the city water system, without notice where an emergency exists or for the purpose of making inspection, extensions, repairs, or to prevent damage to property.

B. When water service will be cut off for purposes of inspection, extension, or repair, to prevent damages to property and the period of cutoff of service is estimated by the water department to exceed four consecutive hours, then, before such cutoff, the city shall give reasonable notice to the individuals to be affected by the cutoff as far in advance of the actual cutoff as is feasible. The following methods will be considered reasonable: use of telephone, television, radio, newspaper, mail, personal contact, or notification left at the premises.

C. Water service may also be cut off where a water connection charge has not been paid or where a bill for water service has not been paid. Procedure for notification, with opportunity for appeal, shall be as follows:

1. A notice that the account is past due, with late charges as prescribed above, and subject to water shutoff if not promptly paid, shall be mailed to the customer as soon as the account becomes past due.
2. If the bill is not paid as required in the notice, written notice by certified mail with return receipt requested will be sent on the fifth of the month following the date when the account became past due, stating that the customer is delinquent in payments, the customer has the right to protest the bill and appeal to the clerk-treasurer concerning the amount due. If the bill has not been paid, or if no hearing is requested by the fifteenth of the month following the date when the account became past due, the water will be immediately shut off by the city without further notice.
3. In cases where receipt of certified mail notice is not returned to the city, a water department employee will deliver the notice in person. If no one can be found at home, the notice will be attached to the doorknob of the residence or otherwise conspicuously posted.
4. If the customer requests a hearing on the amount due, a hearing must be held with the clerk-treasurer, and the customer must be given an opportunity to be heard. The clerk-treasurer must determine what amount is due and owing and inform the customer.
5. The customer shall be given five days to pay the amount determined by the clerk-treasurer to be owing. If the customer has not paid said amount within five days, water service shall be shut off.
6. If, after service has been terminated, full payment of all amounts owing, plus a turn-on charge, is made, then water service shall be restored to customer, property, premises, or building.
7. In the event that water service is to be cut off from a known rental unit where a tenant is not the customer as previously defined, then, prior to the termination of service for nonpayment and after the city has satisfied the procedures in this section, the city shall place upon the premises at least two working days prior to cutoff of service such notice as is reasonably calculated to inform the tenant or tenants of the proposed cutoff of service.
8. When abnormally high usage is determined to be due to a verified leak, a significantly high billing may be appealed to the city administrator provided the leak was not caused by the intentional act of the utility customer or his agents or employees. The city administrator, or his or her designee, may agree to limit the affected billing to not more than the historical billing for the month in question plus 10 percent of the total actual metered bill amount. Such appeals may only be made for the first month's billing that is significantly high as a result of the leak. If billing relief is granted, the customer shall be responsible for presenting documentation to the city that the leak has been repaired within one month of the first significantly high billing resulting from the leak. Failure to repair the leak and provide the city with documentation that the repair has been made, within said 30-day period, will result in the entire bill plus all applicable penalties, becoming due and payable to the city.
9. The turn-on charge shall be set by resolution of the Leavenworth city council from time to time and said rates shall be on file at the office of the city clerk-treasurer. Payment must be made at City Hall. The turn-on charge is payable when a work order for disconnection has been written, even if actual disconnection has not been made.

D. Connection and Disconnection of Service. The city will refuse to connect or will disconnect service for good cause, including violation of any of its service regulations, violation of rate schedule or contract provisions, theft or illegal diversion of water or upon the receipt of written instructions from proper authorities for violation of state or national sanitary codes, or city municipal codes. Except where otherwise provided in these regulations, the city shall, before disconnection, attempt to give the customer reasonable advance notice as to such disconnection,

including reasons for the disconnection and the time of the disconnection; the nature of the notice required and the period of time before disconnection shall be reasonable under the particular circumstances, with special consideration for the potential danger to life and property.

The disconnection of service for any cause shall not release the customer from his obligation to pay for services received or amounts specified in the city's service regulations or any written contract with the customer. [Ord. 1239 § 1, 2004; Ord. 1180 § 1, 2003; Ord. 860 § 9, 1990.]

13.04.100 Service charges.

A. An account service charge of \$10.00 is to be collected when processing service applications, or for any customer requested change of account, billing, or address, except as exempted below. Service charge fees shall be set by resolution of the Leavenworth city council from time to time and said fees shall be on file at the office of the city clerk-treasurer.

1. Name changes involving conditions where a wife applies for her former husband's account, where a husband assumes his wife's account, or other name changes as a result of marriage;
2. Whenever a change order is used to change the account of a customer into the name of an estate and regular billing is continued with no additional meter reading required;
3. When an owner or agent assumes temporary responsibility for service that may be used while the premises are vacant;
4. Whenever an account has been disconnected for nonpayment and has been reconnected subject to reconnect charge.

B. The customer is to be advised of the account service charge at the time the application is taken.

C. The account service charge is to be collected in cash or check when application is taken or, at the discretion of the city, other arrangements may be made with the clerk-treasurer.

D. Individual service applications shall be required for each meter and service tap. [Ord. 1180 § 2, 2003; Ord. 860 § 10, 1990.]

13.04.110 Monthly water rates and tap fees.

Effective January 1, 1999, water rates shall be set by resolution of the city council from time to time and such rates shall be on file at the office of the city clerk-treasurer. [Ord. 1104 § 1, 1998; Ord. 1075 § 1, 1998; Ord. 1068 § 1, 1997; Ord. 1046 § 1, 1997; Ord. 1020 § 1, 1996; Ord. 940 § 1, 1993; Ord. 933 § 1, 1993; Ord. 914 § 1, 1992; Ord. 860 § 11, 1990.]

13.04.120 Mailing and receiving city communications.

All correspondence, bills and notices relating to items covered by these regulations shall be sent by mail except where specifically provided otherwise. Also, such communications may be delivered personally. Customers shall provide proper mailing addresses and means of receiving mail. Failure to do so shall render the service subject to disconnection under the same notice. [Ord. 860 § 12, 1990.]

13.04.130 Change of occupancy.

When a change of occupancy or legal responsibility takes place on any premises being served by the city, notice of such change shall be given at the City Hall within a reasonable time prior to such change. The outgoing customer may be held responsible for all service supplied until such notice has been received by the city. [Ord. 860 § 13, 1990.]

13.04.140 Transfer of previous unpaid accounts.

The city may transfer to an existing or new service account any unpaid charges for water service previously rendered to the same customer at any location in the city's service area. Such transferred balances shall be

considered part of the customer's current obligation to the city as though the previous unpaid balance had been incurred at the present service address. The city may apply any payment received from the customer toward the customer's transferred balance if the customer has not paid the transferred balance. The city, upon detection of an unpaid balance, shall notify the customer in writing of said unpaid balance, including the dates and location of the service, the city's regulations concerning transferred balances, and the possibility of disconnection of service. [Ord. 860 § 14, 1990.]

13.04.150 Resale.

Water service is not to be resold by the customer, except by special contract with the city. [Ord. 860 § 15, 1990.]

13.04.160 Point of service, delivery, care and ownership of facilities.

A. The point of water delivery for residential customers shall be at the water meter which, together with the shutoff valve, will normally be located at or near the property line.

B. The point of water delivery for commercial customers shall be the curb stop shutoff valve, which will normally be located at or near the property line.

C. The water meter for commercial customers will be located at the curb stop shutoff valve when exterior meter installation is deemed appropriate by the city, but may be located inside the building or at a location beyond the curb stop shutoff, when installation circumstances warrant.

D. All water meters, meter boxes, shutoff valves, and service lines and fittings between the water service tap and the point of delivery shall be the property of the city. The customer shall be responsible for damage which is due to carelessness, negligence, or intentional acts by the customer.

E. Water service customers shall take every reasonable action necessary to protect the water meter from damage by frost or other cause. The city shall not be liable for damages caused by frozen pipes. When necessary, frozen, damaged or destroyed water meters shall be repaired or replaced by the city and the cost thereof shall be paid by the customer. In the event of nonpayment by the customer, the water service shall be shut off by the city until the costs have been paid in full.

F. Each winter season, the city will install meter frost protection material in each customer meter box. The customer may opt to install additional insulation material above the city-installed insulation pad only. If it becomes necessary for the customer to temporarily remove the frost protection material, he shall inform the city so that city personnel can ensure that it is properly reinstalled.

G. In the event of a frozen service lateral, it shall be the customer's responsibility to thaw the line between the service tap and the actual point of use. City personnel will not attempt to thaw such frozen lines. Only qualified and insured parties shall attempt to thaw such frozen lines. Prior notification to the Chelan County public utility district and the city is required. [Ord. 860 § 16, 1990.]

13.04.170 Repair and maintenance of service lines.

A. Repair or maintenance of the water service line between the service tap and the point of delivery shall be performed by the city at no cost to the customer, unless for reasons described in LMC 13.04.160(D) through (F).

B. Repair or maintenance of the water service line between the point of delivery and the point of use shall be the responsibility of the customer, and the customer or his contractor must do the work.

C. In the event that the service line between the service tap and the point of delivery is deteriorated to the extent that replacement is required, the customer shall be responsible for the cost of such work. The work will be done either by the city or by a properly qualified contractor, subject to inspection by the city. The city reserves the right to determine when a service line has deteriorated to the extent that repair is no longer appropriate and replacement is required. [Ord. 860 § 17, 1990.]

13.04.180 Customer's responsibility for city property.

Any customer or person damaging, removing, disconnecting or otherwise interfering with any meter, remote readout, remote wiring, or any apparatus belonging to the city will be subject to prosecution under the law.

The customer shall exercise proper care to protect the city's property on his premises. This shall include meters, meter boxes, remote meter vaults readouts, wires and other facilities. In the event of loss or damage to the city's property, the city may collect from the customer the cost of repairs or replacement. Where the situation warrants, the city will furnish a standby serviceman at no charge, during regular working hours and when given adequate notification for customers who may wish to do work or such other activities which might endanger property. [Ord. 860 § 18, 1990.]

13.04.190 Right of access.

The customer shall grant as a condition of service all necessary permission to enable the city to install and maintain its serving facilities on the premises of the customer and to carry out its contract. The city shall have the right through its employees, or other agents, to enter upon the premises of the customer at all reasonable times for the purpose of reading, connecting, disconnecting, inspecting, repairing or removing the metering devices, wiring, services, or other facilities of the city. The customer shall be responsible for restraining animals which pose a threat to meter readers and maintenance personnel. Meters which cannot be read because of animals or other obstructions will be estimated until they can be properly read. [Ord. 860 § 19, 1990.]

13.04.200 Inspection.

The city shall have the right, but shall not be obligated to inspect the customer's water service facilities before or during the time service is supplied. However, such inspection, or lack of inspection, shall not be construed as placing upon the city any responsibility for the condition of maintenance of the customer's water service. [Ord. 860 § 20, 1990.]

13.04.210 Meter tests.

The city will, at its own discretion and expense, inspect and test its meters as required to ensure a high standard of accuracy. Additional tests at the request of a customer will be made; and if the meter is found to register accurately within two percent, the city may charge a test fee of \$15.00 for each such test. If the meter is found to register in excess of two percent, fast or slow, the city will pay for the testing and will adjust the customer's billing for the known or assumed period or error, not to exceed the previous six months. [Ord. 860 § 21, 1990.]

13.04.220 Separate meter for each class of service.

If the customer desires to use water for purposes classified under different rates, separate meters must be installed to measure the water supplied to each rate. The city will designate the rate schedule applicable to each meter and bill each meter at the appropriate rate schedule. Unless otherwise specified in a special contract, the city will not totalize the metering of separate service or meters.

If the customer desires additional meters for his own use other than those required by the city, such additional meters shall be provided, installed and maintained by the customer on the customer's side of the city meter, at his own expense, and shall not be read by the city. [Ord. 860 § 22, 1990.]

13.04.230 Home occupations.

Unless otherwise provided for under the conditions of the permit, home occupation permits shall be regarded as residential water uses only, and not subject to the provisions of LMC 13.04.220. [Ord. 1467 § 1 (Att. A), 2014; Ord. 860 § 23, 1990.]

13.04.240 Water use during fire.

It is unlawful for any person to use water for irrigation or sprinkling purposes during the progress of any fire in the city. All irrigation and sprinkling shall be immediately stopped when the alarm of fire is sounded and shall not be resumed until the fire is extinguished. [Ord. 860 § 24, 1990.]

13.04.250 Fire protection piping.

If a customer desires a fire system separate from his or her other water service, the rules under LMC 13.04.050 shall apply. The city may or may not require metering or detection equipment for the fire system. No other use of the fire protection system will be permitted. No person shall extend or make changes of any kind before receiving written permission from the city administrator or his designee. If the fire system is to be tested, the customer shall first receive permission from the city administrator or his designee and city employees shall be present at such test. [Ord. 860 § 25, 1990.]

13.04.260 Fire hydrant – Obstruction prohibited.

It is unlawful for any person to obstruct or hinder the access to any fire hydrant by placing around or upon the hydrant any brick, lumber, stone, dirt, vegetation, or any other material or thing, or to permit or cause to be permitted any such material to be placed around or thereon by those in his employ, or in any other manner not mentioned herein obstruct the free access to any such fire hydrant in the city. [Ord. 860 § 26, 1990.]

13.04.270 Fire hydrant – Unauthorized use prohibited.

All fire hydrants shall be under the control and shall be kept in repair by the water department and by the fire department, and such other persons as the city administrator or his designee may authorize to have free access to the hydrants. It is unlawful for all other persons to open any fire hydrant or attempt to draw water therefrom or wilfully or carelessly injure the same. [Ord. 860 § 27, 1990.]

13.04.280 Fire hydrant spacing – Installation required.

The normal distance between fire hydrants shall be 300 feet. The city may require installation of new hydrants in conjunction with any proposal for extension of the city's water system. [Ord. 860 § 28, 1990.]

13.04.290 Right to restrict water use.

The city reserves the right, in case of shortage or potential shortage of water, to make orders through the city administrator or his designee forbidding the use of water for irrigation, sprinkling, or other nonessential purposes. Such order may be made at any time and, when printed in the official paper or served in writing upon the customer, shall be deemed as sufficient notice thereof. The city may adopt, by resolution, policies and procedures designed to encourage or mandate water conservation or curtailment measures when conditions require. [Ord. 860 § 29, 1990.]

13.04.300 Water saver devices required.

All structures constructed within the water service area after the effective date of the ordinance codified in this chapter shall be required to install water saver toilets that use no more than 3.5 gallons per flush, and shall be American Standard, Kohler, Eljer, or approved equal; shall be required to install in all showers a device to restrict the flow of water to a maximum of three gallons per minute; it is recommended to insulate all interior domestic water pipes with one half-inch thick for cold water and three fourths-inch thick for hot water tubular high density closed cell pipe insulation; the insulation shall be Rubatex or approved equal and shall be installed in accordance with the manufacturer's published recommendations; it is recommended to install all built-in dishwashers with metered fill devices which do not depend on time or pressure for operation.

All building permits will require acknowledgement by the building contractor of these requirements. City Hall shall be notified 24 hours in advance of any installation which will be covered and out of sight so that inspection of the water conservation devices can be done. Failure to comply with these requirements shall be grounds for refusal of water and sewer service. [Ord. 860 § 30, 1990.]

13.04.310 Cross connection control.

The city has the right to require the installation of a cross connection control device or devices on any service connection it deems necessary in order to prevent the possibility of contamination of the public water system in accordance with state and local health requirements, and the city's adopted cross connection control regulation. The city shall also have the right to review the plumbing arrangement of proposed or existing buildings or improvements, and to require certain changes to protect the public water system. No provision of this chapter shall relieve the property owner or customer of the responsibility to design and construct all private water facilities

and plumbing arrangements in full conformance with applicable health and plumbing codes. [Ord. 860 § 31, 1990.]

13.04.320 Negligent use, condition of customer's facilities.

All water customers served by the city shall utilize the water served through their connections in a responsible and nonwasteful manner. If the city deems that a customer is utilizing the water in an irresponsible or wasteful manner, the city shall have the right to discontinue service at its discretion. Similarly, if the city, through its inspections, tests or records, discovers that a customer's water service pipelines, facilities or plumbing are in a deteriorated condition or are being managed or controlled improperly, and such condition or management is resulting in a demonstrable waste of water, the city shall have the right to require the remedy of such conditions, and to discontinue service until such remedies are made by the customer. [Ord. 860 § 32, 1990.]

13.04.330 City representation by employees.

No inspector, agent, or employee of the city may ask, demand, receive or accept any personal compensation for any service rendered to consumers of water service or other persons, in connection with supplying or furnishing services by the city. No promise, agreement or representation of any employee or agent of the city with reference to the furnishing of water service shall be binding on the city unless the same shall be in writing signed by the mayor or his authorized agent. [Ord. 860 § 33, 1990.]

13.04.340 Violations and enforcement.

A. The remedies provided in this section for violations or failure to comply with provisions of this chapter shall be cumulative and shall be in addition to any other remedy to which the city is entitled by law.

B. Civil Remedies. The violation of or failure to comply with any of the provisions of this chapter is unlawful.

1. Injunction and Abatement. The city, through its authorized agents, may initiate injunction or abatement proceedings or other appropriate action in the municipal court or the courts of this state, against any person who violates or fails to comply with any provision of this chapter, or against the owner of the property on which a violation is occurring, to prevent, enjoin, abate or terminate violation of this chapter.

2. Civil Penalty. Any person who violates or fails to comply with any of the provisions of this chapter shall be subject to a maximum civil penalty of \$450.00 for each day or portion thereof that the violation has continued; provided, however, that the owner of the property on which the violation has occurred, who is not also the user of the water on said premises, shall be subject to the penalty only if demand for remedy of the violation has been mailed to the owner at his last known address by registered mail, return receipt requested, and the demand has remained uncomplished with for more than 30 days. The civil penalty provided for in this section may be imposed by the municipal court if within its jurisdiction or by the courts of this state and may be enforced in a civil action in superior court or in any other manner provided by Washington law.

3. Attorney Fees. In any action brought by the city to enforce this chapter or in any action brought by any other person in which the city is joined as a party challenging this chapter, in the event the city is a prevailing party, then the nonprevailing party challenging the provisions of this chapter or the party against whom this chapter is enforced in such action shall pay, in addition to the city's costs, a reasonable attorney fee at trial and in any appeal incurred by the city. [Ord. 860 § 34, 1990.]

Mobile Version

Chapter 13.06 CROSS CONNECTION CONTROL

Sections:

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- 13.06.020 Definitions.
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13.06.010 Purpose.

The purpose of this chapter is to protect the public water system from contamination or pollution due to any existing or potential cross connections as defined in WAC 246-290-010, as amended by this chapter. The purveyor shall ensure that cross connections between the distribution system and a customer's premises are eliminated or protected against by the installation of an approved air gap or approved backflow prevention assembly. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.020 Definitions.

Except where specifically designated herein, all words used in this document shall carry their customary meanings. Words used in the present tense include the future and plural words include the singular. The word "shall" is always mandatory, and the word "may" denotes a use of discretion in making a decision. Any definition not found in this section will take its meaning from the WAC (Chapter 246-290 WAC), or as amended.

"Air gap" means a physical separation between the free-flowing end of a potable water supply pipeline and the overflow rim of an open or nonpressure-receiving vessel. To be an "approved air gap," the separation must be at least twice the diameter of the inlet piping (supply pipe) measured vertically, and never be less than one inch.

"Approved backflow prevention assembly" or "backflow assembly" or "assembly" means an assembly to counteract back pressures or prevent back siphonage. This assembly must appear on the list of approved assemblies issued by the Washington State Department of Health.

"Auxiliary supply" means any water source or system other than the city of Leavenworth's water. This includes, but is not limited to, irrigation systems, ponds, streams, rivers or wells.

"Backflow" means the flow of water or other liquids, gases or solids from any source back into the distribution system. The flow of water in the opposite direction of its intended flow.

"Backflow prevention assembly tester" means a person holding a valid BAT certificate issued in accordance with WAC 246-290-490 and Chapters 18.27, 18.106 and 70.119 RCW.

"Back pressure" means water pressure which exceeds the operating pressure of the public potable water supply.

"Back siphonage" shall mean backflow due to a negative or reduced pressure within the public potable water supply.

"Building inspector" shall mean the building inspector for the city of Leavenworth.

"City" shall mean the city of Leavenworth.

"City administrator" means the person responsible for the enforcement of this chapter, or their designee.

"Closed system" means any water system or portion of a water system in which water is transferred to a higher pressure zone closed to atmosphere.

"Contamination" means the entry into or presence in a public water supply system of any substance which may be deleterious to health and/or quality of the water.

"Cross connection" means any physical arrangement where a public water system is connected, directly or indirectly (actual or potential), with any other nondrinkable water system or auxiliary system, sewer, drain conduit, swimming pool, storage reservoir, plumbing fixture, swamp coolers, or any other device which contains, or may contain, contaminated water, sewage, or other liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water system as a result of backflow. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, or other temporary or permanent devices through which, or because of which, backflow may occur are considered to be cross connections.

"Cross connection specialist" or "CCS" shall mean a person who has successfully completed and maintains all requirements as established by the Washington Department of Health to be a specialist in the state of Washington.

"Degree of hazard" means the low or high hazard classification that shall be attached to all actual or potential cross connections.

"DOH" means Washington Department of Health.

"Double check valve backflow prevention assembly" or "double check assembly" or "double check" or "DCVA" or "DC" means an assembly which consists of two independently operating check valves which are spring-loaded or weighted. The assembly comes complete with a shutoff valve on each side of the checks, as well as test cocks to test the checks for tightness.

"Health hazard" means an actual or potential threat of contamination of a physical, toxic or biological nature that would be a danger to health.

"High hazard" means the classification assigned to an actual or potential cross connection that potentially could allow a substance that may cause illness or death to backflow into the potable water supply.

"In-premises protection" means a method of protecting the health of consumers served by the customer's plumbing system (i.e., located within the property lines of the customer's premises) by the installation of an approved air gap or backflow prevention assembly at the point of hazard.

"Inspector" or "surveyor" shall mean a person holding a valid CCS certificate issued in accordance with the Washington Administrative Code, who meets the stipulations in this chapter, and the most recent edition of the city's standard operating procedures manual.

"Local administrative authority" means the local official, board, department or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code and all other plumbing codes recognized by the state of Washington.

"Low hazard" means the classification assigned to an actual or potential cross connection that potentially could allow a substance that may be objectionable, but not hazardous to one's health, to backflow into the potable water supply.

"Mobile unit" shall mean units connecting to the water system through a hydrant, hosebib, or other appurtenance of a permanent nature that is part of the city water system or a permanent water service to a premises. Uses that are prohibited include recreational vehicles, commercial operators, or other nonemergency services vehicles, apparatus or equipment.

"Person" means a natural person (individual), corporation, company, association, partnership, firm, limited liability company, joint venture company or association, and other such entity.

"Plumbing hazard" means an internal or plumbing-type cross connection in a consumer's potable water system that may be either a pollutional or a contamination-type hazard. This includes, but is not limited to, cross connections to toilets, sinks, lavatories, wash trays, domestic washing machines and lawn sprinkling systems. Plumbing-type cross connections can be located in all types of structures including, but not limited to, homes, apartment houses, hotels and commercial or industrial establishments.

"Point-of-use isolation" shall mean the same as "in-premises protection."

"Pollution" means an impairment of the quality of the public potable water supply which adversely affects the aesthetic qualities of such potable water for domestic use but does not create a hazard to the public health. Also referred to as "low hazard" or "non-health hazard." See also "Contamination."

"Potable water supply" means any system of water supply intended or used for human consumption or other domestic use.

"Premises" means any piece of property to which water is provided including, but not limited to, all improvements, mobile structures and structures located on it.

"Premises isolation" means a method of protecting a public water system by installation of an approved air gap or approved backflow prevention assembly at the point of service (end of purveyor's service pipe) to separate the customer's plumbing system from the purveyor's distribution system.

"Reduced pressure principle backflow prevention assembly" or "reduced pressure principle assembly" or "RP assembly" shall mean an assembly containing two independently acting approved check valves together with a hydraulically operated, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The assembly shall include properly located test cocks and tightly closing shutoff valves at each end of the assembly.

"SOP" means the most recent edition of the city of Leavenworth's standard operating procedure manual.

"System hazard" means an actual or potential threat of severe danger to the physical properties of the public or consumer's potable water system or of a pollution or contamination which would have a detrimental effect on the quality of the potable water in the system.

"Thermal expansion" means the pressure created in piping when water is heated.

"Used water" means any water supplied by the city to a customer's property after it has passed through the service connection and is no longer under the control of the city water system.

"WAC" means the most recent edition of the Washington Administrative Code.

"Water system" shall mean the city of Leavenworth's public water system. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.030 Cross connections regulated.

A. No cross connections shall be created, installed, used or maintained within the territory served by the city, except in accordance with this chapter.

B. The CCS for the city shall determine if any actual or potential cross connection exists. If found necessary, an assembly commensurate with the degree of hazard will be required to be installed at the service connection.

C. The owner, occupant or person in control of the property is responsible for all cross connection control within the premises.

D. The use of any type of attachment connected to the plumbing including but not limited to the garden hose is prohibited except in accordance with this document.

E. Any service connection within the city which receives water from any other service including, but not limited to, other water systems or auxiliary supplies must abide by the contents of this chapter.

F. All premises found on Table 9 of WAC 246-290-490(4)(b) shall have installed a reduced pressure backflow assembly at the service connection in accordance with this chapter.

G. It is the responsibility of the property owner/occupant to pay for the purchase, installation, test, repair and maintenance of all backflow assemblies. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.040 Application and responsibilities.

This chapter applies throughout the city of Leavenworth and to every premises and property served by the city. It applies to any premises, public or private, regardless of date of connection to the water. Every owner, occupant and/or person in control of any concerned premises is responsible for compliance with the terms and provisions contained herein. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.050 Backflow prevention assembly requirements.

A CCS employed by or under contract with the city shall determine the type of backflow prevention assembly to be installed within the area served by the city. All assemblies shall be installed at the service connection unless it is determined by the CCS that the assembly can be installed at some other point. An assembly will be required in each of the following circumstances, but the CCS is in no way limited to the following circumstances:

- A. In the case of any premises where there is any material dangerous to health which is handled in such a fashion as to permit entry into the potable water system, the potable water system shall be protected by an approved air gap separation or an approved reduced pressure backflow assembly.
- B. When the nature and extent of any activity on the premises, or the materials used in connection with any activity on the premises, or materials stored on the premises, could contaminate or pollute the potable water supply.
- C. Premises having any one or more "cross connections" or potential "cross connections" as that term is defined by this chapter and the WAC.
- D. When an appropriate cross connection survey report form has not been filed with the city.
- E. Internal cross connections are present that cannot be eliminated or corrected.
- F. When intricate plumbing arrangements are present making it impractical to ascertain whether cross connections exist.
- G. There is a repeated history of cross connections being established or re-established.
- H. Materials are being used such that, if backflow should occur, a health hazard could result.
- I. Installation of an approved backflow prevention assembly is deemed to be necessary to accomplish the purpose of these regulations in the judgment of the CCS.
- J. Any premises where an auxiliary water supply is connected to the potable water supply.
- K. All new construction.
- L. In the event a point-of-use assembly which is protecting the city's distribution system has not been tested or repaired as required by WAC 246-290-490, or as amended, and this chapter, a premises isolation assembly will be required.
- M. It is determined that additions or rearrangements have been made to the plumbing system without obtaining proper permits as required by the city's development services department, premises isolation will be required.
- N. All high health hazard premises which are defined in Table 9 of WAC 246-290-490, or as amended, are required to have premises isolation by installing an approved air gap or reduced pressure principle assembly in accordance with this chapter. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.060 Irrigation systems.

All irrigation systems shall be protected according to plumbing code regulations. In the event any system is equipped with an injector system, a reduced pressure backflow assembly will be required. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.070 Fire systems.

An approved double check backflow prevention assembly shall be the minimum protection on all new fire sprinkler systems using piping material that is not approved for potable water use, and/or does not provide for periodic flow-through during each 24-hour period. A reduced pressure principle backflow prevention assembly must be installed, if any solution other than the potable water can be introduced into the sprinkler system. Retrofitting on fire sprinkler systems will be required in each of the following circumstances:

- A. Where improper maintenance has occurred;
- B. On all high hazard systems;
- C. Wherever inspector deems necessary; and

D. Wherever required by the WAC. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.080 Temporary connections.

Backflow protection will be required on all temporary meters and hydrant valves before any use. The type of assembly to be used will be commensurate with the degree of hazard and will be determined on a case-by-case basis by a city of Leavenworth CCS. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.090 Mobile units.

Any mobile unit or apparatus, as defined in LMC 13.06.020, which uses the water from any premises within the city's water system, shall first obtain approval from the city administrator and/or designee and be inspected to assure appropriate backflow prevention is installed in accordance with the city's SOP manual. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.100 Right-of-way encroachment.

A. No person shall install or maintain a backflow prevention assembly upon or within any city right-of-way except as provided in this section.

B. The city reserves the right to have an assembly installed in the right-of-way.

C. A backflow prevention assembly required by the city may be installed upon or within any city right-of-way only if the owner proves to the city that there is no other feasible location for installing the assembly, and installing it in the right-of-way will not interfere with traffic or utilities. The city retains the right to approve the location, height, depth, enclosure, and other requisites of the assembly prior to its installation.

D. All permits required by the city to perform work in the right-of-way shall be obtained.

E. Residential assembly box shall be installed flush with the surrounding grade, and shall be at a distance no greater than 36 inches from right-of-way. Commercial assembly box shall be installed as determined by the city administrator and/or designee. Any assembly or portion of an assembly which extends aboveground shall be located no closer than 18 inches to the face of the curb, shall be protected from freezing damage, and shall comply with the city's utility/engineering standards and specifications.

F. A property owner shall, at the request of the city and at the owner's expense, relocate a backflow prevention assembly which encroaches upon any city right-of-way, when such relocation is necessary for street or utility construction or repairs. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.110 Plumbing code.

As a condition of water service, customers shall install, maintain, and operate their piping and plumbing systems in accordance with all Washington State plumbing laws. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.120 Access to premises.

Authorized personnel of the city of Leavenworth, with proper identification, sufficient notice, and justification, shall have access during reasonable hours to the backflow prevention assembly of a premises and within the building to which water is supplied. However, if any owner, occupant or person in control refuses authorized personnel access to the backflow prevention assembly during those hours for inspection, a reduced pressure backflow assembly must be installed at the service connection to that premises as stipulated in WAC 246-290-490(4)(b).

Pursuant to WAC 246-290-490(2)(g)(ii)(E), purveyors with cross connection control programs that rely both on premises isolation and in-premises protection may reduce premises isolation requirements and rely on in-premises protection for premises other than the type addressed in WAC 246-290-490(4)(b), only if the following conditions are met: the purveyor has reasonable access to the consumer's premises to conduct an initial hazard evaluation and periodic reevaluations to determine whether the in-premises protection is adequate to protect the purveyor's distribution system. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.130 Testing and repairs.

Backflow prevention assemblies shall be tested in accordance with the requirements set out in the most recent edition of WAC 246-290-490, or as amended, in this chapter and the most recent edition of the city's SOP manual. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.140 Responsibilities of backflow prevention assembly testers.

A. All backflow prevention assembly testers operating within the city of Leavenworth water system service area shall be certified in accordance with all applicable regulations of the Washington DOH and shall comply with all stipulations in this chapter and the city's SOP manual.

B. Persons certified as backflow prevention assembly testers shall agree to abide by all requirements of the United States Occupational Safety and Health Administration (OSHA) and Oregon Occupational Safety and Health Administration (OR-OSHA).

C. It is the responsibility of backflow prevention assembly testers to submit records of all backflow prevention assembly test repairs to the city of Leavenworth within 10 days of completing the test. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.150 Maintenance of assemblies.

Backflow prevention assemblies shall be maintained in accordance with the requirements set out in the WAC and plumbing code, or as amended, and the city's SOP manual and adopted utility and engineering standards and specifications. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.160 Installation requirements and specifications.

Backflow assemblies shall be installed in accordance with the requirements set out in the WAC, plumbing code, the city's SOP manual, and city adopted utility and/or engineering standards. At any service connection where a premises isolation assembly is allowed to be installed at some other point than at the service connection, the following stipulations apply:

A. It is illegal to intertie any piping between the service connection and the assembly.

B. The CCS must have access during business hours to inspect the assembly. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.170 Thermal expansion.

If a closed system has been created by the installation of a backflow prevention assembly, it is the responsibility of the property owner to eliminate the possibility of thermal expansion. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.180 Pressure loss.

Any reduction in water pressure caused by the installation of a backflow prevention assembly is not the responsibility of the city. The city will give reasonable assistance to the owner regarding information on adequate sizing of assemblies and proper plumbing practices to provide for required pressure and flows for fire protection. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.190 Parallel installation.

Premises where noninterruption of water supply is critical shall have installed two assemblies of the same type in parallel. They shall be sized in such a manner that either assembly will provide the minimum water requirements while the two together will provide the maximum water requirements. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.200 New construction.

A. In all new construction, an approved backflow prevention assembly shall be installed at the service connection. The type of the assembly will be commensurate with the degree of hazard as determined by the inspector.

B. When a building is constructed and the end use of the building is not determined or could change, a reduced pressure principle backflow prevention assembly shall be installed at the service connection to provide protection of the public water supply in the event of the most hazardous use of the building.

C. The minimum protection on all new residential construction will be a double check. The type of assembly will be determined by the city's CCS. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.210 Service connections.

All properties shall comply with this chapter. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.220 Rental properties.

The property owner is responsible for the installation, testing and repair of all backflow assemblies on their property. If the plumbing is altered in any way, it is the responsibility of the owner to notify the city. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.230 Retrofitting.

Retrofitting shall be required on all service connections where an actual or potential cross connection exists as determined by the city of Leavenworth cross connection specialist. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.240 Costs of compliance.

All costs associated with compliance of this chapter are the financial responsibility of the owner. This includes, but is not limited to:

A. The purchase, installation, inspections, surveys, testing, replacement, maintenance, parts, and repairs of the backflow prevention assembly.

B. All shutoff, reconnect and legal fees. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.250 Terminations of service.

Failure on the part of any owner, occupant or person in control of the premises to install a required assembly, have it tested annually and/or to discontinue the use of all cross connections and to physically separate cross connections in accordance with this chapter and to abide by the contents of this chapter is sufficient cause to deny or discontinue public water service to the premises pursuant to WAC 246-290-490(2)(i)(i), (ii), and (iii) or as amended. In the case of an extreme emergency or where an immediate threat to life or public health is found to exist, discontinuance or termination of public water service to the premises shall be immediate. The city of Leavenworth may, at the property owner's expense, install a reduced pressure backflow assembly at the meter. Testing, maintenance and repair of the assembly will be the responsibility of the property owner. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.260 Emergency suspension of service.

The city administrator and/or their designee may, without prior notice, suspend water service to any premises when such suspension is necessary to stop the imminent threat of any actual or potential cross connection as defined in this chapter and the city's SOP manual. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.270 Nonemergency suspension of service.

The city administrator and/or their designee may suspend the water supply to any premises where the conditions of this chapter or the city's SOP manual have been violated. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.280 Terminations of service – Notice.

A. The city administrator or his designee may at any time order or cause water service to be shut off from any premises connected to the city water system, where the conditions of this chapter or the city's SOP manual have been violated. Procedure for notification, with opportunity for appeal, shall be as follows:

1. A first notice of noncompliance shall be transmitted to the property owner and/or listed customer (as listed in the city's water service billing system). This notice shall state:
 - a. That the backflow prevention assembly is now overdue for testing and/or correction necessary;
 - b. Such testing/correction is required;
 - c. The citation of noncompliance;
 - d. A statement that "failure to transmit the report to the city within the allocated time will constitute a violation, and a compliance order issued which may result in nonemergency suspension of service (shut off water service) per LMC 13.06.270"; and
 - e. The testing results must be sent to the city within 30 days of this notice.
2. Upon nonresponse, a second notice of noncompliance shall be transmitted to the property owner and/or listed customer stating that:
 - a. The backflow prevention assembly is now overdue for testing and/or correction necessary;
 - b. Such testing is required;
 - c. A first notice of noncompliance has been transmitted without response;
 - d. The citation of noncompliance;
 - e. A statement that "failure to transmit the report to the city within the allocated time will constitute a violation; and
 - f. A compliance order issued which may result in nonemergency suspension of service (shut off water service) per LMC 13.06.270," and the testing results must be sent to the city within 15 days of this notice.
3. If the backflow prevention assembly testing and/or correction, as required in the notice, is not completed within the total of 45 days from the first notice of noncompliance, a compliance order will be issued as a written notice by certified mail with return receipt to the property owner and/or listed customer stating:
 - a. The citation of noncompliance;
 - b. A first and second notice of noncompliance has been transmitted without response;
 - c. The right to appeal to the city council public works committee; and
 - d. The water will be immediately shut off by the city without further notice.
4. If the testing has not been completed and transmitted to the city, or if no hearing has been requested within 45 days from the first notice of noncompliance, the water will be immediately shut off by the city without further notice.
5. If, after service has been terminated, testing is completed, testing results are transmitted to the city, and a turn-on charge is made, then water service shall be restored to customer, property, premises, or building.
6. Compliance may include relocation, construction and/or installation of backflow prevention assembly which require the issuance of a building permit.
7. In the event that water service is to be shut off from a known rental unit, where a tenant is not the customer as previously defined, then, prior to the termination of service for noncompliance, and after the city has satisfied the procedures in this section, the city shall place notice upon the premises at least two

working days prior to shutoff of service. Such notice shall be reasonably provided to inform the tenant or tenants of the proposed shutoff of service.

8. The turn-on charge shall be set by resolution of the Leavenworth city council from time to time and said rates shall be on file at the office of the city clerk-treasurer. Payment must be made at City Hall. The turn-on charge is payable when a work order for disconnection has been written, even if actual disconnection has not been made.

B. The city will refuse to connect or will disconnect service for noncompliance with this chapter, except where entering into a voluntary correction agreement.

1. Prior to filing any compliance order notice, the CCS may enter, by annotation into the file of record, into a voluntary correction agreement with a person responsible for correcting the violation(s), which may be the owner, agent or occupant. The CCS may agree to extend the time limit for correction or may agree to modify the required corrective action.

C. The disconnection of service for any cause shall not release the property owner and/or customer from his obligation to pay for services received or amounts specified in the city's service regulations or any written contract with the property owner and/or customer.

D. The city of Leavenworth retains all legal rights and remedies available to it pursuant to local, state and federal law. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.290 Provisions as to availability of materials.

The clerk-treasurer is hereby directed to maintain at all times one copy of Chapter 246-290 WAC, and one copy of the most recent edition of the Pacific Northwest Section American Water Works Association Cross Connection Control Manual, Accepted Procedure and Practice, for public use and inspection during regular city business hours. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

13.06.300 Severability.

If any section, subsection, sentence, clause, or phrase of this chapter is, for any reason, held to be invalid or unconstitutional, such invalidity or unconstitutionality shall not affect the validity or constitutionality of the remaining portions of this chapter. [Ord. 1440 § 1 (Att. A), 2013; Ord. 1178 § 1, 2001.]

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Chapter 13.14 COMMERCIAL WATER METERS

Sections:

- 13.14.010 Authority to contract for installation of commercial water meters.**
- 13.14.020 Application of meter installation charges.**
- 13.14.030 Special water connection charge.**

13.14.010 Authority to contract for installation of commercial water meters.

The city or its duly authorized agents shall have the right to enter contracts with the owners of commercial real property or owners of real property for which grant funds are not eligible for water meter installation in the city or their duly authorized agents, for the installation of commercial water meters serving said properties. Such contracts executed by the city shall provide for a down payment of at least 30 percent of the total cost of installation and shall provide for the payment of the balance of the cost of installation over a period of three years in quarterly or annual payments, including 6.75 percent interest; provided, that installations costing more than \$3,000 may be financed over a five-year period. All such contracts shall provide that the city shall have and shall retain a lien on the real property on which the meter is installed for full payment of the cost of installation of the meter all as provided in the contract between the city and property owner. The lien provided for shall be in addition to all other remedies to which the city is entitled for nonpayment of the meter installation fee, including the city's right to disconnect the water serving the commercial real property. [Ord. 841 § 1, 1989.]

13.14.020 Application of meter installation charges.

The city shall set aside into the 1988 G.O. Bond fund all sums collected, both principal and interest, under the contracts with the property owners authorized in LMC 13.14.010, which sums shall be applied solely to the required payments of principal and interest on said 1988 G.O. Bonds. [Ord. 841 § 2, 1989.]

13.14.030 Special water connection charge.

The cost of installation of water meters to real estate in the city shall be a special connection charge payable to the property owners as a condition to the right to connect to the city water system. [Ord. 841 § 3, 1989.]

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Title 14 DEVELOPMENT STANDARDS

Chapters:

- 14.04 Developer Reimbursement and Collection Agreements
- 14.08 Old World Bavarian Architectural Theme
- 14.09 Old World Bavarian Alpine Theme – Minimum Maintenance
- 14.10 Signs
- 14.12 Off-Street Loading and Parking
- 14.14 Street, Sidewalk, Water, Wastewater, Stormwater and Miscellaneous Utility Development Standards
- 14.16 Residential Structure Design Standards
- 14.17 Flags, Flagpoles, Towers, and Tower Structures
- 14.24 Flood Damage Prevention Standards
- 14.28 Lighting Standards

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Chapter 14.14
STREET, SIDEWALK, WATER, WASTEWATER, STORMWATER AND MISCELLANEOUS
UTILITY DEVELOPMENT STANDARDS

Sections:

- 14.14.010 Purpose.**
- 14.14.020 Scope.**
- 14.14.030 Conformance with other regulations.**
- 14.14.040 Concurrency for public facilities and utilities.**
- 14.14.050 Definitions.**
- 14.14.060 Permits required.**
- 14.14.070 Permit applications.**
- 14.14.080 Approval process.**
- 14.14.090 General road and utility standards.**
- 14.14.100 Water supply standards.**
- 14.14.110 Sewage disposal standards.**
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- 14.14.130 Fire protection standards.**
- 14.14.140 General utility standards.**
- 14.14.150 Access standards.**
- 14.14.160 Curb, gutter, and sidewalk standards.**
- 14.14.170 Fees and performance or surety bonds.**
- 14.14.175 Cost sharing.**
- 14.14.180 Nonconformance.**
- 14.14.190 Variances.**
- 14.14.200 Appeals.**
- 14.14.210 Administrative interpretations.**
- 14.14.220 Compliance and enforcement.**
- 14.14.230 Severability.**

14.14.010 Purpose.

This chapter is adopted to regulate the development of land and to promote the public health, safety and general welfare in accordance with the standards established by the city of Leavenworth and the state of Washington to:

- A. Prevent the overcrowding of land;
- B. Lessen congestion on the streets and highways;
- C. Provide adequate light and air;
- D. Promote the proper arrangement of streets, lots, easements, pathways and other private or public ways;
- E. Provide for adequate and convenient open spaces, utilities, recreation, and access for service and emergency vehicles;

- F. Provide for adequate water, drainage, sewer and other public facilities;
- G. Promote the coordination of development as land develops;
- H. Conserve natural beauty and other natural resources;
- I. Maintain and perpetuate environmental quality;
- J. Provide for expeditious review and approval of proposed developments which conform to zoning standards, the comprehensive plan, and other local plans and policies; and
- K. Adequately provide for the housing and commercial needs of the citizens of Leavenworth. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.020 Scope.

This chapter shall apply to the subdivision, development, and redevelopment of land. Subdivision, development, and redevelopment shall hereafter be referred to as "project(s)." This chapter shall not apply to activities such as boundary line adjustments and other minor land use activities if roads and utilities infrastructure are not needed at the time of approval. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.030 Conformance with other regulations.

- A. No project shall be approved unless found to be in conformance with all adopted and applicable city ordinances, plans and policies.
- B. This chapter recognizes and incorporates the standards, provisions, and regulations contained in other parts of the Leavenworth Municipal Code, as it exists now or as it may hereafter be amended.
- C. This chapter recognizes and incorporates the standard details for construction of public improvements, as it exists now or as it may hereafter be amended. The city council has established by resolution the standard details for construction of public improvements, and other matters pertaining to this title. The standard details for construction of public improvements shall be kept by the city engineer or the city clerk-treasurer and may be altered or amended by resolution of the city council. Where conflicts or inconsistencies arise between the standard details for construction as approved by resolution of the city council and those in other titles, the standard details for construction as approved by resolution of the city council supersede those in other titles.
- D. Approvals granted pursuant to this title shall only occur in compliance with these other regulatory provisions, as well as with the comprehensive plan and any other applicable laws and regulations.
- E. Where provisions of other official controls and regulations overlap or conflict with the provisions of this title, the more restrictive provisions shall govern.
- F. LMC Title 17 contains development standards for roads and utilities pursuant to the subdivision process. This chapter is intended to replace the regulations contained therein for all subdivision activity. If LMC Title 17 prescribes a regulation which is not delineated here in this chapter, the regulations of LMC Title 17 shall still apply. In all other cases, the regulations of this chapter shall apply. [Ord. 1451 § 1 (Att. A), 2013; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.040 Concurrency for public facilities and utilities.

Those public facilities and utilities required to be provided as a condition of approval shall be fully operational or bonded for concurrency with the use and occupancy of the development, except that concurrency for transportation facilities may be within six years of project approval at the discretion of the community development director working in consultation with the public works director. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.050 Definitions.

For the purposes of administering this title, definitions of terms used in this title are found primarily in Chapter 21.90 LMC, Common Definitions. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.060 Permits required.

A. Development standards shall be reviewed concurrently with the related application for a building permit, utility connection permit, land use permit, subdivision permit, and/or other associated type of activity and/or permit.

B. Inspections for compliance with this chapter are required. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.070 Permit applications.

Persons seeking permits or approval under this chapter shall:

A. Complete and submit an application for a building permit, utility connection permit, land use permit, subdivision permit, or other associated type of activity and/or permit.

B. Pay all required permit fees. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.080 Approval process.

Persons seeking permits or approval under this chapter shall be subject to the level of review required for the associated permit pursuant to LMC Title 21. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.090 General road and utility standards.

A. All projects shall comply with the following:

1. Streets, sidewalks, water, wastewater, stormwater and miscellaneous utility infrastructure shall be laid out in a manner which allows for accessibility, further development of all parcels within the region, and well-designed networks and circulation.

2. The developer shall be required to improve the full portion of the streets, sidewalks, water, wastewater, stormwater and miscellaneous utility infrastructure necessary to serve the development.

3. The developer shall be required to design easements and dedications in a manner which facilitates the future development of the region as determined by the community development director. This shall be accomplished by establishing easements and dedications to the furthest lot line, as well as other similar methods.

4. All easements and dedications shall be designed in a manner which provides the necessary dimensional specifications required for future development.

5. Design detail, workmanship, and materials for utilities and public works improvements shall be in accordance with the current editions of:

a. "Standard Specifications for Road, Bridge, and Municipal Construction," as amended;

b. "APWA Amendments to Division One," as amended; and

c. "Standard Plans for Road, Bridge, and Municipal Construction," as amended.

i. Those manuals specified in subsections (A)(5)(a), (b), and (c) of this section are written and promulgated by the Washington State Chapter of the American Public Works Association and the Washington State Department of Transportation;

ii. The standard provided therein shall apply except where standards contained in this title or elsewhere in the Leavenworth Municipal Code provide otherwise.

6. All applicable rules of Washington State shall be adhered to with respect to safety, construction methods, and other state requirements. These include, but are not limited to:

- a. The Revised Code of Washington (RCW); and
- b. The Washington Administrative Code (WAC).

7. Conditions, standards, design, layout, and regulations contained in the following documents shall be applicable when pertinent, when specifically cited in the documents, or as required by a permitting authority/agency, and/or the city:

- a. City of Leavenworth Water Distribution System and Sewer Collection System Master Plan, dated June 10, 2008, as amended;
- b. City of Leavenworth Comprehensive Water System Plan (CLCWSP), November 2002, as amended;
- c. City of Leavenworth Wastewater Facilities Plan (CLWFP), April 1996, as amended;
- d. City of Leavenworth Comprehensive Plan (CLCP), August 2003, as amended;
- e. Leavenworth Municipal Code (LMC) as of April 13, 2004, as amended;
- f. Local Agency Guidelines (LAG), as approved by the Washington State Department of Transportation, as amended;
- g. Washington State Department of Transportation Design Manual as adopted by the Washington State Department of Transportation, as amended;
- h. U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD), as adopted by the Washington State Department of Transportation, as amended;
- i. Criteria for Sewage Works Design, Washington State Department of Ecology Publication No. 98-37 WQ, December 1998, as amended;
- j. Chapter 246-290 WAC for Group A public water systems, as amended; and
- k. Eastern Washington Stormwater Management Manual, as amended. International Fire Code, as amended.

B. The standards and requirements established or referenced by this title are minimum requirements. These standards may be increased and additional requirements may be imposed for the purpose of mitigating identified probable significant adverse environmental impacts pursuant to the State Environmental Policy Act, Chapter 43.21C RCW, as now established or hereafter amended. Such additional requirements may include, but shall not be limited to, off-site improvements to any public facility, the dedication and/or improvement of parks and open spaces, and monetary contributions to any city fund established to finance the provision of public services. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.100 Water supply standards.

A. All projects shall be served by the water system of the city of Leavenworth as approved by the city engineer working in consultation with the development services manager.

B. It is compulsory for every new building(s) or existing building(s) meeting the criteria below within the UGA to hook up to the city water system, if said buildings are located within 200 feet of existing water mains. The existing domestic water source (well) shall be abandoned in conformance with local and state regulations with any rights associated with the well transferred to the city at the option of the city. Pursuant to LMC 13.04.040, all individuals, firms or organizations located within city limits requiring domestic water service shall be required to be connected to the city's water system. Private domestic wells are not permitted. Any existing private domestic well shall be

abandoned in conformance with local and state regulations with any rights associated with the well transferred to the city at the option of the city. Private irrigation wells will be permitted within the city limits on parcels two acres or larger; provided, that the city reserves the right to deny approval of wells which may threaten the city's present or future domestic supplies or water rights. A permit signed by the city administrator must be obtained for such systems. Appropriate backflow prevention devices are required and inspection of the installation by the city is required for such systems.

1. For existing buildings, as described above, which become located within the 200 feet as a result of improvements to the city water system, connection to those improvements shall be made when one of the following occurs:

- a. Remodeling or expansion of the existing building which exceeds 50 percent of the value of the building/structure;
- b. Remodeling or expansion of the existing building occurs which would require an upgrade of an existing on-site water system, as determined by the Chelan-Douglas health district; or
- c. The existing water system is failing, as determined by the Chelan-Douglas health district.

C. All water supply systems shall be designed and constructed according to all applicable provisions of this chapter and specifications on file in the office of the city engineer unless otherwise provided for in the Leavenworth Municipal Code.

D. When water rights are appurtenant to the land, the property owner shall covenant to transfer water rights to the city in a quantity which is equal to the quantity to be utilized by the development and the covenant shall run with the land into perpetuity. The transfer may occur at the time of development or at a future point in time, as decided by the city. Property owner shall cooperate with the transfer.

E. Whenever possible, if either a public or private irrigation source is available and is currently being utilized for the applicable property, the property owner shall continue to utilize this source for all outside irrigation. The feasibility of this shall be evaluated and a determination of applicability made by the city as part of the application process. The property owner shall provide such information the city determines necessary to make this decision.

F. Public Works Director Approval. For properties located inside of the city's UGA and its city limits, the city public works director shall approve water connection subject to requirements for connection as found within the Leavenworth Municipal Code.

G. City Administrator Approval. For properties located outside of the city's UGA and need is demonstrated, the city administrator may grant connection to the city water system subject to the following:

1. Providing documentation that at least one attempt to drill a well down to bedrock yielded insufficient quantities of potable water necessary to serve one single-family resident as determined by the city; and prior to connection, the requestor transfers the water right to the city of Leavenworth.
2. Providing documentation that an existing well to bedrock yields insufficient quantities of potable water necessary to serve one single-family resident as determined by the city; and prior to connection, the requestor transfers the water right to the city of Leavenworth.
3. Providing documentation that an existing well is to be abandoned in favor of connection to the city domestic water system; and prior to connection, the requestor transfers the water right to the city of Leavenworth.
4. A recorded subdivision in situations where the final plat was based on the city's prior commitment to provide water, and if the lot was legally created prior to March 12, 1996.

5. Transfer of water rights to the city shall follow the procedure found within RCW 90.44.105, or other applicable statute, and as approved by the city for consolidating exempt well water rights into the city's water rights when adding customers to the city water system who were previously served by exempt well withdrawals.

H. Council Approval. In addition to the circumstances permitted in subsection (G) of this section, for properties located outside of the city's UGA and not falling within subsection (G) of this section, the city council may grant (at the council's sole discretion) an exception to allow an extension and/or connection to the city water system subject to the following:

1. Consideration for the protection of water use for properties within the city as a priority and paramount prior to granting water outside of the city. Granting water connections outside of the city UGA is a not a right, and the intent is to ensure water is available to the citizens of Leavenworth; and
2. After purchase of property, a plight of the applicant is due to unique and unexpected circumstances over which the property owner has no control; and
3. The authorization of the exception shall not be materially detrimental to the purposes of this title, be injurious to property in the same district or neighborhood in which the property is located, or be otherwise detrimental to the objectives of any comprehensive plan; and
4. Water extension and/or connection for the creation of a lot shall be a one-time waiver, shall not be allowed to serve more than one lot, shall not be transferable, and the properties created shall not be allowed future/additional water extension and/or connection for a period of no less than 10 years. Such moratorium shall include a notice to title recorded with the Chelan County auditor's office which shall be recorded at the expense of the property owner.

I. Regardless of approval process, subsection (G) or (H) of this section, and for all properties located outside of the city's UGA, all of the following standards shall be met:

1. Not more than a total of three equivalent residential units (ERU) per calendar year shall be granted for connections outside of the UGA under subsection (G) or (H) of this section together, beginning the first of January of each year, and allowance will be issued as vested by application; and
2. Prior to connection, the property owner shall transfer to the city of Leavenworth their present domestic water rights and cooperate in any process to transfer those rights to the city, unless otherwise specifically waived by the city council; and
3. The applicant shall install a new water main to the property within right-of-way or public utility easement. The line size shall be determined by the city engineer; and
4. The applicant shall be responsible to install necessary appurtenances for the water line extension; such may include but are not limited to fire hydrant(s). At no time may an extension of water line, for the purposes of this provision, be extended beyond that of the original approval; and
5. Construction and installation shall adhere to the adopted Standard Details and/or applicable LMC standards and specifications; and
6. A water connection shall not be allowed to split into two or more. The lateral line (connection) shall serve a single structure; and
7. The property owner, their successors, heirs, and assigns shall record with the Chelan County auditor's office a notice to title, as approved by the city of Leavenworth, which provides notice of and binds all future property owners to the following waivers of protest and other requirements. It shall also be the obligation of the property owner, their successors, heirs, and assigns to inform potential buyers of these items:

a. Property owners, their successors, heirs, and assigns shall not protest annexation. Provided further, nothing in approval of extension of city water shall bind the city to annex said property nor obligate the city to approve future subdivision and development of the property, nor impose or not impose any particular conditions or requirements for said development and land use actions, nor implement improvements to its utilities and/or roads that may be required to serve the development. If the city agrees to annex this property, the city does not warrant that existing facilities are adequate to serve this development.

b. Property owners, their successors, heirs, and assigns agree to participate in future local improvement districts (LID) and/or other similar financing mechanisms for the redevelopment of streets, sidewalks, utilities and related infrastructure in the area. This participation shall be in accordance with reasonable methods established by Washington State law and/or by local law, and shall be for a pro-rata share of improvements in the geographic area as established by a benefits assessment or other similar mechanism.

8. No extension or connection for water service may be allowed if such connection or extension outside the city's UGA would violate the Growth Management Act of the state of Washington. [Ord. 1507 § 1 (Att. A), 2015; Ord. 1454 § 1 (Att. A), 2013; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.110 Sewage disposal standards.

A. All projects shall be served by the sanitary sewer system of the city of Leavenworth as approved by the community development director working in consultation with the director of public works.

B. All sanitary sewers shall be designed and constructed according to all applicable provisions of this chapter and specifications on file in the office of the director of public works unless otherwise provided for in the Leavenworth Municipal Code. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.120 Storm drainage standards.

A. All projects shall be provided with adequate provisions for storm drainage that is connected to the storm drainage system of the city or other on-site system, as approved by the community development director working in consultation with the director of public works.

B. All storm drainage systems shall be designed and constructed according to all applicable provisions of this chapter, the Eastern Washington Stormwater Management Manual, as amended, and specifications on file in the office of the director of public works unless otherwise provided for in the Leavenworth Municipal Code. [Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.130 Fire protection standards.

A. All projects shall be provided with adequate provisions for fire protection as approved by the community development director working in consultation with the fire marshal.

B. All systems shall be designed and constructed according to all applicable provisions of this chapter and the International Fire Code, unless otherwise provided for in the Leavenworth Municipal Code. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.140 General utility standards.

A. All utilities shall be in conformance with the provisions contained in this chapter and shall be placed underground unless topographic constraints otherwise prohibit their placement underground.

B. Easements may be required along the lot lines or through blocks where necessary for the extension of existing or planned utilities.

C. Such easements shall have written approval from the utility purveyor prior to acceptance of the final plat. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.150 Access standards.

A. General Standards. All projects shall be provided with access via an improved road meeting the specifications contained in this chapter, and as designated in the city of Leavenworth comprehensive plan unless otherwise provided for in the Leavenworth Municipal Code.

B. Design Standards. The following table delineates the applicable road types and road designs which shall be required for all projects:

Type	ROW Width	Purpose
Urban collector	60 ft. (See adopted Standard Details)	Collects traffic from a region and/or the primary road to which local access roads from neighborhoods/commercial/industrial areas connect
Urban local access	50 ft. (See adopted Standard Details)	Provides access and circulation within commercial areas and single/multifamily neighborhoods
Industrial local access	44 ft. (See adopted Standard Details)	Provides access and circulation within industrial areas
Driveway (private)	20 ft./10 ft. (See adopted Standard Details)	Serves one single-family residential lot or the equivalent ADT producer for other land uses

Dead-end roads may be required to provide a turnaround.

Flag lots which serve as access roads shall be regulated in the same manner as the roads to which they compare.

C. Fire apparatus roads and private driveways shall meet the following standards:

1. Fire apparatus roads shall serve no more than a total of three single-family residential lots and are intended to provide access to existing developed areas for infill development purposes.
2. Private driveways shall serve no more than a total of one lot, are intended to provide access to one single-family residential lot, and are intended to provide access to existing developed areas for infill development purposes.
3. Fire apparatus roads and private driveways shall require recording of a road maintenance and upgrading agreement. If subdivision is involved, a note shall be recorded on the plat regarding the agreement.
4. Fire apparatus roads and private driveways shall not be used for access where access to more remote properties would be inhibited or where the development standards for public streets outlined in this chapter could be accommodated, or for properties that can be further subdivided, unless topography, wetlands, or other natural features necessitate this type of access.
5. Multiple fire apparatus roads/private driveways shall not be allowed in place of a city street adequate to serve the area or development built to the standards outlined in this title.
6. Access via a fire apparatus road/private driveway shall be limited to one such access on the parent parcel existing at the time of adoption of this code on April 13, 2004. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.160 Curb, gutter, and sidewalk standards.

A. All projects shall provide permanent concrete or paver curbs, gutters, and sidewalks in conformance with the standards contained in this chapter.

B. In cases of limited infill development, the standard can be waived by the community development director working in consultation with the public works director. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010;

Ord. 1268 (Exh. A), 2005.]

14.14.170 Fees and performance or surety bonds.

A. Fees, Rates, and Charges.

1. The city council has established by resolution a rate and fee schedule for community development rates, fees, and charges for permits, applications, and other matters pertaining to this title.
2. The rate and fee schedule resolution, as amended, is hereby adopted.
3. Until all applicable fees, charges, and expenses have been paid as required in the fee schedule, no action shall be taken by the city on any application, appeal or request.

B. Performance or Surety Bond. As a condition of approval for the issuance of any development permit or any permit issued under this title or other associated titles contained in the Leavenworth Municipal Code, a performance or surety bond may be required.

C. Bond Criteria.

1. The city attorney shall approve all performance and surety bonds as to form and securities.
2. The director(s) of the affected department(s) shall approve all performance and surety bonds as to amount and adequacy.
3. The value of the bond shall be equal to at least 150 percent of the estimated cost of the improvement(s) to be performed for improvements completed within a one-year time frame or 200 percent for improvements completed within a two-year time frame, or to be utilized by the city to perform any necessary work, or to reimburse the city for performing any necessary work and documented administrative costs associated with action on the bond. To determine this value, the applicant must submit up to two bids for the improvements to be performed. If costs incurred by the city exceed the amount provided by the assurance device, the property owner shall reimburse the city in full, or the city may file a lien against the subject property for the amount of any deficit. Please see LMC 17.02.070 for exceptions to this time frame on bonding.
4. Upon completion of the required work by the property owner and approval by the city at or prior to the completion date identified in the assurance device, the city shall release the device.
5. If the performance bond or surety is required, the property owner shall provide the city with an irrevocable notarized agreement granting the city and its agents the right to enter the property and perform any required work remaining uncompleted at the expiration of the completion date identified in the assurance device. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.175 Cost sharing.

The city may choose to engage in a cost sharing agreement for utility improvement(s) at its discretion and to the amount and/or method it chooses and may use the following criteria as a guide when considering an agreement:

- A. The project is identified in the city's capital improvement plan;
- B. There is a system-wide benefit which would be derived by the improvement(s); and/or
- C. The improvement(s) does not exceed the annual budgeted amount established by the city council for cost sharing. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010.]

14.14.180 Nonconformance.

Nonconforming projects under the standards of this chapter shall be subject to the requirements of the Leavenworth Municipal Code. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.190 Variances.

A. Variances from the standards of this chapter shall be pursuant to the processes within the Leavenworth Municipal Code.

B. The community development director working in consultation with other agencies and departments with expertise shall be given discretionary authority to rule on the applicability of these standards, determine modifications necessary to fit development patterns, topography, and other constraints, and at his/her discretion to require formal application to the hearing examiner for variance of the standards. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.200 Appeals.

A. Appeals of the decisions made under this chapter shall be pursuant to the processes within the Leavenworth Municipal Code.

B. An applicant aggrieved by any part, requirement or process set forth in this chapter must exhaust all available administrative remedies before seeking recourse in the courts. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.210 Administrative interpretations.

Administrative interpretations of this chapter shall be made pursuant to the processes within the Leavenworth Municipal Code. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.220 Compliance and enforcement.

Compliance and enforcement of this chapter shall be conducted pursuant to the processes within the Leavenworth Municipal Code. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

14.14.230 Severability.

If any section, subsection, sentence, clause, or phrase of this title is, for any reason, held to be invalid or unconstitutional, such invalidity or unconstitutionality shall not affect the validity or constitutionality of the remaining portions of this title. [Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010; Ord. 1268 (Exh. A), 2005.]

ILLUSTRATION 1

(See adopted Standard Details)

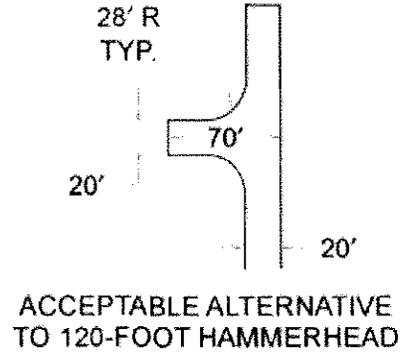
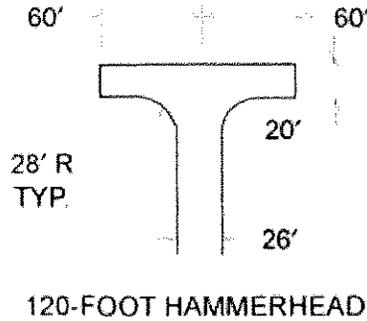
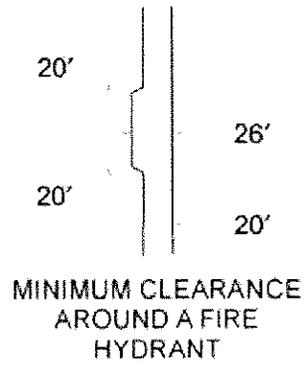
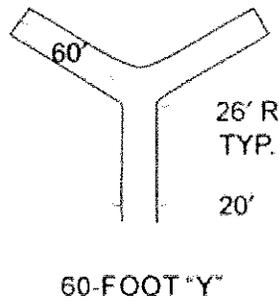
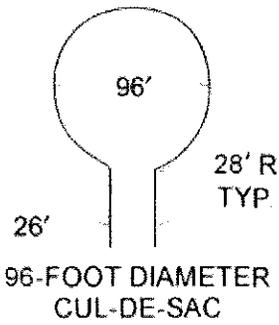
PRIVATE DRIVEWAY

A private driveway serving a maximum of one residential lot or equivalent ADT producer. A private driveway shall be 20 feet wide up to a point which provides fire access within 150 feet of existing or proposed structures. The remaining private driveway shall be composed of six inches of crushed gravel and two inches of hot mix, double shot BST mix or concrete.

(See adopted Standard Details)

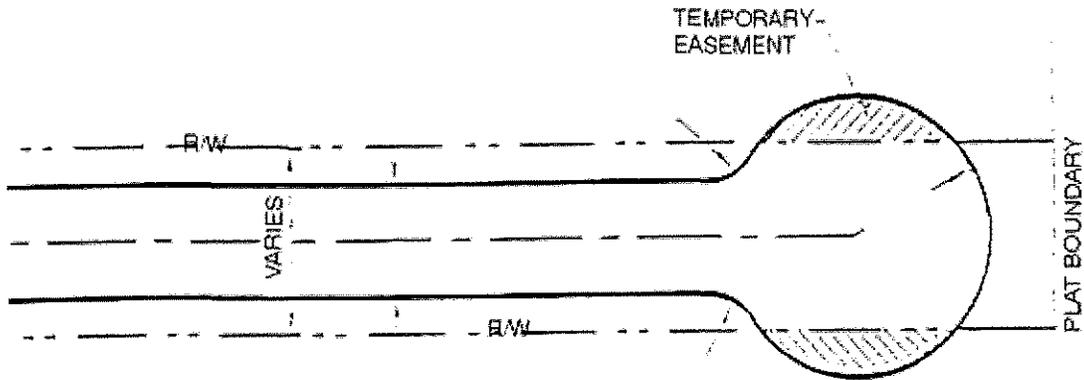
Turnarounds

Turnarounds shall only be accepted due to constraints of a water body, topography, and as determined by the city. The intent is to provide streets with connectivity and circulation. Dead-end roads that exceed 150 feet may be required to provide an emergency vehicle turnaround.



TEMPORARY CUL-DE-SAC

A temporary cul-de-sac shall be provided when there is a foreseeable likelihood of extending the road to adjacent properties, or as part of a subdivision phasing plan. A bulb area lying outside of the road right-of-way shall be required as a temporary easement pending forward extension of the road. Surfacing, curb and gutter requirements shall be as required for typical roadway section for the road classification. Removal of the temporary cul-de-sac shall be the responsibility of the developer who extends the road.



[Ord. 1506 § 1 (Att. A), 2015; Ord. 1355 § 1 (Att. A), 2010.]

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Title 21 DEVELOPMENT CODE ADMINISTRATION

Chapters:

- 21.01 Introduction
- 21.03 Administration
- 21.05 Application Forms
- 21.07 Application Process
- 21.09 Application Review
- 21.11 Appeals
- 21.13 Enforcement and Penalties
- 21.15 Hearing Examiner
- 21.31 Comprehensive Plan Amendment Process
- 21.90 Common Definitions

Mobile Version

Chapter 21.07 APPLICATION PROCESS

Sections:

- 21.07.010 Application process.**
- 21.07.020 Preapplication meeting.**
- 21.07.030 Consolidated application process.**
- 21.07.040 Plan review.**
- 21.07.050 Determination of completeness.**
- 21.07.060 Application vesting.**
- 21.07.070 Notice of application.**
- 21.07.080 Miscellaneous processes – Development agreements.**

21.07.010 Application process.

The application process shall consist of the following components:

- A. Preapplication meeting;
- B. Plan review;
- C. Determination of completeness;
- D. Technical review committee;
- E. Notice of application;
- F. Application review;
- G. Notice of final decision. [Ord. 1504 § 1 (Att. A), 2015; Ord. 1426 § 1 (Att. A), 2012; Ord. 1358 § 1 (Att. A), 2010; Ord. 1088 § 2 (Exh. A), 1998.]

21.07.020 Preapplication meeting.

A. All prospective applicants shall participate in a preapplication meeting. At the discretion of the development services manager, the requirement of a preapplication meeting may be waived. Such projects may include, but are not limited to: when proposed development is subject to limited administrative review, sign permits, murals and change of paint when compliant with Chapter 14.10 LMC.

B. The purpose of the preapplication meeting is to provide the applicant with the best available information regarding the development proposal and application processing requirements, and to assure the availability of complete and accurate development information necessary for review prior to the applicant's expenditure of application fees and the scheduling of the application review process.

C. The preapplication meeting provides an opportunity for the applicant, staff and other agencies to informally discuss and review the proposed development, the application and permit requirements, fees, the review process and schedule, and applicable development standards, plans, policies and laws.

D. The preapplication meeting shall take place at the city's offices, unless another location is agreed upon by the city and the applicant. The length of the preapplication meeting shall be determined by the complexity of the development proposed by the applicant.

E. After the preapplication meeting, written summary of the meeting shall be transmitted to the applicant by each department, agency, or the city. The written summary may include a list of any specific documents, information, reports/studies, legal descriptions or other requirements that must be submitted with the application. Such list shall be in addition to the requirements set forth in the appropriate application form.

F. An applicant may request one or more additional preapplication meetings if the proposed development changes based on information received at the previous meeting. The additional meetings shall be subject to the same procedures as the initial preapplication meeting.

G. Application forms shall be made available to the applicant following a preapplication meeting. [Ord. 1504 § 1 (Att. A), 2015; Ord. 1426 § 1 (Att. A), 2012; Ord. 1358 § 1 (Att. A), 2010; Ord. 1088 § 2 (Exh. A), 1998.]

21.07.030 Consolidated application process.

A. When more than one application for a proposed development is required, the applicant may elect to have all applications submitted for review at one time.

B. Applications for proposed development and planned actions subject to the provisions of the State Environmental Policy Act (SEPA) shall be reviewed concurrently and in accordance with the state and local laws, regulations and ordinances.

C. When more than one application is submitted under a consolidated review and the applications are subject to different types of review procedures, all of the applications for the proposed development shall be subject to the highest level of review procedure which applies to any of the applications.

D. If an applicant elects a consolidated application process, the determination of completeness, the notice of application, and the notice of final decision must include all applications being reviewed. [Ord. 1426 § 1 (Att. A), 2012; Ord. 1358 § 1 (Att. A), 2010; Ord. 1088 § 2 (Exh. A), 1998.]

21.07.040 Plan review.

A. A plan review shall be conducted by the city to determine if the application is complete. The plan review shall determine if adequate information is provided in or with the application in order to begin processing the application, and that all required information and materials have been supplied in sufficient detail to begin the application review process. All information and materials required by the application form or from the preapplication meeting must be submitted. All studies supporting the application or addressing projected impacts of the proposed development must be submitted.

B. The purpose of the plan review is to ensure adequate information is contained in the application materials to demonstrate consistency with applicable comprehensive plans, development regulations and other applicable city codes. City staff will coordinate the involvement of agencies responsible for the review of setbacks, landscaping, parking, drainage, access, roads, traffic, signs, utilities and any other applicable requirements. [Ord. 1426 § 1 (Att. A), 2012; Ord. 1358 § 1 (Att. A), 2010; Ord. 1088 § 2 (Exh. A), 1998.]

21.07.050 Determination of completeness.

A. Within 28 days after receiving an application, the city shall complete the plan review of the application and provide the applicant a written determination that the application is complete or incomplete.

B. An application shall be determined complete only when it contains all of the following information and materials:

1. A fully completed and signed application;

2. Applicable review fees;
3. All information and materials required by the application form;
4. A fully completed and signed environmental checklist for projects subject to review under the State Environmental Policy Act;
5. The information specified for the desired project in the appropriate title of the LMC;
6. A plot plan disclosing all existing and proposed structures and features applicable to the desired development; for example, parking, landscaping, preliminary drainage plans with supporting calculations, signs, setbacks, etc.;
7. Any additional information and materials identified at the preapplication meeting or required by applicable development standards, plans, policies or any other federal, state or local laws;
8. Any supplemental information or special studies identified by the city.

C. For applications determined to be incomplete, the city shall identify, in writing, the specific requirements, information or materials necessary to constitute a complete application. Within 14 days after its receipt of the additional requirements, information or materials, the city shall issue a determination of completeness or identify the additional requirements, information, or materials still necessary for completeness. Failure to submit the requirements, information or materials within 60 days will result in a null and void application, with no refund of the filing fees. Prior to the end of 60 days, the applicant may provide a written request for a one-time extension not to exceed 60 days which shall be granted by the city administrator or his/her designee.

D. A determination of completeness shall identify, to the extent known, other local, state or federal agencies that may have jurisdiction over some aspect of the application.

E. A determination of completeness shall not preclude the city from requesting additional information or studies if new information is required or a change in the proposed development occurs.

F. Upon issuing a determination of completeness, the application materials, including the applicable SEPA review information, will be referred to appropriate agencies for review and comment. [Ord. 1426 § 1 (Att. A), 2012; Ord. 1423 § 1 (Att. C), 2012; Ord. 1358 § 1 (Att. A), 2010; Ord. 1088 § 2 (Exh. A), 1998.]

21.07.060 Application vesting.

An application shall become vested on the date of "filing" a complete application under this title.

After a determination of completeness is made, the application shall be reviewed under the codes, regulations and other laws in effect on the date of vesting; provided, in the event an applicant substantially changes his/her proposed development after a determination of completeness, as determined by the director, the application shall not be considered vested until a new determination of completeness on the changes is made under this title. [Ord. 1426 § 1 (Att. A), 2012; Ord. 1358 § 1 (Att. A), 2010; Ord. 1088 § 2 (Exh. A), 1998. Formerly 21.07.070.]

21.07.070 Notice of application.

A. Within 14 days after issuing a determination of completeness, the city shall issue a notice of application. The notice shall include, but not be limited to, the following:

1. The date of application, the date of the determination of completeness, and the date of the notice of application;
2. A description of the proposed project action, a list of permits required for the application, and, if applicable, a list of any studies requested;
3. The identification of other required permits not included in the application, to the extent known by the city;

4. The identification of existing environmental documents which evaluate the proposed development and the location where the application and any studies can be reviewed;
5. A statement of the public comment period, which shall be 14 days following the date of the notice of application, and a statement of the right of any person to comment on the application, receive notice of and participate in any hearings, and request a copy of the decision once made, and a statement of any appeal rights;
6. The date, time, location and type of hearing, if applicable and scheduled at the date of the notice of application;
7. A statement of the preliminary determination, if one has been made at the time of notice of application, of those development regulations that will be used for project mitigation and of consistency with the type of land use of the proposed site, the density and intensity of proposed development, infrastructure necessary to serve the development, and the character of the development;
8. Any other information determined by the city to be appropriate.

B. Informing the Public. The notice of application shall be posted in the following manner:

1. It shall be posted on the subject property for the duration of the public comment period. The applicant shall be responsible for posting and maintaining the notice throughout the entire public comment period. The location and manner of posting shall be determined by the development services department and shown on the applicant's site plan. The applicant shall obtain the notice of application sign(s) and post(s) from the city upon payment of all applicable fees. The sign location and condition shall be the responsibility of the applicant until the sign(s) and post(s) are returned to the city. After the public comment period, the applicant shall sign an affidavit of posting before a notary public, using the form adopted by the city, and file the affidavit of posting with the city, together with a photograph of the notice of application sign(s) posted at the site. Any necessary replacement of the notice of application sign(s) and post(s) shall be the sole responsibility of the applicant.

2. It shall be posted at City Hall in three different locations.

C. The notice of application is not a substitute for any required notice of a public hearing.

D. A notice of application is not required for the following actions, when they are categorically exempt from SEPA or environmental review has been completed:

1. An application for a single-family residence, accessory uses or other minor construction building permits;
2. Application for a lot line adjustment;
3. Applications subject to review by the design review board (Chapters 14.08 and 14.10 LMC); and
4. Any application for which limited administrative review is determined applicable. [Ord. 1426 § 1 (Att. A), 2012; Ord. 1358 § 1 (Att. A), 2010; Ord. 1088 § 2 (Exh. A), 1998. Formerly 21.07.080.]

21.07.080 Miscellaneous processes – Development agreements.

A. Development Agreements – Authorized. The city may enter into a development agreement with a person having ownership or control of real property within its jurisdiction. The city may enter into a development agreement for real property outside its boundaries as part of a proposed annexation or a service agreement. A development agreement must set forth the development standards and other provisions that shall apply to, and govern and vest the development, use, and mitigation of the development of the real property for the duration specified in the agreement. A development agreement shall be consistent with applicable development regulations adopted by the city.

B. Development Agreements – Effect. Unless amended or terminated, a development agreement is enforceable during its term by a party to the agreement. A development agreement and the development standards in the agreement govern during the term of the agreement, or for all or that part of the build-out period specified in the agreement. A development agreement may not be subject to an amendment to a zoning ordinance, development standard, regulation, a new zoning ordinance, development standard, or regulation adopted after the effective date of the agreement. A permit or approval issued by the county or city after the execution of the development agreement must be consistent with the development agreement.

C. Development Agreements – Recording – Parties and Successors Bound. A development agreement shall be recorded with the Chelan County auditor's office. During the term of the development agreement, the agreement is binding on the parties and their successors, including the city, if the city assumes jurisdiction through incorporation or annexation of the area covering the property covered by the development agreement.

D. Development Agreements – Public Hearing. Notwithstanding other procedural requirements of this title, the city shall only approve a development agreement by ordinance or resolution after a public hearing by the city council. Notice of the public hearing shall be made by publishing in the local paper, a minimum six days prior to the hearing, the time, date, and location of the hearing, and a general description of the location and proposal.

If the development agreement relates to a project permit application, the provisions of Chapter 36.70C RCW shall apply to the appeal of the decision on the development agreement. [Ord. 1502 § 1 (Att. A), 2015.]

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Chapter 21.09 APPLICATION REVIEW

Sections:

- 21.09.010 Application review criteria.**
- 21.09.020 Application review classification.**
- 21.09.030 Limited administrative review of applications.**
- 21.09.040 Full administrative review of applications.**
- 21.09.050 Quasi-judicial review of applications.**
- 21.09.060 Legislative review of applications.**
- 21.09.070 Notice of final decision.**

21.09.010 Application review criteria.

Review of an application and proposed development shall be governed by and be consistent with the fundamental land use planning policies and choices which have been made in adopted comprehensive plans and development regulations. The review process shall consider the type of land use permitted at the proposed site, the density and intensity of the proposed development, the infrastructure available and needed to serve the development, the character of the development and its consistency with development regulations. In the absence of applicable development regulations, the applicable development criteria in the comprehensive plan or sub-area plan adopted under Chapter 36.70A RCW shall be determinative. [Ord. 1526 § 1 (Att. A), 2016; Ord. 1426 § 1 (Att. A), 2012; Ord. 1088 § 2 (Exh. A), 1998.]

21.09.020 Application review classification.

A. Following the issuance of a determination of completeness and a notice of application, an application shall be reviewed at one of four levels:

1. Limited administrative review;
2. Full administrative review;
3. Quasi-judicial review;
4. Legislative review.

B. If this title or the LMC provides that a proposed development is subject to a specific type of review, or a different review procedure is required by law, then the application for such development shall be processed and reviewed accordingly. If this title does not provide for a specific type of review, or if a different review procedure is not required by law, then the city shall determine the type of review to be used for the type and intensity of the proposed development.

C. Any public meeting or required open hearing may be combined by the city with any public meeting or open record hearing that may be held on the proposed development by another local, state, federal or other agency. Hearings shall be combined if requested by the applicant. However, joint hearings must be held within the city and within the time limits of this title and Chapter 36.70B RCW. [Ord. 1526 § 1 (Att. A), 2016; Ord. 1426 § 1 (Att. A), 2012; Ord. 1088 § 2 (Exh. A), 1998.]

21.09.030 Limited administrative review of applications.

Limited administrative review shall be used when the proposed development is subject to clear and objective standards that require the exercise of professional judgment about technical issues and the proposed development is exempt from the State Environmental Policy Act (SEPA). Permits reviewed through this process are not subject to the requirements of Chapter 21.07 LMC. The city may approve, approve with conditions, or deny the application after the date the application is accepted as complete. The decision of the city is final unless an administrative appeal process is provided for in this or any other title within the LMC. This type of review includes but is not limited to the following:

- A. Interpretation of codes and ordinances;
- B. Single-family and other minor building permits;
- C. Fence permits;
- D. Boundary line adjustments;
- E. Fill and grade permits;
- F. Encroachment permits to work within a right-of-way;
- G. Flood development permits;
- H. Minor amendments or modifications to approved developments or permits which may affect the precise dimensions or location of buildings, accessory structures and driveways, but do not affect the overall project character, increase the number of lots, dwelling units or density, or decrease the quality or amount of open space;
- I. Multifamily, commercial, industrial, and/or office building permits that have been subject to a public review process or for which environmental review has been completed in connection with other project permits;
- J. Applications subject to administrative approvals found within Chapters 14.08 and 14.10 LMC;
- K. Group A home occupations; and
- L. Site development permit intent and purpose. Site development permits are issued for work such as limited clearing, grading, landscaping, drainage, private streets and groundwork related to site preparation, where no building or structure is altered, moved or constructed, in association with an approved binding site plan, major subdivision, or short plat permitted activity.
 1. Site development permits are not a prerequisite to permitting for footings and foundation permit, right-of-way permit, grade and excavation permit, master application and/or other higher level permits.
 2. Site development permits will be subject to compliance with the zoning, building, and other applicable land use codes and regulations existing at the time of permit submittal.
 3. As necessary, plans are required for site development permits.
 4. Site development permits do not vest a future development to the codes at the time of site preparation. [Ord. 1526 § 1 (Att. A), 2016; Ord. 1467 § 1 (Att. A), 2014; Ord. 1426 § 1 (Att. A), 2012; Ord. 1165 § 1, 2001; Ord. 1162 § 1, 2001; Ord. 1158 § 2, 2001; Ord. 1088 § 2 (Exh. A), 1998].]

21.09.040 Full administrative review of applications.

A. Full administrative review shall be used when the proposed development is subject to the objective and subjective standards that require the exercise of limited discretion about nontechnical issues and about which there may be limited public interest. The proposed development may or may not be subject to SEPA review. This type of review includes, but is not limited to, the following:

1. Short subdivisions;
2. Binding site plans;
3. Shoreline substantial development permits;
4. Group B home occupations; and
5. Multifamily, commercial, industrial, and/or office building permits that have not been subject to a public review process or for which environmental review has not been completed in connection with other project permits.

B. The review procedure under full administrative review shall be as follows:

1. If the proposed development is subject to the State Environmental Policy Act (SEPA), the threshold determination may be made concurrent with the public comment period required in the notice of application, pursuant to the provisions of WAC 197-11-355, "Optional DNS process," and Chapter 16.04 LMC.

2. The city may approve, approve with conditions, or deny the application after the date the application is accepted as complete, and upon the completion of the public comment period and the comment period required by SEPA, if applicable. The decision of the city is final unless an administrative appeal process is provided for in this or any other title within the LMC. The city shall mail the notice of decision to the applicant and all parties of record. The decision shall include:

- a. A statement of the applicable criteria and standards in the development codes and other applicable law;
- b. A statement of the findings of the review authority, stating the application's compliance or noncompliance with each applicable criterion, and assurance of compliance with the applicable standards;
- c. The decision to approve or deny the application and, if approved, conditions of approval necessary to ensure the proposed development will comply with all applicable laws;
- d. A statement that the decision is final unless appealed as provided in Chapter 21.11 LMC, Appeals. The statement shall state the appeal closing date and describe how a party may appeal the decision, including applicable fees and the elements of notice of appeal;
- e. A statement that the complete case file, including findings, conclusions and conditions of approval, if any, is available for inspection. The notice shall list the place, days and times when the case file is available for inspection and the name and telephone number of the city's representative to contact to arrange inspection. [Ord. 1475 § 1 (Att. A), 2014; Ord. 1467 § 1 (Att. A), 2014; Ord. 1426 § 1 (Att. A), 2012; Ord. 1162 § 2, 2001; Ord. 1088 § 2 (Exh. A), 1988.]

21.09.050 Quasi-judicial review of applications.

A. Quasi-judicial review shall be used when the development or use proposed under the application requires a public hearing before a hearing body. This type of review includes, but is not limited to, the following:

1. Administrative appeals, including those relating to Chapter 43.21C RCW;
2. Subdivisions;
3. Conditional use permits;
4. Planned developments;
5. Variances;

6. Shoreline permits issued pursuant to Chapter 90.58 RCW;
7. Applications submitted to the design review board for review and approval (Chapter 14.08 LMC – Design, and Chapter 14.10 LMC – Signs);
8. Rezones which are not of general applicability; and
9. Other similar development permit applications.

B. The review procedure under quasi-judicial review shall be as follows:

1. A quasi-judicial review process requires an open record public hearing before the appropriate hearing body which is generally the hearing examiner except for applications governed by Chapters 14.08 and 14.10 LMC which is generally the design review board.
2. The public hearing shall be held after the completion of the public comment period and the comment period required by SEPA, if applicable. For sign applications, a hearing shall occur not later than 28 days after the date of determination of completeness.
3. At least 10 days before the date of a public hearing, the city shall issue public notice of the date, time, location and purpose of the hearing as follows:
 - a. Publication at least 10 days before the date of a public meeting or hearing in the official newspaper if one has been designated, or a newspaper of general circulation in the city except for applications subject to Chapters 14.08 and 14.10 LMC;
 - b. Mailing at least 10 days before the date of a public meeting or hearing to all property owners as shown on the records of the county assessor within 350 feet of the boundaries of the property which is the subject of the meeting or hearing except for applications subject to Chapters 14.08 and 14.10 LMC;
 - c. Posting at least 10 days before the meeting or hearing in three different locations at City Hall.
4. At least seven days before the date of the public hearing, the city shall issue a written staff report, integrating the SEPA review and threshold determination (as applicable) and recommendation regarding the application(s), shall make available to the public a copy of the staff report for review and inspection, and shall mail a copy of the staff report and recommendation to the applicant or the applicant's designated representative. The city shall make available a copy of the staff report, subject to payment of a reasonable charge, to other parties who request it.
5. Public hearings shall be conducted in accordance with the rules of procedure adopted by the hearing body which shall conform with the Appearance of Fairness Doctrine in Washington State. A public hearing shall be recorded. If, for any reason, the hearing cannot be completed on the date set in the public notice, it may be continued during the public hearing to a specified date, time and location, without further public notice required.
6. Within 10 working days after the date the public record closes, the hearing examiner or design review board, as applicable, shall issue a written decision regarding the application(s).
7. The hearing examiner or design review board, as applicable, may approve, approve with conditions or deny the application and shall mail the notice of its decision to the city, applicant, the applicant's designated representative, the property owner(s), and any other parties of record. The decision shall include:
 - a. A statement of the applicable criteria and standards in the development codes and other applicable law;

- b. A statement of the findings of the review authority, a statement of the conclusions of the review authority stating the application's compliance or noncompliance with each applicable criterion, and assurance of compliance with applicable standards;
- c. The decision to approve or deny the application and, if approved, conditions of approval necessary to ensure the proposed development will comply with all applicable laws;
- d. A statement that the decision is final unless appealed as provided in Chapter 21.11 LMC, Appeals. The statement shall state the appeal closing date and describe how a party may appeal the decision, including applicable fees and the elements of a notice of appeal for decisions appealable to the hearing examiner;
- e. A statement that the complete case file, including findings, conclusions and conditions of approval, if any, is available for inspection. The notice shall list the place, days and times when the case file is available for inspection and the name and telephone number of the city's representative to contact to arrange inspection. [Ord. 1426 § 1 (Att. A), 2012; Ord. 1088 § 2 (Exh. A), 1998.]

21.09.060 Legislative review of applications.

A. Legislative review shall be used when the proposed development involves the creation, implementation or amendment of city policy or law – as it relates to the city's development codes and related comprehensive planning activities. Projects reviewed through this process are not subject to the requirements of Chapter 21.07 LMC. This type of review includes, but is not limited to, the following:

1. Comprehensive plan, sub-area plan, zoning and/or development code amendments and updates.

B. Legislative review shall be conducted as follows:

1. Legislative review generally requires at least one public hearing before the planning commission and one public meeting before the city council.
2. When an application by a private individual is part of the proposed legislative action, the application shall contain all information and material requirements, including the appropriate fee(s), required by the appropriate application form and any preapplication meeting.
3. At least 10 days before the date of the first planning commission hearing, the city shall issue public notice of the date, time, location and purpose of the hearing. The notice shall include notice of the SEPA threshold determination issued by the city.
4. At least seven days prior to the hearing, the city shall issue a written staff report, integrating the SEPA review and threshold determination and recommendation regarding the application(s), shall make available to the public a copy of the staff report for review and inspection, and shall mail a copy of the staff report and recommendation to the applicant or the applicant's designated representative, and planning commission members. The city shall make available a copy of the staff report, subject to a reasonable charge, to other persons who request it.
5. Following the public hearing and in accordance with Chapter 35A.63 RCW, the recommendation of the planning commission shall be forwarded to the city council. Upon receiving the recommendation from the planning commission, the city council shall set a public meeting to consider the proposal, at which the council may either accept or reject the recommendation.
6. The council must hold a public hearing to consider any changes to the recommendation of the planning commission. The council may approve, modify, deny or remand the proposal back to the planning commission for further review after such public hearing. The final decision of the council shall be adopted by ordinance.

7. The final decision of the council shall be in writing and include:

- a. A statement of the applicable criteria, standards and other applicable law;
- b. A statement of the findings of the city council, stating the application or project's compliance or noncompliance with each applicable criterion, and assurance of compliance with applicable standards;
- c. The decision to approve or deny the application and, if approved, conditions of approval necessary to ensure the proposed development will comply with all applicable laws;
- d. A statement that the decision is final unless appealed as provided in Chapter 21.11 LMC, Appeals. The appeal shall meet the requirements of the Growth Management Hearing Board process and procedures;
- e. A statement that the complete case file, including findings, conclusions and conditions of approval, if any, is available for inspection. The notice shall list the place, days and times when the case file is available for inspection and the name and telephone number of the city's representative to contact to arrange inspection. [Ord. 1426 § 1 (Att. A), 2012; Ord. 1268 (Exh. D), 2005; Ord. 1088 § 2 (Exh. A), 1998.]

21.09.070 Notice of final decision.

A. Unless otherwise specified, a notice of final decision on an application reviewed pursuant to either a full administrative or a quasi-judicial review process shall be issued within 120 days after the date of the determination of completeness. In determining the number of days that have elapsed, the following periods shall be excluded:

1. Any period during which the applicant has been requested by the city to correct plans, perform required studies, or provide additional information or materials. The period shall be calculated from the date the city issues the request to the applicant to, the earlier of, the date the city determines whether the additional information satisfies its request or 14 days after the date the information has been received by the city;
2. If the city determines the information submitted by the applicant under subsection (A)(1) of this section is insufficient, it shall again notify the applicant of deficiencies, and the procedures under subsection (A)(1) of this section shall apply to the request for information;
3. Any period during which an environmental impact statement (EIS) is being prepared following a determination of significance pursuant to Chapter 43.21C RCW;
4. Any period for administrative appeals, which shall not exceed 90 days for open record appeals and 60 days for closed record appeals;
5. Any extension of time mutually agreed upon by the applicant and the city.

B. The time limit by which the city must issue a notice of final decision does not apply if an application:

1. Requires an amendment to a comprehensive plan or development regulation;
2. Requires the siting of an essential public facility, as provided in Chapter 36.70A RCW and as may be hereafter amended;
3. Is substantially revised by the applicant after a determination of completeness has been issued, in which case the time period shall start from the date on which the revised project application is determined to be complete.

C. If the city is unable to issue its final decision within the time limits provided for in this section, it shall provide written notice of this fact to the applicant. The notice shall include a statement of reasons why the time limits

have not been met and an estimated date for issuance of the notice of final decision.

D. In accordance with state law, the city is not liable for damages which may result from the failure to issue a timely notice of final decision. [Ord. 1426 § 1 (Att. A), 2012; Ord. 1088 § 2 (Exh. A), 1998.]

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Chapter 21.11 APPEALS

Sections:

- 21.11.010 Appeal of administrative interpretations and decisions.**
- 21.11.020 Appeal of hearing examiner decisions.**
- 21.11.025 Appeal of design review board decisions.**
- 21.11.030 Administrative appeals.**
- 21.11.040 Judicial appeals.**

21.11.010 Appeal of administrative interpretations and decisions.

Administrative interpretations and administrative decisions pursuant to LMC 21.09.030(A) and (I) and 21.09.040, including appeals of administrative decision or determinations made pursuant to Chapter 43.21C RCW, may be appealed, by applicants or parties of record, to the hearing examiner as provided for in LMC 21.11.030. There are no appeals of administrative decisions issued pursuant to LMC 21.09.030(B) through (H). [Ord. 1354 § 2 (Exh. B), 2010; Ord. 1088 § 2 (Exh. A), 1998.]

21.11.020 Appeal of hearing examiner decisions.

A. Appeals of a rezone not of general applicability (site specific) shall be made to the city council for review at a closed record appeal as provided for in LMC 21.11.030. All other decisions of the hearing examiner may be appealed, by applicants or parties of record from the hearing examiner public hearing, to the Chelan County superior court as provided for in LMC 21.11.040; provided, however, that no final decision of the hearing examiner may be appealed to Chelan County superior court unless such party has first brought a timely motion for reconsideration of the hearing examiner's decision pursuant to LMC 21.15.120, and has paid the additional fee for the motion for reconsideration at the time of filing.

B. All decisions issued by the hearing examiner except appeals of a rezone not of general applicability (site specific) shall contain the following notice of appeal rights:

Applicants or parties of record may appeal this decision as provided for in LMC 21.11.040; provided, however, that no such appeal may be filed unless such party has first brought a timely motion for reconsideration of this decision pursuant to LMC 21.15.120.

C. Appeal fees for appeal to the hearing examiner or appeals of a hearing examiner's decision to superior court shall be paid at the time of filing of the appeal and such fees shall be established and modified from time to time, by separate resolution of the Leavenworth city council. Any such resolution may include, in addition to the appeal fee, the cost to the city of the hearing examiner's services related to the appeal and any motion for reconsideration thereof. [Ord. 1354 § 2 (Exh. B), 2010; Ord. 1088 § 2 (Exh. A), 1998.]

21.11.025 Appeal of design review board decisions.

A. Appeals of decisions of the design review board may be appealed, by applicants or parties of record from the design review board public hearing, to the hearing examiner.

B. An applicant or party of record to a design review board's public hearing may appeal pursuant to the requirements of this chapter.

C. Appeal fees for appeal to the hearing examiner or appeals of a hearing examiner's decision to superior court shall be paid at the time of filing of the appeal and such fees shall be established and modified from time to time, by separate resolution of the Leavenworth city council. Any such resolution may include, in addition to the appeal fee, the cost to the city of the hearing examiner's services related to the appeal and any motion for reconsideration thereof.

D. The notice of appeal shall contain a concise statement including the following information:

1. The decision being appealed;
2. The name and address of the appellant and his/her interest(s) in the matter;
3. The specific reasons why the appellant believes the decision to be wrong, including identification of each finding of fact, each conclusion, and each condition or action ordered which the appellant alleges is erroneous. The appellant shall bear the burden of proving the decision was wrong;
4. The specific desired outcome or changes to the decision;
5. The applicable appeal fee;
6. The notice of appeal shall include a copy of the receipt evidencing payment of the applicable appeal fee.

E. Upon receipt of a notice of appeal, the city shall schedule with the hearing examiner a closed record appeal hearing.

F. Closed record appeals shall be conducted in accordance with the hearing examiner's rules of procedure and shall serve to provide argument and guidance for the decision. Closed record appeals shall be conducted generally as provided for public hearings, except that no new evidence or testimony shall be given or received except as provided in this section. The parties to the appeal may submit timely written statements or arguments.

G. A hearing examiner decision following a closed record appeal hearing shall include one of the following actions:

1. Grant the appeal in whole or in part;
2. Deny the appeal in whole or in part;
3. Remand for further proceedings and/or evidentiary hearing in accordance with this section.

H. In the event the hearing examiner determines that the public hearing record or record on appeal is insufficient or otherwise flawed, the hearing examiner may remand the matter back to the design review board to correct the deficiencies. The hearing examiner may receive new evidence in addition to that contained in the record on appeal only if it relates to the validity of the underlying decision at the time the decision was made and is needed to decide disputed issues regarding:

1. The proper constitution of or disqualification grounds pertaining to the decision maker; and
2. The use of unlawful procedure. [Ord. 1485 § 1 (Att. A), 2014.]

21.11.030 Administrative appeals.

A. Filing. Every appeal to the hearing examiner shall be filed with the director within 10 days after the date of the decision of the matter being appealed. If the 10-day period ends on a weekend or a holiday, the following working day shall be the tenth day. Every appeal to the hearing examiner shall be accompanied by the applicable appeal fee established by resolution of the Leavenworth city council. Failure to pay the appeal fee within said 10-day period shall subject the appeal to summary dismissal by the hearing examiner.

B. Contents. The notice of appeal shall contain a concise statement including the following information:

1. The decision being appealed;
2. The name and address of the appellant and his/her interest(s) in the matter;
3. The specific reasons why the appellant believes the decision to be wrong, including identification of each finding of fact, each conclusion, and each condition or action ordered which the appellant alleges is erroneous. The appellant shall bear the burden of proving the decision was wrong;
4. The specific desired outcome or changes to the decision;
5. The applicable appeal fee;
6. The notice of appeal shall include a copy of the receipt evidencing payment of the applicable appeal fee.

C. Process. Upon receipt of a notice of appeal containing all information required in subsection (B) of this section, the department of community development shall schedule with the applicable hearing body either an open record hearing or a closed record appeal hearing if an open record hearing has already been held on an application.

D. Closed record appeals shall be conducted in accordance with the hearing body's rules of procedure and shall serve to provide argument and guidance for the body's decision. Closed record appeals shall be conducted generally as provided for public hearings, except that no new evidence or testimony shall be given or received except as provided in subsection (D)(3) of this section. The parties to the appeal may submit timely written statements or arguments.

1. A council/hearing examiner decision following a closed record appeal hearing shall include one of the following actions:

- a. Grant the appeal in whole or in part;
- b. Deny the appeal in whole or in part;
- c. Remand for further proceedings and/or evidentiary hearing in accordance with subsections (D)(2) and (3) of this section.

2. In the event the city council/hearing examiner determines that the public hearing record or record on appeal is insufficient or otherwise flawed, the council/hearing examiner may remand the matter back to the hearing body to correct the deficiencies. The council shall specify the items or issues to be considered and the time frame for completing the additional work.

3. The council/hearing examiner may receive new evidence in addition to that contained in the record on appeal only if it relates to the validity of the underlying decision at the time the decision was made and is needed to decide disputed issues regarding:

- a. The proper constitution of or disqualification grounds pertaining to the decision maker;
- b. The use of unlawful procedure.

E. SEPA Appeals. In addition to the items listed above, LMC 16.04.230 shall be complied with when filing administrative appeals of SEPA decisions or determinations. [Ord. 1354 § 2 (Exh. B), 2010; Ord. 1088 § 2 (Exh. A), 1998.]

21.11.040 Judicial appeals.

A. Appeals from the final decision of the city council or hearing examiner involving LMC Titles 14, 15, 16, 17 or 18, and for which all other appeals specifically authorized have been timely exhausted, shall be made to Chelan County superior court and served on all necessary parties within 21 days of the date the decision or action became final, unless another time period is established by state law or local ordinance.

B. Notice of the appeal and any other pleadings required to be filed with the court shall be served on the city clerk-treasurer, director and city attorney within the applicable time period. This requirement is jurisdictional.

C. The cost of transcribing and preparing all records ordered certified by the court or required at the discretion of the city attorney for such appeal shall be borne by the appellant. The appellant shall post with the city clerk-treasurer prior to the preparation of any records an advance fee deposit in the amount specified by the city clerk-treasurer. The city clerk-treasurer shall ascertain the approximate charge of the transcription. Any overage will be promptly returned to the appellant. Any undercharges shall be promptly paid by the appellant. [Ord. 1354 § 2 (Exh. B), 2010; Ord. 1088 § 2 (Exh. A), 1998.]

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City of Leavenworth

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City Council
Cheryl K. Farivar - *Mayor*
Elmer Larsen
Carolyn Wilson - *Mayor Pro-Tem*
Gretchen Wearne
Mia Bretz
Margaret Neighbors
Richard Brinkman
Sharon Waters
Joel Walinski - *City Administrator*

LEAVENWORTH CITY COUNCIL AGENDA

Leavenworth City Hall - Council Chambers
October 10, 2017 - 6:30 PM

Call to Order

Flag Salute

Roll Call

Consent Agenda

1. Approval of Agenda
2. Approval of September 26, 2017 Regular Meeting Minutes
3. September 2017 Payroll \$242,484.46
4. 2017 Claims \$308,262.82
5. PRSA Voucher Request \$13,000.00

Public Safety Report: Sergeant Scott Lawrence, Liaison Officer

Councilmember and Committee Reports

Mayor/Administration Reports

Comments from the Public on Items Not on the Agenda

Resolutions, Ordinances, Orders and Other Business

1. Action: Resolution 18-2017 Approving Water Use Efficiency Goals
2. Action: Equipment Purchase/Surplus
 - a. Resolution 19-2017 Sole Source Vendor
 - b. Bobcat Purchase
 - c. Motion to Surplus Bobcat
3. Action: Annexation Survey Authorization
4. Action: 2018 Chelan County Prosecution Services Agreement
5. Action: Ordinance 1552 Quarterly Budget Amendment

Information Items for Future Consideration

1. Public Hearing: Property Taxes and Mid-Biennium Budget Review, 10/24/17, 6:30 PM
2. Pine Street Stakeholder Review, 10/25/2017, 7:00 PM at the Festhalle

Adjournment

Council Committees - 2nd Tuesday

Public Safety 3:00 Parks 4:00

Public Works 5:00

(Next Ordinance is 1553 - Next Resolution is 20-2017)

SUPPLEMENTAL COUNCIL AGENDA

1. Resolution 18-2017 Approving Water Use Efficiency Goals

The City Council is being asked to approve and adopt Resolution No. 18-2017, which in accordance with WAC 246-290-830(7) and WAC 246-290-830(4)(a) requires the City of Leavenworth to adopt the water use efficiency goal in conjunction with the 2017 update of its Water System Plan. The City has made the required public notices, conducted the public forum, and considered input provided by the public concerning the proposed water use efficiency goal.

The following item is included under **TAB 1**:

- Resolution 18-2017
 - **MOTION:** *The Leavenworth City Council moves to approve Resolution 18-2017 adopting the 2017 Water Plan Update of the water use efficiency goal of 1,030,000 gallons annually.*

2. Equipment Purchase/Surplus

a) Resolution 19-2017 Sole Source Vendor

The Council is being asked to approve Resolution No. 19-2017, which is required by the City in accordance with RCW 39.04.280 for exemption from competitive bidding requirements for equipment purchases that are clearly and legitimately limited to a single source of supply. This is required in the proposed purchase of a S70 Bobcat Skid-Steer Loader and Snow Blower. City Public Works Staff has researched the equipment available for the intended use and concluded that this unit solely meets the rigid width requirements and other specifications necessary for use on narrow City sidewalks.

- **MOTION:** *The Leavenworth City Council moves to approve Resolution No. 19-2017 exempting the City from the competitive bidding requirements for the proposed purchase of a S70 Bobcat Loader and Snow Blower.*

b) Bobcat Purchase

The City Council is being asked to authorize the expenditure of funds for the purchase of a S70 Bobcat Loader and Snow Blower in the amount of \$21,199.63, including sales tax, from Rowe's Tractor, LLC – East, E. Wenatchee, Washington. This newly purchased Skid-Steer Loader and Snow Blower will be used primarily for snow removal on the narrow sidewalks, including “safe routes to school” routes, Commercial Street – 3rd Street to 8th Street, Festhalle area sidewalks, etc. The smaller width will allow for better and more efficient access to smaller areas with less damage or problems caused by the larger units. Public Works Departments will also utilize the skid-steer in the non-snow months for moving materials and other smaller job-related tasks.

In addition, the purchase of the S70 Bobcat loader will allow for the replacement and surplus sale of the larger 2010 Bobcat S185 #1, which is one of two Bobcat Skid-Steer units presently owned and operated by the City and scheduled for replacement in 2020, per the City's Equipment Rental & Revolving Loan Fund (ER&R) Schedule. The value of the 2010 S185 #1 is estimated at approximately \$20,000.

- **MOTION:** *The Leavenworth City Council moves to authorize the expenditure of funds to purchase a S70 Bobcat Skid-Steer Loader and Snow Blower in the amount of \$21,199.63, including sales tax, from Rowe's Tractor, LLC – East.*

c) Motion to Surplus Bobcat

The City Council is being asked to approve the purchase of a 2017 S70 Bobcat Loader and Snow Blower and declare the 2010 Bobcat S185 #1 Loader, VIN/Serial # 530320368, as surplus equipment. In addition, Council approves the consignment sale of the S185 #1 Bobcat through Rowe's Tractor, LLC – East at an estimated selling price of \$20,000 – \$23,000, with a 10% commission, and an initial \$500 – \$1,000 servicing charge. A minimum selling price will be set at \$20,000.

- **MOTION:** *The Leavenworth City Council moves to declare the 2010 Bobcat S185 #1, VIN/Serial # 530320368 as surplus equipment and approves selling the loader on Consignment through Rowe's Tractor, LLC – East for no less than \$20,000, less a 10% consignment fee and a service fee.*

The following items are included under **TAB 2:**

- Resolution No. 19-2017
- Bobcat Product Quotation
- Picture of Bobcat S70 Loader

3. Annexation Survey Authorization

The City Council is being asked to approve and authorize the Mayor to enter into contract services for the creation of a legal description and map for the processing of territory to be annexed by the City. The City is beginning the process of annexation for lands controlled by the Washington State Department of Transportation (Hwy 2) from the existing City Limits to east of the Marson's Warehouse. This area is solely within Hwy 2 Rights-of-Way, and is for the purposes of municipal control. This annexation would expand the City Limits and Leavenworth jurisdiction to the outer area adjacent to land already under City jurisdiction (area surrounding and including Safeway and the new Hampton Inn).

The following items are included under **TAB 3:**

- WSDOT letter of consent
- Survey work cost estimate
- Territory to be annexed (concept)
- **MOTION:** *The Leavenworth City Council moves to authorize the Mayor to enter into contract services for the creation of a legal description and map for the processing of territory to be annexed by the City.*

4. 2018 Chelan County Prosecution Services Agreement

The City Council is being asked to approve the 2018 Chelan County Prosecution Agreement with Chelan County for prosecution services through the Chelan County Prosecuting Attorney. Through this agreement, the County Prosecuting Attorney will provide prosecution services for misdemeanors and gross misdemeanors filed in District Court for cases arising within the

corporate City limits. The fee for the prosecution services would be calculated based on the rate of \$225.00 per case, which is the same amount as last year. The total contract amount for 2018 would be \$13,725 based on 61 cases at \$225 per case, which is an increase of \$1,575 from last year. See the table below for the history of annual contract costs:

Year	Per Case Fee	Number of Cases	Contract Cost
2017	\$225	54	\$12,150
2016	\$210	64	\$13,440
2015	\$210	50	\$10,500
2014	\$210	84	\$17,640
2013	\$210	69	\$14,490
2012	\$200	55	\$11,000
2011	\$200	58	\$11,600
2010	\$200	69	\$13,800

The history of fee changes per case for the Prosecution Service Contract is as follows:

1997 - \$100 per case	2003 - \$125 per case	2006 - \$175 per case
2010 - \$200 per case	2013 - \$210 per case	2017 - \$225 per case

A copy of the agreement is provided as well as a list of misdemeanor crimes occurring within the corporate city limits as provided by the Chelan County Sheriff's Office via RiverCom. The report provides the incident number, location of incident, location of arrest, the charges, and the date of the arrest.

The following items are located under **TAB 4**:

- Chelan County Prosecuting Attorney Cover Letter, September 30, 2016
- Booking by LV Incident Location (09012015 – 08312016)
- Prosecution Service Agreement
- **MOTION:** *The Leavenworth City Council moves to approve and authorizes the Mayor to sign the 2018 Chelan County Prosecution Service Agreement.*

5. Ordinance 1552 Quarterly Budget Amendment

The City Council is being asked to adopt Ordinance 1552 Quarterly Budget Amendment, which amends the budget at the fund level. This amendment includes the necessary adjustments to Council actions over the past quarter. Two additional adjustments are included for increased funding from the Transportation Improvement Board for the Commercial Street 3rd Street to 8th Street project and increased expenditures for the Dryden Transfer Station Dump Fees due to increased garbage removal and a rate increase after the budget adoption. Finance Director Chantell Steiner will review the amendment and answer questions at the evening meeting.

The following items are included under **TAB 5**:

- Ordinance 1552
- Revenue and Expense Line Item Details
- **MOTION:** *The Leavenworth City Council moves to adopt Ordinance 1552 Quarterly Budget Amendment.*

LEAVENWORTH CITY COUNCIL MINUTES

October 10, 2017

Mayor Farivar called the October 10, 2017 Leavenworth City Council meeting to order at 6:30 PM and Chelan County Sheriff Sergeant Scott Lawrence led the City Council in the Flag Salute.

ROLL CALL

Council Present: Mayor Cheryl K. Farivar, Carolyn Wilson, Gretchen Wearne, Mia Bretz, Elmer Larsen, Margaret Neighbors, and Sharon Waters.

Staff Present: City Administrator Joel Walinski, City Attorney Tom Graafstra, Nathan Pate, Herb Amick, and Sue Cragun.

Mayor Farivar excused Councilmember Richard Brinkman from the meeting.

APPROVAL OF THE CONSENT AGENDA

Consent Agenda

1. Approval of Agenda
2. Approval of September 26, 2017 Regular Meeting Minutes
3. September 2017 Payroll \$242,484.46
4. 2017 Claims \$308,262.82
5. PRSA Voucher Request \$13,000.00

Councilmember Waters motioned to amend the consent agenda to include item no. 6 Professional Services Agreement – Festhalle Manager. The motion was seconded by Councilmember Wilson and passed unanimously.

Councilmember Larsen motioned to approve the consent agenda as amended. The motion was seconded by Councilmember Wearne and passed unanimously.

PUBLIC SAFETY REPORT: SERGEANT BRUCE LONG, LIAISON OFFICER

Chelan County Sheriff Sergeant Scott Lawrence reported on the current Sheriff Report for the month of August and stated the events that have taken place around the City of Leavenworth and nearby surrounding areas. He stated the numbers of incidents, citations, traffic accidents, alarm calls, and arrests and compared those to the prior month of July and the previous year's statistics.

COUNCILMEMBER AND COMMITTEE REPORTS

Councilmember Waters shared her regards for the recent hurricane, flood, earthquake, fire, and Las Vegas shooting victims. She then reported that she attended the Mayor's luncheon in honor of the Planning Commission and Design Review Board members and participated in the Oktoberfest Keg Tapping Ceremony. She also attended the Residential Advisory (RAC), Festhalle Oversight, City Council, Study Session, Parks, and Public Safety Committee meetings,

and the Listening Tour with WA State Senator Brad Hawkins. She briefly reported the highlights of the Public Safety Committee meeting.

Councilmember Neighbors reported that she attended the Parking Study, Festhalle Oversight Committee, Parks Committee and Study Session meetings, and the Listening Tour with WA State Senator Brad Hawkins. She briefly reported the topics discussed by the Parks Committee.

Councilmember Bretz reported that she attended the Public Works Committee meeting and stated the various topics that were discussed by the group. She noted the Public Open House for the Pine Street Reconstruction project on October 25th at the Festhalle.

Councilmember Larsen reported that he attended the Residential Advisory Committee (RAC) meeting. He noted that the City has purchased a traffic speed counter and upon review, are finding that the speed limit, for the most part, is being adhered to.

Councilmember Wearne shared her regards for the fire victims in Northern California and briefly provided an update regarding her home town, which is in that area. She then reported that she attended the Parking Study meeting.

Councilmember Wilson reported that she attended the Mayor's Luncheon in honor of the Planning Commission and Design Review Board members, the Oktoberfest Keg Tapping Ceremony, and spoke at the Upper Valley Museum Fundraising Tea. She also attended the Study Session and Public Safety Committee meetings.

MAYOR/ADMINISTRATION REPORTS

Mayor Farivar reported that she participated in the Oktoberfest Keg Tapping Ceremony with WA State Lieutenant Governor Cyrus Habib; following the ceremony, she attended a meeting with Lieutenant Governor Habib, Representatives Condotta and Steele, Senator Hawkins, and several local leaders; there was discussion regarding tourism economy at the city level and state level. She met with Senator Hawkins during his Listening Tour to discuss the City's Legislative Priorities, and hosted a luncheon for the Planning Commission and Design Review Board members. She expressed her sincere appreciation for the time and commitment that the members put in to volunteering for the City. She then reported on the Study Session meeting and stated that the Council received a report from the Chamber of Commerce, received an update on the Utility Rate Study with HDR, Inc., reviewed the Lions Club Park Pavilion with Architect Alison Miller, discussed the Highway 2 annexation, received an update regarding the purchase of water meters, received the quarterly update on the future Council Agenda items and Project Tracking documents, provided article topics for the Winter Newsletter, and had an open discussion with the Council.

Mayor Farivar presented City Administrator Joel Walinski with a Certificate of Appreciation for 7 years of excellence in public service and thanked him for his dedication to the City. She presented Finance Director Chantell Steiner with a Certificate of Appreciation for 10 years of excellence in public service and noted that Chantell has also received the Professional Finance Officer Award for the past 10 years.

City Administrator Joel Walinski reported on the Festhalle Oversight Committee meeting and stated that the new Festhalle Manager was in attendance at the meeting and that the Council will be discussing his contract later in the meeting. He updated the Council regarding the Parking Study and stated that the study information that was collected is currently being reviewed again and will be posted for public review soon.

City Attorney Tom Graafstra stated that he has been traveling through Amsterdam and Rome; he noted his appreciation for the quiet town of Leavenworth regarding security personnel.

Finance Director Chantell Steiner reported that Staff reviewed the utility accounts of the residents who leave during the winter months from the morning study session discussion and noted that the number is an average of about 32 residences per month.

Public Works Director Herb Amick reported that the Fall Clean-up began today and will continue through November 2, 2017.

COMMENTS FROM THE PUBLIC ON ITEMS NOT ON THE AGENDA

Mayor Farivar recognized one student in attendance for his "Citizens of Washington in a Contemporary World" class criteria at Cascade High School. She asked him to introduce himself and state what he will be doing for his senior class volunteer work. Mr. David Bryant introduced himself and stated that he will be working with Young Life for their parking fundraiser. Mayor Farivar and the City Council thanked Mr. Bryant for attending the meeting and Mayor Farivar gave him a City of Leavenworth lapel pin.

Maryann Bennett 338 Whitman Street, Leavenworth; Ms. Bennett stated that she wants to build a shed on her property, but is taking issue with the 3 foot setback required by City Code. She stated her grievance and asked if Staff would consider an administrative change.

RESOLUTIONS, ORDINANCES, ORDERS AND OTHER BUSINESS

1. Resolution 18-2017 Approving Water Use Efficiency Goals

Public Works Director Herb Amick stated that the City Council is being asked to approve and adopt Resolution No. 18-2017, which is the Water Use Efficiency Goal that is required by the State of Washington in conjunction with the 2017 Water System Plan update. He confirmed that all public noticing has been completed and that the public comment period has been conducted.

Councilmember Neighbors motioned to approve Resolution 18-2017 adopting the 2017 Water Plan Update of the water use efficiency goal of 1,030,000 gallons annually. The motion was seconded by Councilmember Wilson and passed unanimously.

2. Equipment Purchase/Surplus

a) Resolution 19-2017 Sole Source Vendor

Public Works Director Herb Amick stated that the Council is being asked to approve Resolution No. 19-2017, for exemption from competitive bidding requirements for equipment purchases that are clearly and legitimately limited to a single source of supply. He said that this process is required for purchase of a S70 Bobcat Skid-Steer Loader and Snow Blower. He confirmed that the Public Works Staff has researched the equipment available for the intended use and concluded that this unit solely meets the width requirements and other specifications necessary for use on narrow City sidewalks.

Councilmember Larsen motioned to approve Resolution No. 19-2017 exempting the City from the competitive bidding requirements for the proposed purchase of a S70 Bobcat Loader and Snow Blower. The motion was seconded by Councilmember Waters and passed unanimously.

b) Bobcat Purchase

Public Works Director Herb Amick stated that the City Council is being asked to authorize the expenditure of funds for the purchase of a S70 Bobcat Loader and Snow Blower in the amount of \$21,199.63, including sales tax, from Rowe's Tractor, LLC – East, E. Wenatchee, Washington. He said that the equipment will be used for snow removal on narrow sidewalks in the winter, and moving materials and other small job related tasks in non-snow months. He said that the purchase of the new S70 Bobcat loader will allow for the replacement and surplus sale of the larger 2010 Bobcat S185 #1, which is scheduled for replacement in 2020.

Councilmember Larsen motioned to authorize the expenditure of funds to purchase a S70 Bobcat Skid-Steer Loader and Snow Blower in the amount of \$21,199.63, including sales tax, from Rowe's Tractor, LLC – East. The motion was seconded by Councilmember Wilson and passed unanimously.

c) Motion to Surplus Bobcat

Public Works Director Herb Amick stated that the City Council is being asked to declare the 2010 Bobcat S185 #1 Loader, VIN/Serial # 530320368, as surplus equipment. He added that the Council is approving a consignment sale of the Bobcat through Rowe's Tractor, LLC – East at an estimated selling price of \$20,000 – \$23,000, with a 10% commission, and an initial \$500 – \$1,000 servicing charge. He confirmed that the minimum selling price will be set at \$20,000.

Councilmember Larsen motioned to declare the 2010 Bobcat S185 #1, VIN/Serial # 530320368 as surplus equipment and approves selling the loader on Consignment through Rowe's Tractor, LLC – East for no less than \$20,000, less a 10% consignment fee and a service fee. The motion was seconded by Councilmember Neighbors and passed unanimously.

3. Annexation Survey Authorization

Development Services Manager Nathan Pate stated that the City Council is being asked to approve and authorize the Mayor to enter into a contract, for the purpose of creating a legal description and map, for processing an area to be annexed by the City. He described the area as US Hwy. 2, from the Wenatchee River to the furthest west boundary of the Urban Growth Area.

He explained that the City will own the land, although the WA State Department of Transportation (WSDOT) will maintain the roadway; this will allow for the City to maintain utilities, create access points, etc. He added that WSDOT is in favor of the agreement. On a final note he explained that this is the first portion of the annexation process.

Councilmember Wearne motioned to authorize the Mayor to enter into contract services for the creation of a legal description and map for the processing of territory to be annexed by the City. The motion was seconded by Councilmember Waters and passed unanimously.

4. 2018 Chelan County Prosecution Services Agreement

City Administrator Joel Walinski stated that the City Council is being asked to approve the 2018 Chelan County Prosecution Agreement for prosecution services through the Chelan County Prosecuting Attorney. He said that the price for the annual 2018 contract is \$13,725 which is calculated at a rate of \$225 per case, which is the same amount as 2017. He went on to compare the contract rates over the last few years. He noted that because the contract is based on the number of cases from the previous year, the annual rate has increased by \$1,575.

Councilmember Wilson motioned to approve and authorizes the Mayor to sign the 2018 Chelan County Prosecution Service Agreement. The motion was seconded by Councilmember Larsen and passed unanimously.

5. Ordinance 1552 Quarterly Budget Amendment

Finance Director Chantell Steiner stated that the City Council is being asked to adopt Ordinance 1552 Quarterly Budget Amendment. She addressed the adjustments due to increased funding from the Transportation Improvement Board (TIB) and increased expenditures for the Dryden Transfer Station Dump Fees.

Councilmember Waters motioned to adopt Ordinance 1552 Quarterly Budget Amendment. The motion was seconded by Councilmember Wilson and passed unanimously.

6. Professional Services Agreement – Festhalle Manager

City Administrator Joel Walinski stated that the City Council is being asked to consider the approval of a Professional Services Agreement (PSA) between the City of Leavenworth and Convenience Store Coaching, LLC, which is owned by Mr. Josh Flickner. He briefly detailed the scope of work within the contract and described Mr. Flickner's background and qualifications. He stated that the cost of the agreement is \$35 per hour for 45 hours per month, a 5% commission for mid-week rentals, and a standard technology fee. He said that language addressing a responsible party closing the event and a 24 hour response time on rental inquiries was included within the agreement. He went on to say that the City will provide reimbursement for the cost of a \$1,000,000 Comprehensive General Liability policy with a not to exceed cost of \$500 annually and confirmed that the Festhalle Oversight Committee is recommending approval of the agreement. There was a brief discussion of the response time and being available to address the needs of the event.

Councilmember Neighbors motioned approve and authorizes the Mayor to sign the Professional Services Agreement with Convenience Store Coaching, LLC Mr. Josh Flickner – Owner, as the Festhalle Operations Consultant Manager. The motion was seconded by Councilmember Larsen and passed unanimously.

INFORMATION ITEMS FOR FUTURE CONSIDERATION

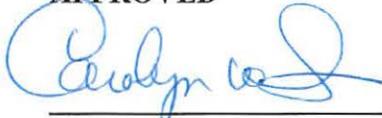
Mayor Farivar stated that there will be a public hearing on property taxes and mid-biennium budget review on October 24, 2017 at 6:30 PM and the Pine Street Stakeholder Open House will take place on October 25, 2017 at 7:00 PM at the Festhalle.

ADJOURNMENT

Seeing no other business, Councilmember Bretz motioned to adjourn the October 10, 2017 meeting of the Leavenworth City Council. The motion was seconded by Councilmember Wilson and passed unanimously.

The meeting adjourned at 7:32 PM.

APPROVED



Carolyn Wilson
Mayor Pro-Tempore

ATTEST



Chantell Steiner
Finance Director / City Clerk

Coliform Monitoring Plan for: City of Leavenworth

A. System Information

Plan Date: 11/7/2017

Water System Name <u>City of Leavenworth</u>	County <u>Chelan</u>	System I.D. Number <u>465005</u>
Name of Plan Preparer <u>Arnica Briody</u>	Position <u>Supervisor</u>	Daytime Phone <u>509-630-8703</u>
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	<u>SO1, Icicle Creek</u> <u>SO3, Well Field with:</u> <ul style="list-style-type: none"> • <u>Well #1</u> • <u>Well #2</u> • <u>Well #3</u> 	
<u>Cascade Analytical</u>	<u>Icicle Reservoir</u> <u>Ski Hill Reservoir</u>	
Treatment: Source Number & Process	<u>SO1: Direct Filtration</u> <u>SO3: Groundwater</u>	
Pressure Zones: Number and name	_____	
Population by Pressure Zone	_____	
Number of Routine Samples Required Monthly by Regulation:	<u>3</u>	
Number of Sample Sites Needed to Represent the Distribution System:	<u>9</u>	
*Request DOH Approval of Triggered Source Monitoring Plan?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name <u>Cascade Analytical</u>	Office Phone <u>509-662-1888</u> After Hours Phone <u>800-545-4206</u>
Address <u>3019 Gs Center Rd, Wenatchee, WA 98801</u>	Cell Phone - - Email <u>info@cascadeanalytical.com</u>
Hours of Operation <u>M-F 8-5</u>	
Contact Name _____	
Emergency Laboratory Name <u>Chelan-Douglas Health District</u>	Office Phone <u>509-886-6400</u> After Hours Phone - -

Address 200 Valley Mall Pkwy, East Wenatchee, WA 98802	Cell Phone - - - Email _____
Hours of Operation M-Th 8-5	
Contact Name _____	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, Water System Name: Contact Name: Telephone Numbers Office - - - After Hours - - -		
We sell groundwater to other public water systems.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, Water System Name: Contact Name: Telephone Numbers Office - - - After Hours - - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - - After Hours - - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - - After Hours - - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - - After Hours - - -		

D. Routine, Repeat, and Triggered Source Sample Locations*

Location/Address for Routine Sample Sites	Location/Address for Repeat Sample Sites	Groundwater Sources for Triggered Sample Sites**
1A. Chelan County PUD 1505 Chumstick Hwy Woman's bathroom	<ol style="list-style-type: none"> <li>1. Original location <li>2. 10210 County Shop Rd. County Utility shop <li>3. 10195 Titus Rd Icicle River middle School 	S01 S03 – Well #1 S03 – Well #2 S03 – Well #3
1B. Gustav's Restaurant 615 Hwy 2 Woman's bathroom	<ol style="list-style-type: none"> <li>1. Original location <li>2. 221 8th St. Watershed Restaurant <li>3. 280 Hwy 2 Kristall's Restaurant 	S01 S03 – Well #1 S03 – Well #2 S03 – Well #3
1C. COL City Shops 1404 Commercial St First bathroom	<ol style="list-style-type: none"> <li>1. Original location <li>2. 250 12th St. Lorrain Haus <li>3. 1329 Hwy 2 Dan's Food Mart 	S01 S03 – Well #1 S03 – Well #2 S03 – Well #3

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Routine, Repeat, and Triggered Source Sample Locations*

Location/Address for Routine Sample Sites	Location/Address for Repeat Sample Sites	Groundwater Sources for Triggered Sample Sites**
<p>2A.</p> <p>C.H.S. Bus Garage</p> <p>10150 Titus Rd</p> <p>Breakroom sink</p>	<p>1. Original location</p> <hr/> <p>2. 12240 Pine St. S.D. Construction HQ</p> <hr/> <p>3. 10421 Titus Rd Club West Gym</p> <hr/>	<p>S01</p> <hr/> <p>S03 – Well #1</p> <hr/> <p>S03 – Well #2</p> <hr/> <p>S03 – Well #3</p> <hr/>
<p>2B.</p> <p>Ski Hill Dr. Booster pump station</p> <p>Frankie's wayside</p> <p>Near corner of Pine St & Ski Hill Dr.</p>	<p>1. Original location</p> <hr/> <p>2. 12380 West Emig Dr. Resident's Home</p> <hr/> <p>3. 424 Ski Hill Dr. Resident's Home</p> <hr/>	<p>S01</p> <hr/> <p>S03 – Well #1</p> <hr/> <p>S03 – Well #2</p> <hr/> <p>S03 – Well #3</p> <hr/>
<p>2C.</p> <p>District Office, building next to Osborn Elem.</p> <p>225 Central Ave</p> <p>Woman's bathroom on first floor</p>	<p>1. Original location</p> <hr/> <p>2. 323 Benton St.</p> <hr/> <p>3. 423 Evans St Senior Center</p> <hr/>	<p>S01</p> <hr/> <p>S03 – Well #1</p> <hr/> <p>S03 – Well #2</p> <hr/> <p>S03 – Well #3</p> <hr/>

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Routine, Repeat, and Triggered Source Sample Locations*

Location/Address for Routine Sample Sites	Location/Address for Repeat Sample Sites	Groundwater Sources for Triggered Sample Sites**
<p>3A.</p> <p>USFS Ranger office</p> <p>600 Sherborne St.</p> <p>First bathroom near public entrance</p>	<p>1. Original location</p> <hr/> <p>2. 714 Cedar St. Resident's Home</p> <hr/> <p>3. 1001 Front St. Leavenworth Feasthalle</p> <hr/>	<p>S01</p> <hr/> <p>S03 – Well #1</p> <hr/> <p>S03 – Well #2</p> <hr/> <p>S03 – Well #3</p> <hr/>
<p>3B.</p> <p>Sleeping Lady Retreat Center</p> <p>7375 Icicle Rd.</p> <p>O'Grady's prep sink</p>	<p>1. Original location</p> <hr/> <p>2. 7409 Icicle Rd Snowy Owl Theater</p> <hr/> <p>3. 7675 Icicle Rd Resident's Home</p> <hr/>	<p>S01</p> <hr/> <p>S03 – Well #1</p> <hr/> <p>S03 – Well #2</p> <hr/> <p>S03 – Well #3</p> <hr/>
<p>3C.</p> <p>Mtn Meadows Assisted Living</p> <p>320 Park Ave.</p>	<p>1. Original location</p> <hr/> <p>2. 309 Meadow Drive Resident's Home</p> <hr/> <p>3. 263 Mine St. Berg Rose Apartment Building</p> <hr/>	<p>S01</p> <hr/> <p>S03 – Well #1</p> <hr/> <p>S03 – Well #2</p> <hr/> <p>S03 – Well #3</p> <hr/>

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Reduced Triggered Source Monitoring Justification (add sheets as needed):

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E. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	1A, 1B, 1C	July	1A, 1B, 1C
February	2A, 2B, 2C	August	2A, 2B, 2C
March	3A, 3B, 3C	September	3A, 3B, 3C
April	1A, 1B, 1C	October	1A, 1B, 1C
May	2A, 2B, 2C	November	2A, 2B, 2C
June	3A, 3B, 3C	December	3A, 3B, 3C

F. Level 1 and Level 2 Assessment Contact Information

Name Tracy Valentine, WDM 2, WTPO 2	Office Phone 509-548-4235 After Hours Phone 509-433-2357
Address PO Box 285, Leavenworth, WA 98826	Email TValentine@cityofleavenworth.com
Name Mike Wilson	Office Phone 509-329-2117
Address 16201 East Indiana Ave. Suite 1500 Spokane Valley, WA 99216	Email Michael.Wilson@DOH.WA.GOV

G. *E. coli*-Present Sample Response

Distribution System <i>E. coli</i> Response Checklist				
Background Information	Yes	No	N/A	To Do List
We inform staff members about activities within the distribution system that could affect water quality.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Our Cross-Connection Control Program is up-to-date.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We routinely inspect all treatment facilities for proper operation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can activate an emergency intertie with an adjacent water system in an emergency.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have a map of our service area boundaries.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have consumers who may not have access to bottled or boiled water.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We have messages prepared and translated into different languages to ensure our consumers will understand them.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have the capacity to print and distribute the required number of notices in a short time period.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Policy Direction	Yes	No	N/A	To Do List
We have discussed the issue of <i>E. coli</i> -present sample results with our policy makers.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If we find <i>E. coli</i> in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(Cont.)				

Distribution System *E. coli* Response Checklist

Potential Public Notice Delivery Methods	Yes	No	N/A	To Do List
It is feasible to deliver a notice going door-to-door.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have a list of all of our customers' addresses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We have a list of customer email addresses.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We encourage our customers to remain in contact with us using social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We have an active website we can quickly update to include important messages.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We need a news release to supplement our public notification process.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Confirm *E. Coli* is present in the water system for the results for the repeat samples.
4. Take water samples from all four water sources (Surface water, well #1, well #2, and well #3) to see if any sources are contaminated.
5. Identify the source(s) of contamination. Investigate any broken mains or recent leaks in the water line.
6. Make repairs to eliminate the source of the contaminate by flushing, increasing the chlorine dose, and/or making a system repair.
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

***E. coli*-Present Triggered Source Sample Response Checklist –
All Sources**

Background Information	Yes	No	N/A	To Do List
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We address any significant deficiencies identified during a sanitary survey.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
We routinely inspect our well site(s).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have a good raw water sample tap installed at each source.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Public Notice	Yes	No	N/A	To Do List
We discussed the requirement for immediate public notice of an <i>E. coli</i> -present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We discussed the requirement for immediate public notice of an <i>E. coli</i> -present source sample result with our wholesale customers and encouraged them to develop a response plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
We have prepared templates and a communications plan that will help us quickly distribute our messages.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<i>E. coli</i>-Present Triggered Source Sample Response Checklist – Source S__*				
Alternate Sources	Yes	No	N/A	To Do List
We can stop using this source and still provide reliable water service to our customers.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can provide bottled water to all or part of the distribution system for an indefinite period.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We can quickly replace our existing source of supply with a more protected new source.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temporary Treatment	Yes	No	N/A	To Do List
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? <u>0.6</u> mg/L	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

<i>E. coli</i>-Present Triggered Source Sample Response Plan – Source ____	
If we have <i>E. coli</i> in Source ____ water we will immediately:	
1. Call DOH.	
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

Sampling Procedures:

- Only use the Colilert sample bottle provided (100 mL) to collect water at each sampling location according to the sampling schedule above.
- Samples are collected by City of Leavenworth Water System Employee.
- Have clean hands when taking a sample or wear gloves when taking the sample.
- Remove faucet aerator screen and rubber gasket.
- Clean and sanitize faucet with any number of methods:
 - torch,
 - chlorine in a bottle and soak faucet outlet in chlorine bleach for 3-5 minutes,
 - chlorine spray bottle and after spraying bleach into faucet let sit for 3-5 minutes, or
 - clean faucet outlet with rubbing alcohol wipes.
- Run **cold** water from the faucet for 3 minutes.
- Remove plastic sanitary seal from the sample bottle. Once seal is removed be diligent to not touch the inside of the sample bottle.
- Fill the sample bottle to the line (100 mL mark). Tightly put on cap and put the sticker label on top of the cap.
- The sample must be kept cool while in delivery.
- Samples are taken immediately (no longer than 24 hours) to Cascade Analytical:
 - Cascade Analytical
 - 3019 GS Center Rd
 - Wenatchee, WA 98001
 - 509-662-1888
- In exchange for the filled sample bottles, pick up empty bottles for the next sample.

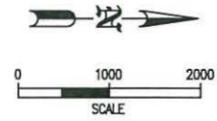
Sample Form:

- It is best practice to fill out the order form prior to taking the water sample.
- Write the date and time of the collection while sampling.
- Indicate that the sample was collected in Chelan County.
- Water system ID: **465005**, Name: City of Leavenworth, Group A system.
- Include the sample site with address and description.
- Include the name of the person who did the sampling.
- System owner/manager: Arnica Briody
- Day Telephone number: 509-548-4235
- Evening Telephone number: 509-630-8703
- Include the name, address and phone number of where the report will be sent.
- Send Report to:

Water Plant
City of Leavenworth
PO Box 287
Leavenworth, WA 98826

- Bill to:
City of Leavenworth
PO Box 287
Leavenworth, WA 98826
- In the "Type of Sample" box indicated either:
 - #1. Routine Distribution Sample or #3. Raw Water Source Sample
 - For distribution samples choose option #1 and "yes" for chlorinated and take the chlorine residual.
 - For Raw water source sample choose #3 and if it is at the Icicle intake then check the box for Fecal- Surface
 - For raw water source sample at the well site choose #3 and check the box for E. coli.
- See form on next page

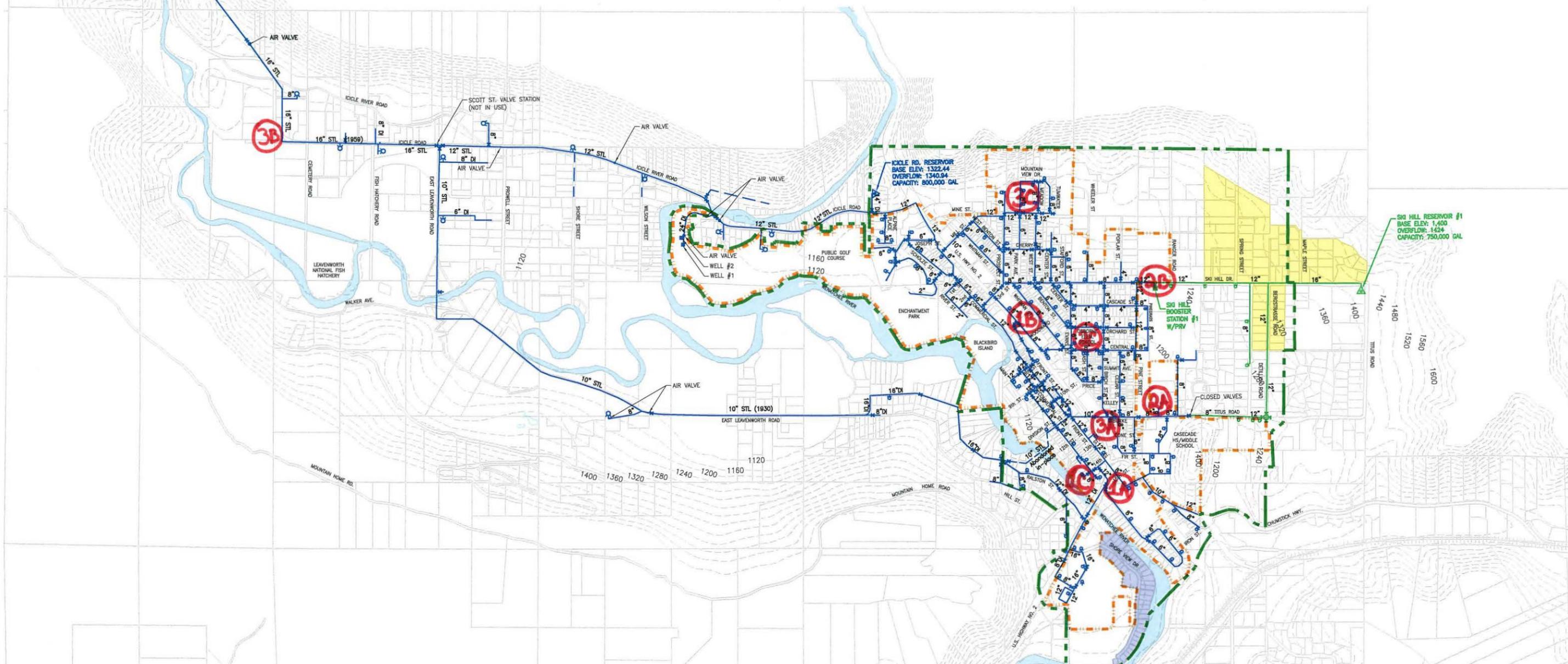
18" STEEL
16" STEEL
INTAKE STRUCTURE
SCREEN HOUSE
WATER FILTER PLANT
CLEAR WELL W.S. ELEV. 1367±



LEGEND

- - - - - CITY LIMITS
 - - - - - URBAN GROWTH AREA
 - FIRE HYDRANT
 - WATER VALVE
 - ▲ EXISTING RESERVOIR
 - 6" EXISTING WATER MAIN—ZONE 1
 - 6" EXISTING WATER MAIN—ZONE 2
 - - - - - PRIVATE WATER PIPE
 - APPROXIMATE BOUNDARY OF RIVER BEND WATER ASSOCIATION
 - APPROXIMATE BOUNDARY OF SKI HILL WATER ASSOCIATION
- STL STEEL
CI CAST IRON
DI DUCTILE IRON
PVC POLYVINYL CHLORIDE
(1930) INSTALLATION YEAR (IF AVAILABLE)

NOTE:
THIS MAP CONTAINS THE MOST CURRENT INFORMATION AVAILABLE FOR MAIN SIZES. IT DOES NOT CONTAIN CURRENT MAIN MATERIAL AND CONDITION INFORMATION THAT MAY BE AVAILABLE ON OTHER CITY MAPS.



141001-WSP-Fig2&3

SCALE: AS SHOWN
DESIGNED: -
DRAWN: TYP
CHECKED:
APPROVED:
PROJ. NO.: 14-10-01
DATE: 6/28/17



CITY OF LEAVENWORTH, WA
WATER SYSTEM PLAN
COLIFORM MONITORING PLAN
SAMPLE LOCATIONS

FIGURE
A

**Operational Guidelines
For
City of Leavenworth
Water Production Facilities**

**Developed for:
Comprehensive Technical Assistance Project.
City of Leavenworth, and Process Applications Inc.**

Table of Contents

Number	Guideline Subject
#1P	Performance Goals
#2	Waterplant Startup
#3	Water plant Flow Rate Adjustment
#3a	Valve Schematic
#4	C-T Determination
#5	Backwashing Process
#6	Daily Operational Data Collection
#6a	Well Data Log
#6b	Water Treatment Plant Data Log
#6c	Process Control Data Collection
#7	Chemical Batch Tank Preparation
#7a	Valve Schematic
#8	Chemical Feed Pump Setting
#9	Jar Testing Method
#10	Backwash Testing
#10a	NPDES Permit
#11	Water Treatment Plant Shutdown
#12	Waterplant Sampling and Laboratory Technique
#13	Operation and Maintenance of Intake Facilities
#14	Annual Maintenance Calendar
#15	Chemical Feed Pump Calibration
#16	Waterplant Improvements 1994 Through Present
#17	Draining Filters for Maintenance
#18	Responding to Alarm Systems
#19	Operation and Maintenance of Wells
Att.	Special Study: WTP Hydraulic Capability – Cold Conditions
Att.	Special Study: WTP Hydraulic Capability – Warm Conditions
Att.	Letter to DOH Regional Engineer

- Att. DOH 1998 Site Visit Report (Steven Baker)
- Att. Restoration of Filtration Credit 5/18/98
- Att. GWI Determination / Stiff Diagram / Lab Reports

WA WATER PLANT COPY

City of Leavenworth

Wellhead Protection and Watershed Control Program 2001

Tracy L. Valentine
Assistant Water Plant Operator

Stan Adams
Water Plant Supervisor

Daniel J. Cappellini



Evergreen Rural Water of WA



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- 3. Icicle Creek Daily Discharge Record**
- 4. Icicle Creek Monthly Mean Hydrograph**
- 5. Icicle Creek WY 1999 Hydrograph**
- 6. Icicle Creek Turbidity Data**
- 7. WHPA Map**

IX. Appendices

Appendix A: Well Reports
Well Field / Wenatchee MPA Results
Well Field / Wenatchee Stiff Diagrams
Icicle Creek Water Quality Data

Appendix B: Susceptibility Assessment
Water Facilities Inventory

Appendix C: Potential Contaminant Source List
Notification Letters

Appendix D: Resource Contacts

Update and additions to City of Leavenworth Wellhead Protection and Watershed Control Program

1. On Page 21 Appendix C

Include these two additions to the Potential Contaminant Source List:

Business Name	Address	Nature of Business	Possible Contaminants
City of Leavenworth	700 Hwy 2	Backup power at Well field.	Diesel fuel for Generator
Fish & Wildlife (509)665-3508	215 Melody Lane Wenatchee	Fish Counter intake area	2 Propane tanks

See supplied photos: 1, 2, 3, 4, & 5 for Appendix C

2. Page 14

Update the last paragraph under the title "Short term":

Short term

The Community has two above ground storage tanks near the well field. Icicle Reservoir has a capacity of 810,000 gallons. Ski Hill Reservoir has a capacity of 750,000 gallons. The reservoir at Icicle is kept full from the water plant through gravity flow and a booster pump at the base of ski hill supplies water to the ski hill reservoir. In 2012 the well field was supplied with a Cummings Generator (see appendix C photo) to supply backup power in case of an electrical outage. Electrical Power source is the Chelan County PUD.

Wellhead Protection Plan Hazard Evaluation Update

7/24/2017

An evaluation was done on June 24th, 2017 with Arnica Briody and Tracy Valentine. With a review of the existing Wellhead Protection and Watershed Control Program we saw these above changes from the original program assessment.

A. Briody 8/9/17

Tracy L. Valentine 8/9/17



Icicle Reservoir City of Leavenworth

**Report of Findings
From the
Diving Operations
Conducted on**

July 6, 2017

by



**LIQUIVISION
TECHNOLOGY
DIVING SERVICES**



LiquiVision
D I V I N G

Office/Mailing Address
711 Market Street
Klamath Falls, OR 97601
www.divinoservices.com

TECHNOLOGY
S E R V I C E S

Western Operations
835 Market Street
Klamath Falls, OR 97601
liquivision@divinoservices.com

Toll Free: (800) 223-8959
Phone: (541) 883-8473
Fax: (541) 883-1361

Underwater Inspection of Icicle Reservoir

July 6, 2017

Arnica Briody
City of Leavenworth
PO Box 287
Leavenworth, WA 98826

Following is the report of findings during the underwater work conducted on your storage tank.

It will focus on issues of concern or areas that need attention. In order to see a complete and detailed inspection, please view each video.

Color images of all plumbing fixtures, components and areas of concern were taken via underwater digital camera. The images should give you a clear view of the conditions described. The video may give you another view and a clearer understanding of any area that you may wish to look at more closely.

METHODOLOGY:

Disinfection of All Equipment With 200ppm+ Chlorine Solution Immediately Prior to Entering System: This process prevents contamination of the water supply. All LVT equipment was properly disinfected prior to entering the potable water system.

Full-Time Voice Communication between surface and Diver: The system allowed for constant communication between the diver, and all surface personnel. In addition, customers were able to communicate with the diver at any time. For purposes of a more efficient inspection, cleaning, and repair program, that enabled the diver to immediately discuss any observations he made inside the storage tank.

Full-Time Live High Resolution Color Video: Allowed for constant viewing of the diver's work and observations. This also enabled the district personnel to view what the diver in the storage tank was witnessing.

Icicle Reservoir

TERMINOLOGY:

When describing the features or areas of interest inside the storage tank, an image number is placed next to the description that corresponds with the inspection findings. The diagram is shown in a view looking from the top down. The entry hatch is referred to as the South position.

Following the diagram are pictures of the pertinent areas of the storage tank and the locations where the pictures were taken. Each picture is described and numbered.

The standards used to evaluate the condition of the storage tank include: Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 NACE Standard RP0196-96 & RP0388-2001 or Condition of Concrete In-service – ACI 201.1R-92.

Icicle Reservoir

OVERVIEW OF STORAGE TANK INSPECTED:

Customer Name:	City of Leavenworth	Tank Name:	Icicle Reservoir
Manager:	Arnica Briody	Construction:	PBG Concrete
Job Number:	WA617216R1T2	Capacity (gal.):	800,000
Date of Inspection:	July 6, 2017	Diameter or L x W:	96' X 53'
Report Writer:	Jonathan Menendez	Height:	21'
Diver:	Jamie Taylor	Floor Square FT:	5,088
Tender:	William Rush	Date Built:	Unknown

N/A –not applicable **Excellent (Ex.)** –like new condition, no repairs needed. **Good** – Cosmetic only problems, repairs if wanted. **Fair**-Minor problems, repairs needed, not immediate. **Poor** –Major problems, structural or like, immediate repairs needed.

1. Rust Grades

Grades	% of Surface Rusted	Description
10	0% - 0.01%	No rusting or less than 0.01% of surface rusted
9	0.01% - 0.03%	Minute rusting, less than 0.03% of surface rusted
8	0.03% - 0.1%	Few isolated rust spots, less than 0.1% of surface rusted
7	0.1%- 0.3%	Less than 0.3% of surface rusted
6	0.3% - 1%	Extensive rust spots, but less than 1% of surface rusted
5	1% - 3%	Rusting to the extent of 3% of surface rusted
4	3% - 10%	Rusting to the extent of 10% of surface rusted
3	10% - 16%	Approximately one sixth of the surface rusted (16%)
2	16% - 33%	Approximately one third of the surface rusted (33%)
1	33% - 50%	Approximately one half of the surface rusted (50%)
0	50% - 100%	Approximately 100% of the surface rusted

2. Concrete Deformities

Unable to Evaluate	Good Condition	Cracks	Blistering	Chalking	De-Lamination	Pitting	Popouts	Scaling	Spalling	Warping
UE	GC	CK	BL	CH	DL	PT	PO	SC	SP	WA

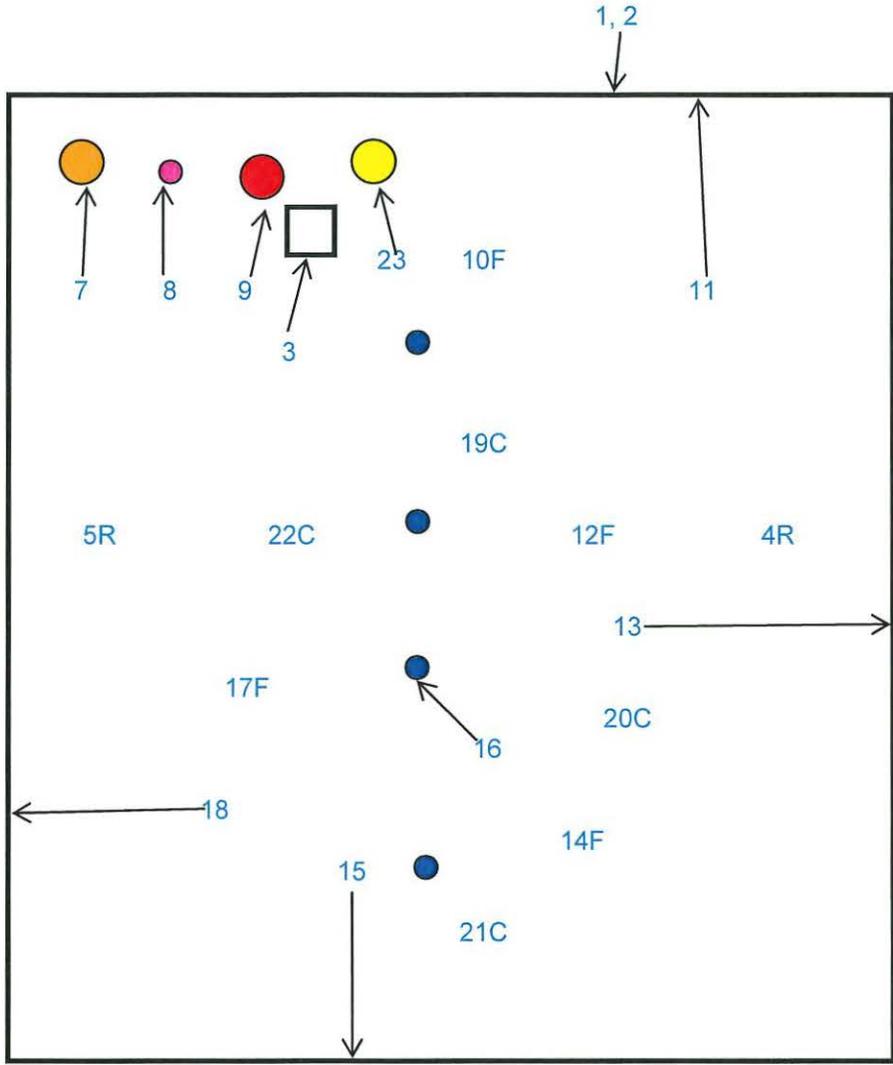
Icicle Reservoir

RECOMMENDATIONS:

Recommendation	Estimated Time - Hrs.
Perform a regular cleaning, inspection and repair cycle every 2-3 years in order to ensure superior water quality and proper maintenance of coating condition and appurtenances is performed.	Please contact our sales office for an estimate.

Icicle Reservoir

Tank Diagram



North



Drawing Not to Scale

□	Entry Hatch	● (Yellow)	Overflow	● (Blue)	Support Column
● (Orange)	Common Inlet/Outlet	● (Pink)	Telemetry	● (Yellow)	Air Vent

Icicle Reservoir

Image #1

Exterior Wall South

Condition:
Concrete Deform³ PT.

Description:
Exterior Wall
appeared to be in good
condition with a minor
amount of pitting.



Image #2

Exterior Base South

Condition:
Earthen Base appeared
to be in good condition
with no problems.



Icicle Reservoir

Image #3

Entry Hatch South

Condition:
Rust Grade¹ 8.

Description:
36"x36" Entry Hatch appeared to be in good condition with a minor amount of corrosion.



Image #4

Roof West

Condition:
Concrete Deform³ GC.

Description:
Roof appeared to be in good condition with no concrete problems.



Icicle Reservoir

Image #5

Roof East

Condition:
Concrete Deform³ CK.

Description:
Roof appeared to be in good condition with a minor amount of cracking.



Image #6

Diver



Icicle Reservoir

Image #7

Inlet / Outlet Southeast

Condition:
Rust Grade¹ 5.

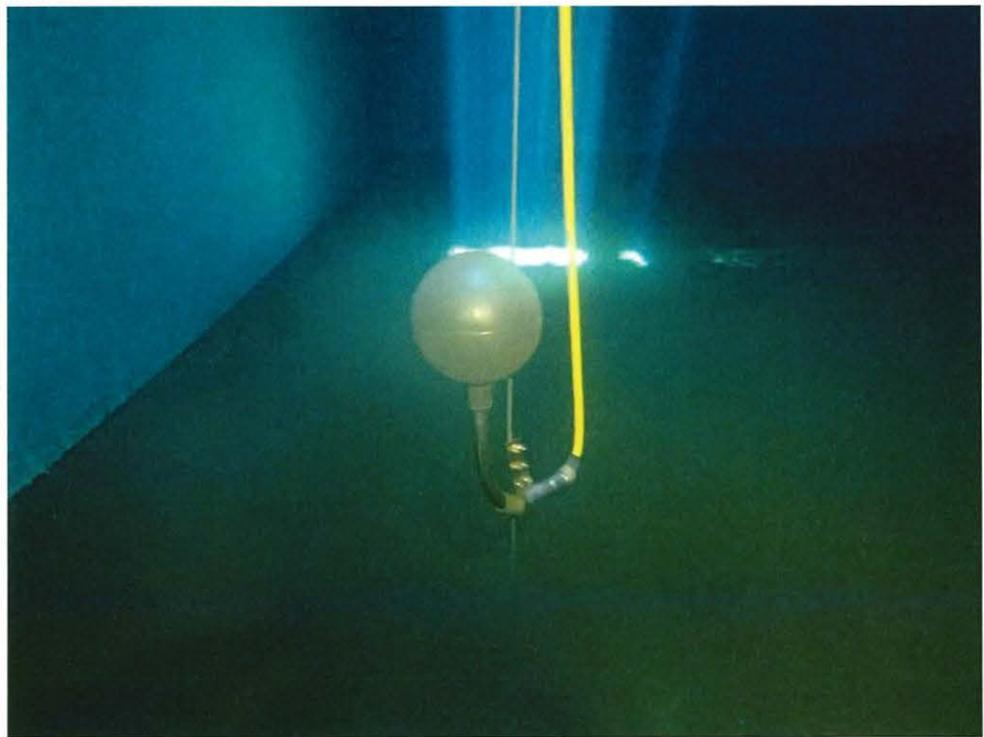
Description:
18" Inlet / Outlet appeared to be in fair condition with a moderate amount of corrosion.



Image #8

Telemetry South

Description:
Telemetry appeared to be in good working condition with no problems.



Icicle Reservoir

Image #9

Drain South

Condition:
Rust Grade¹ Z.

Description:
Observable portion of the 8" Drain appeared to be in good condition with a minor amount of corrosion.



Image #10

Floor South

Condition:
Concrete Deform³ GC.

Description:
Observable portion of the Floor appeared to be in good condition with no concrete problems.



Icicle Reservoir

Image #11

Wall South

Condition:
Concrete Deform³ GC.

Description:
Wall appeared to be in good condition with no concrete problems.

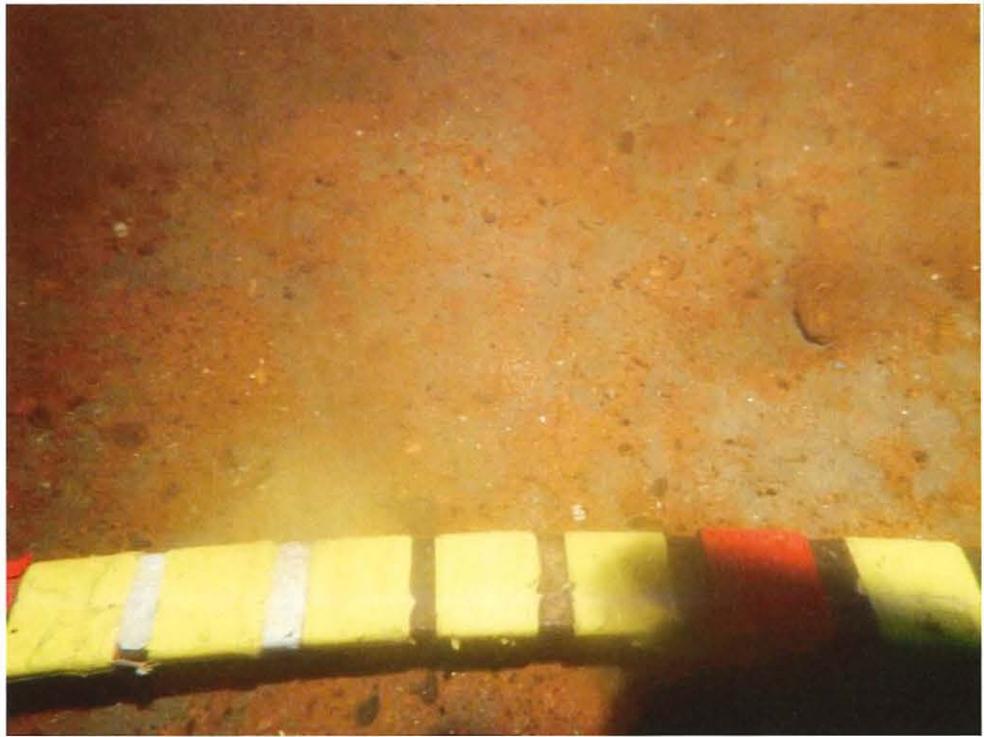


Image #12

Floor West

Condition:
Concrete Deform³ GC.

Description:
Observable portion of the Floor appeared to be in good condition with no concrete problems.



Icicle Reservoir

Image #13

Wall West

Condition:
Concrete Deform³ GC.

Description:
Wall appeared to be in good condition with no concrete problems.



Image #14

Floor North

Condition:
Concrete Deform³ GC.

Description:
Observable portion of the Floor appeared to be in good condition with no concrete problems.



Icicle Reservoir

Image #15

Wall North

Condition:
Concrete Deform³ GC.

Description:
Wall appeared to be in good condition with no concrete problems.



Image #16

Column Center

Condition:
Concrete Deform³ GC.

Description:
16"x16" Column appeared to be in good condition with no concrete problems.



Icicle Reservoir

Image #17

Floor East

Condition:
Concrete Deform³ GC.

Description:
Observable portion of the Floor appeared to be in good condition with no concrete problems.



Image #18

Wall East

Condition:
Concrete Deform³ GC.

Description:
Wall appeared to be in good condition with no concrete problems.



Icicle Reservoir

Image #19

Ceiling South

Condition:
Concrete Deform³ GC.

Description:
Ceiling appeared to be in good condition with no concrete problems.



Image #20

Ceiling West

Condition:
Concrete Deform³ GC.

Description:
Ceiling appeared to be in good condition with no concrete problems.



Icicle Reservoir

Image #21

Ceiling North

Condition:
Concrete Deform³ GC.

Description:
Ceiling appeared to be in good condition with no concrete problems.



Image #22

Ceiling East

Condition:
Concrete Deform³ GC.

Description:
Ceiling appeared to be in good condition with no concrete problems.



Icicle Reservoir

Image #23

Overflow South

Condition:
Concrete Deform³ 8.

Description:
14" Overflow appeared to be in fair condition with a minor amount of corrosion and a moderate amount of delamination observed.



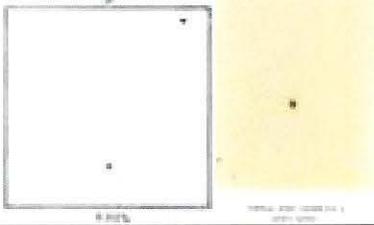
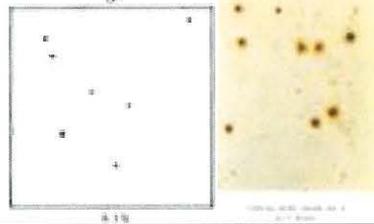
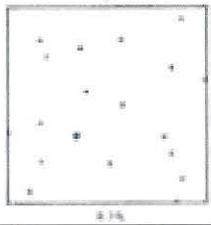
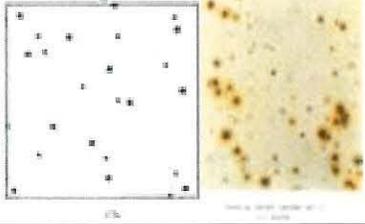
Icicle Reservoir

REFERENCES:

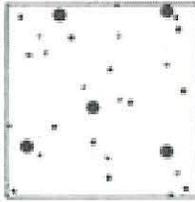
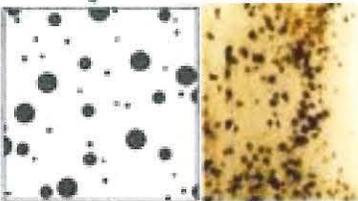
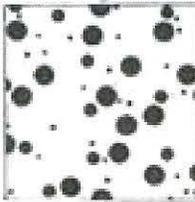
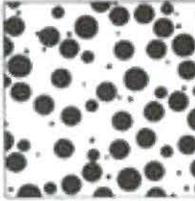
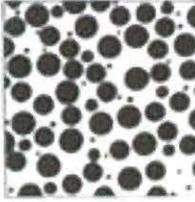
Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 (1989)

The graphical representations show examples of area percentages, which may be helpful in rust grading. The use of photographic reference standards requires the following precautions:

1. Some finishes are stained by rust. This staining must not be confused with the actual rusting involved.
2. Accumulated dirt or other material may make accurate determination of the degree of rusting difficult.
3. Certain types of deposited dirt that contain iron or iron compounds may cause surface discoloration that should not be mistaken for corrosion.
4. It must be realized that failure may vary over a given area and discretion must therefore be used in applying these reference standards.
5. In evaluating surfaces, consideration shall be given to the color of the finish coating, since failures will be more apparent on a finish that shows color contrast with rust, such as white, than on a similar color, such as iron oxide finish.
6. The photographic reference standards are not required for use of the rust-grade scale since the scale is based upon the percent of the area rusted and any method of assessing area rusted may be used to determine the rust grade.

Rust Grades	Description	Graphical Representation
10	No rusting or less than 0.01% of surface rusted	Unnecessary
9	Minute rusting, less than 0.03% of surface rusted	
8	Few isolated rust spots, less than 0.1% of surface rusted	
7	Less than 0.3% of surface rusted	
6	Extensive rust spots, but less than 1% of surface rusted	

Icicle Reservoir

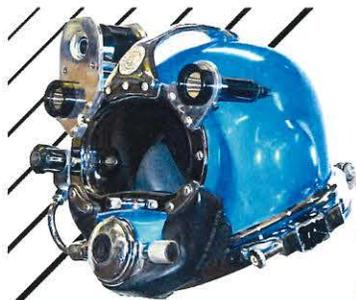
5	Rusting to the extent of 3% of surface rusted	
4	Rusting to the extent of 10% of surface rusted	
3	Approximately one sixth of the surface rusted (16%)	
2	Approximately one third of the surface rusted (33%)	
1	Approximately one half of the surface rusted (50%)	
0	Approximately 100% of the surface rusted	Unnecessary



Ski Hill Tank
City of Leavenworth
Report of Findings
From the
Diving Operations
Conducted on

March 28, 2017

by



LIQUIVISION
TECHNOLOGY
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www.divineservices.com

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Klamath Falls, OR 97601
liquivision@divineservices.com

Toll Free: (800) 229-6959
Phone: (541) 883-8473
Fax: (541) 883-1361

Underwater Inspection of Ski Hill Tank

March 28, 2017

Arnica Briody
City of Leavenworth
P.O. Box 287
Leavenworth, WA 98826

Following is the report of findings during the underwater work conducted on your storage tank.

It will focus on issues of concern or areas that need attention. In order to see a complete and detailed inspection, please view each video.

Color images of all plumbing fixtures, components and areas of concern were taken via underwater digital camera. The images should give you a clear view of the conditions described. The video may give you another view and a clearer understanding of any area that you may wish to look at more closely.

METHODOLOGY:

Disinfection of All Equipment With 200ppm+ Chlorine Solution Immediately Prior to Entering System: This process prevents contamination of the water supply. All LVT equipment was properly disinfected prior to entering the potable water system.

Full-Time Voice Communication between surface and Diver: The system allowed for constant communication between the diver, and all surface personnel. In addition, customers were able to communicate with the diver at any time. For purposes of a more efficient inspection, cleaning, and repair program, that enabled the diver to immediately discuss any observations he made inside the storage tank.

Full-Time Live High Resolution Color Video: Allowed for constant viewing of the diver's work and observations. This also enabled the district personnel to view what the diver in the storage tank was witnessing.

Ski Hill Tank

TERMINOLOGY:

When describing the features or areas of interest inside the storage tank, an image number is placed next to the description that corresponds with the inspection findings. The diagram is shown in a view looking from the top down. The entry hatch is referred to as the 12:00 o'clock position.

Following the diagram are pictures of the pertinent areas of the storage tank and the locations where the pictures were taken. Each picture is described and numbered.

The standards used to evaluate the condition of the storage tank include: Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85
NACE Standard RP0196-96 & RP0388-2001 or Condition of Concrete In-service – ACI 201.1R-92.

Ski Hill Tank

OVERVIEW OF STORAGE TANK INSPECTED:

Customer Name:	City of Leavenworth	Tank Name:	Ski Hill Reservoir
Manager:	Arnica Briody	Construction:	OG Welded
Job Number:	WA617216R2T3	Capacity (gal.):	700,000
Date of Inspection:	March 28, 2017	Diameter or L x W:	74'
Report Writer:	David Anderson	Height:	22'
Diver:	Chris Kipp	Floor Square FT:	4,300.7
Tender:	Eric Reitemeyer	Date Built:	Unknown

N/A –not applicable **Excellent** (Ex.) –like new condition, no repairs needed. **Good** – Cosmetic only problems, repairs if wanted. **Fair**-Minor problems, repairs needed, not immediate. **Poor** –Major problems, structural or like, immediate repairs needed.

1. Rust Grades

Grades	% of Surface Rusted	Description
10	0% - 0.01%	No rusting or less than 0.01% of surface rusted
9	0.01% - 0.03%	Minute rusting, less than 0.03% of surface rusted
8	0.03% - 0.1%	Few isolated rust spots, less than 0.1% of surface rusted
7	0.1%- 0.3%	Less than 0.3% of surface rusted
6	0.3% - 1%	Extensive rust spots, but less than 1% of surface rusted
5	1% - 3%	Rusting to the extent of 3% of surface rusted
4	3% - 10%	Rusting to the extent of 10% of surface rusted
3	10% - 16%	Approximately one sixth of the surface rusted (16%)
2	16% - 33%	Approximately one third of the surface rusted (33%)
1	33% - 50%	Approximately one half of the surface rusted (50%)
0	50% - 100%	Approximately 100% of the surface rusted

2. Concrete Deformities

Unable to Evaluate	Good Condition	Cracks	Blistering	Chalking	De-Lamination	Pitting	Popouts	Scaling	Spalling	Warping
UE	GC	CK	BL	CH	DL	PT	PO	SC	SP	WA

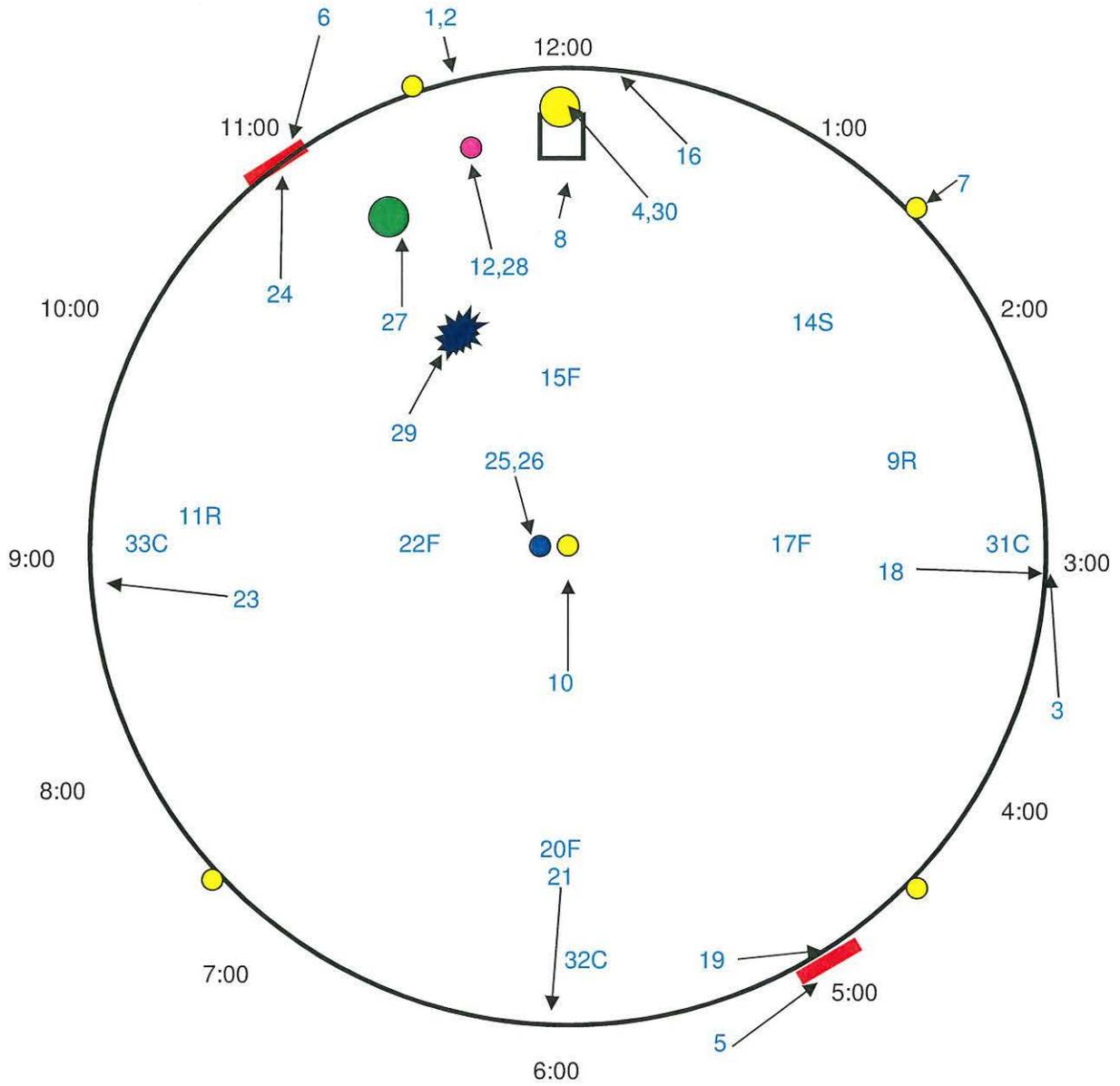
Ski Hill Tank

RECOMMENDATIONS:

Recommendation	Estimated Time - Hrs.
Install weather stripping on entry hatch to limit the risk of bugs and other matter from entering the storage tank.	1.0
Perform a regular cleaning, inspection and repair cycle every 3-5 years in order to ensure superior water quality and proper maintenance of coating condition and appurtenances is performed.	Please contact our sales office for an estimate.

Ski Hill Tank

Tank Diagram



Drawing Not to Scale

	Entry Hatch		Overflow		Support Column
	Inlet/Outlet		Man Entry		Air Vent
	Repair		Telemetry		

Ski Hill Tank

Image #1

Exterior Ladder 11:30

Condition:
Rust Grade¹ 9.

Description:
Exterior Ladder appeared to be in excellent condition with a minor amount of corrosion.



Image #2

Exterior Base 11:30

Description:
Exterior Base appeared to be in good condition with no problems.



Ski Hill Tank

Image #3

Exterior Wall 3:00

Condition:
Rust Grade¹ 9.

Description:
Exterior Wall appeared to be in good condition with a minor amount of corrosion.

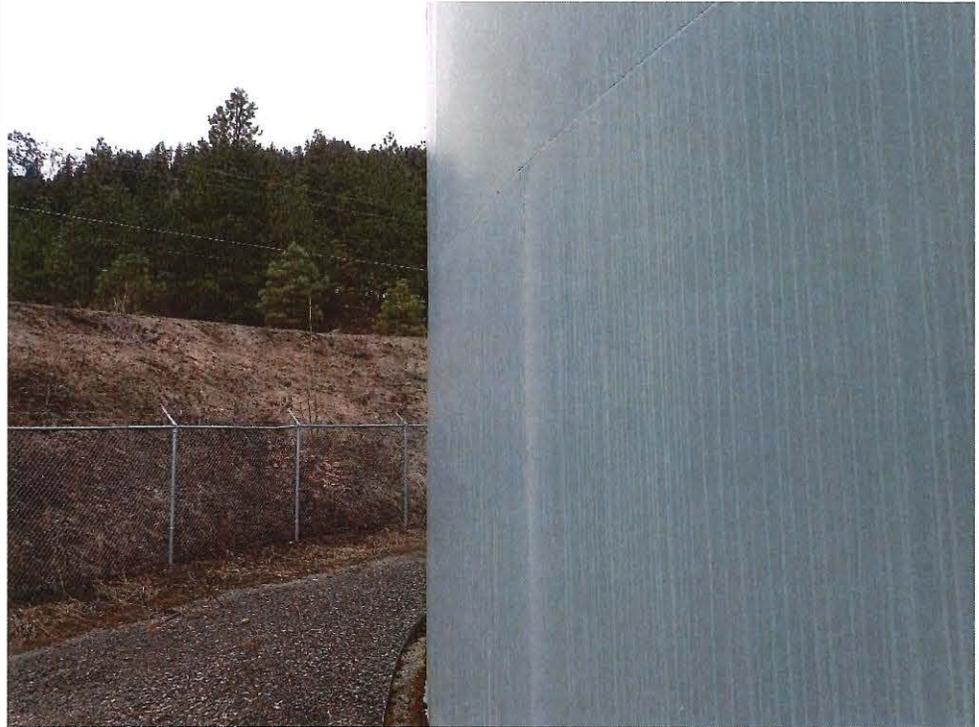


Image #4

Overflow 12:00

Condition:
Rust Grade¹ 9.

Description:
Overflow appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #5

Man Way 5:00

Condition:
Rust Grade¹ 9.

Description:
Man Way appeared to be in good condition with a minor amount of corrosion.

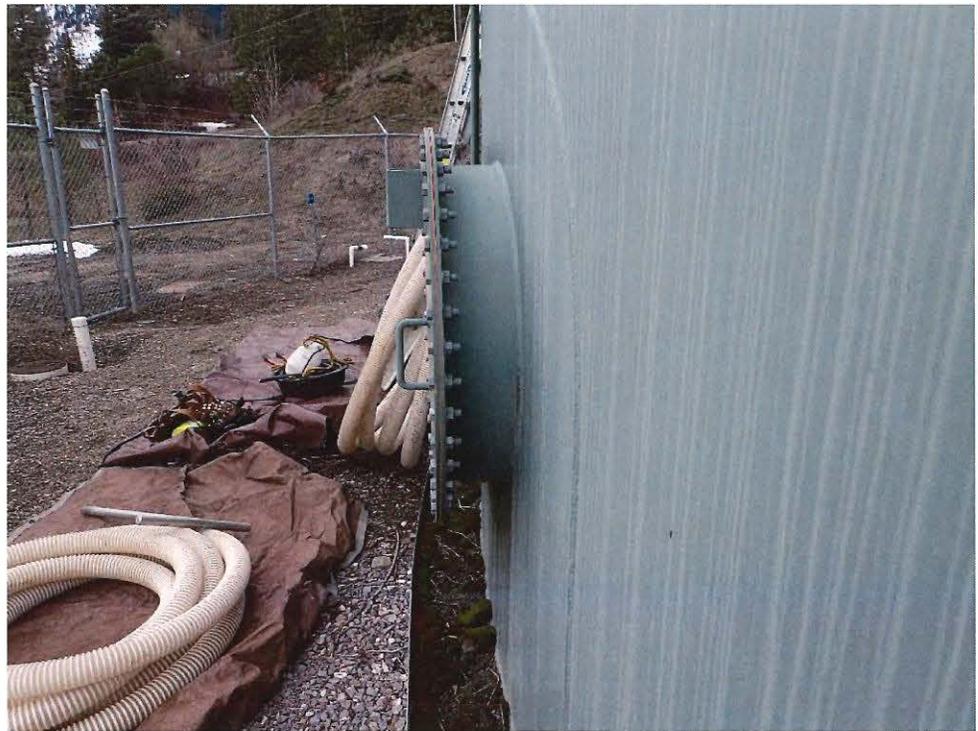


Image #6

Man Way 11:00

Condition:
Rust Grade¹ 9.

Description:
Man Way appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #7

Vent 1:30

Condition:
Rust Grade¹ 9.

Description:
Vent appeared to be in good condition with a minor amount of corrosion.

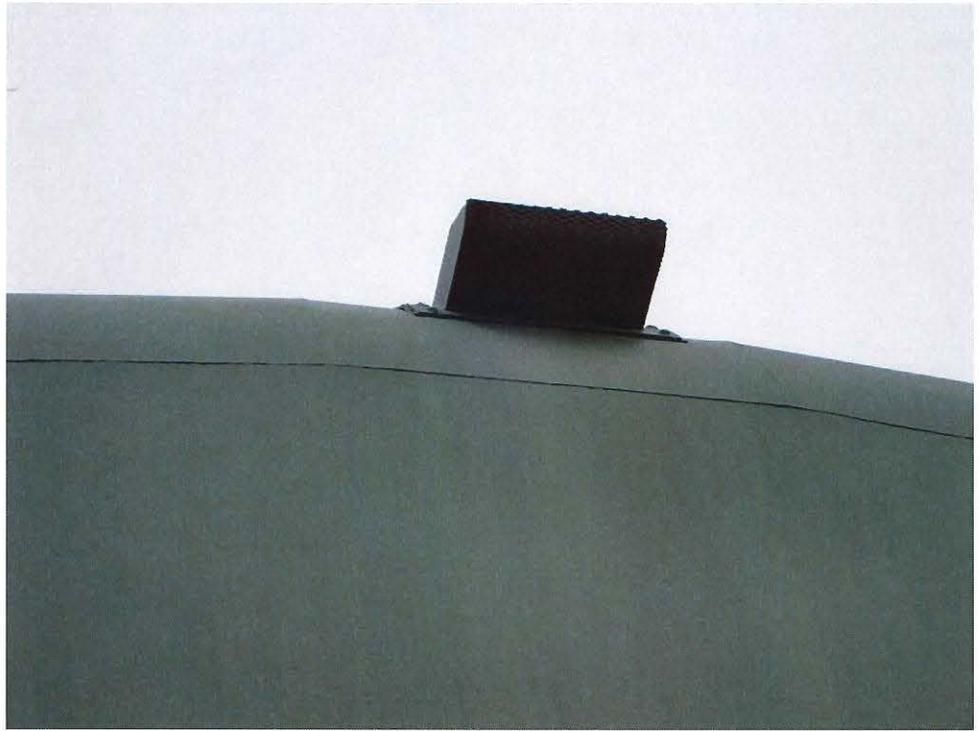


Image #8

Entry Hatch 12:00

Condition:
Rust Grade¹ 9.

Description:
Entry Hatch appeared to be in good condition with a minor amount of corrosion. No weather stripping was observed.



Ski Hill Tank

Image #9

Roof 3:00

Condition:
Rust Grade¹ 8.

Description:
Roof appeared to be in good condition with a minor amount of corrosion.



Image #10

Vent Center

Condition:
Rust Grade¹ 8.

Description:
Vent appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #11

Roof 9:00

Condition:
Rust Grade¹ 8.

Description:
Roof appeared to be in good condition with a minor amount of corrosion.



Image #12

Telemetry Penetration
11:30

Condition:
Rust Grade¹ 9.

Description:
3" Telemetry Penetration appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #13

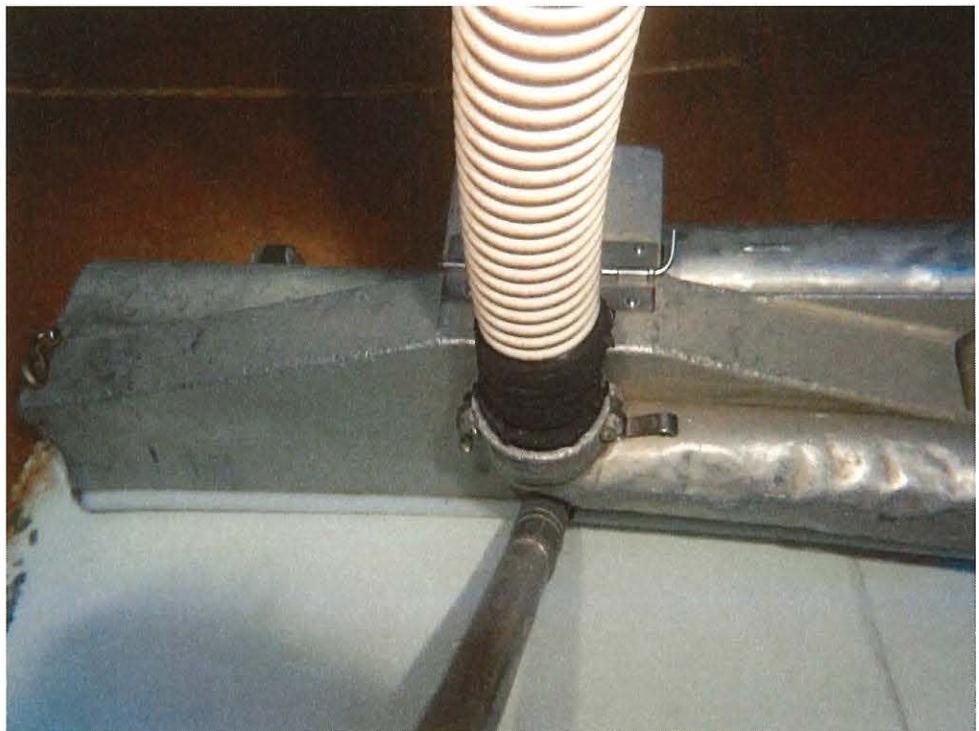
Diver



Image #14

Sediment

Description:
1/4" of sediment was
removed from
reservoir floor.



Ski Hill Tank

Image #15

Floor 12:00

Condition:
Rust Grade¹ 9.

Description:
Floor appeared to be in good condition with a minor amount of corrosion.

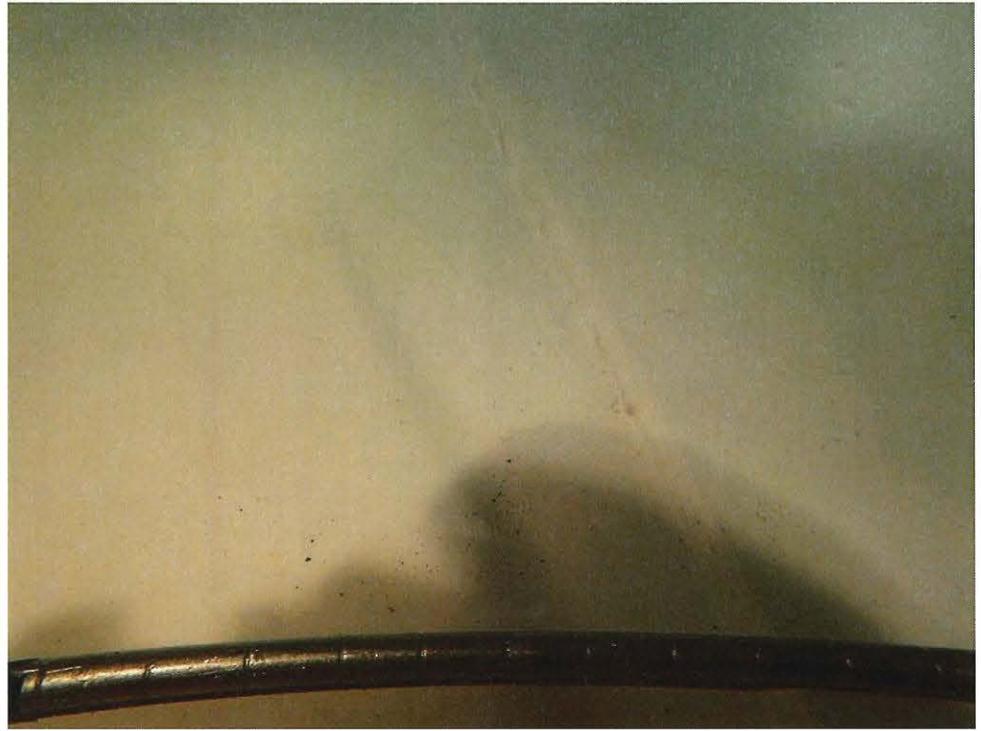
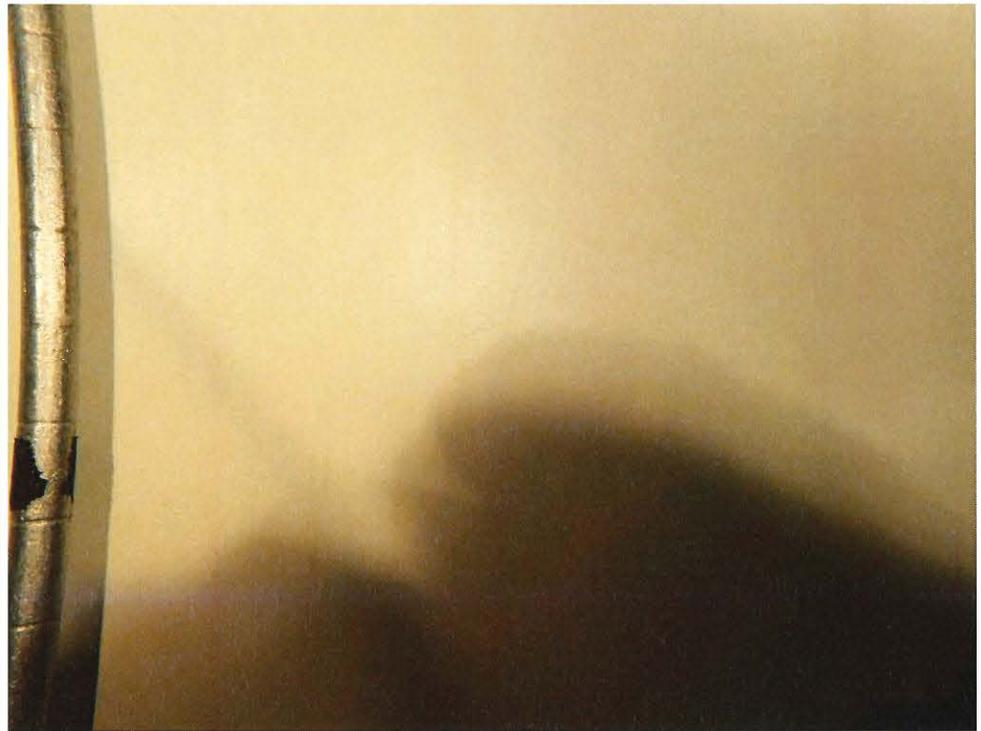


Image #16

Wall 12:00

Condition:
Rust Grade¹ 9.

Description:
Wall appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #17

Floor 3:00

Condition:
Rust Grade¹ 9.

Description:
Floor appeared to be in good condition with a minor amount of corrosion.

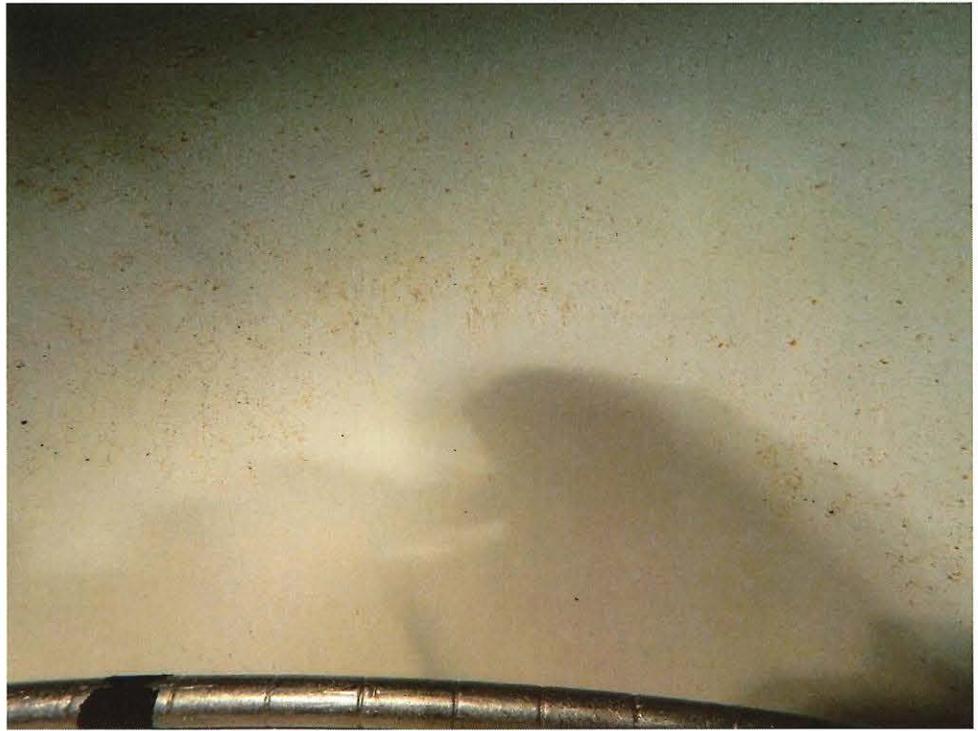


Image #18

Wall 3:00

Condition:
Rust Grade¹ 9.

Description:
Wall appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #19

Man Way 5:00

Condition:
Rust Grade¹ 9.

Description:
Man Way appeared to be in good condition with a minor amount of corrosion.

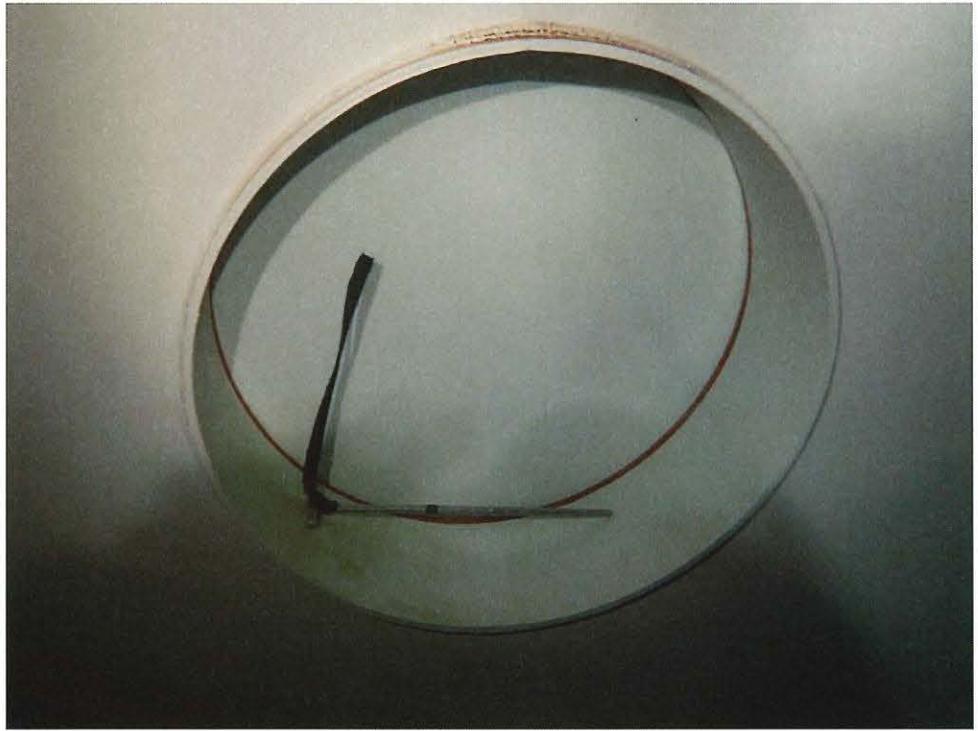


Image #20

Floor 6:00

Condition:
Rust Grade¹ 9.

Description:
Floor appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #21

Wall 6:00

Condition:
Rust Grade¹ 9.

Description:
Wall appeared to be in good condition with a minor amount of corrosion.

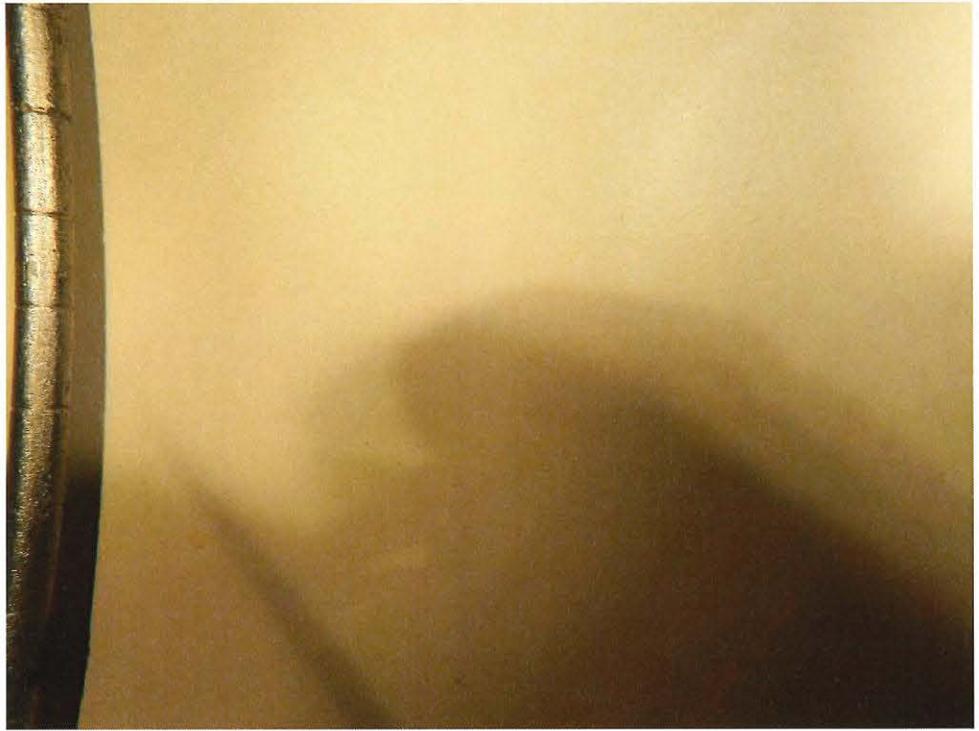
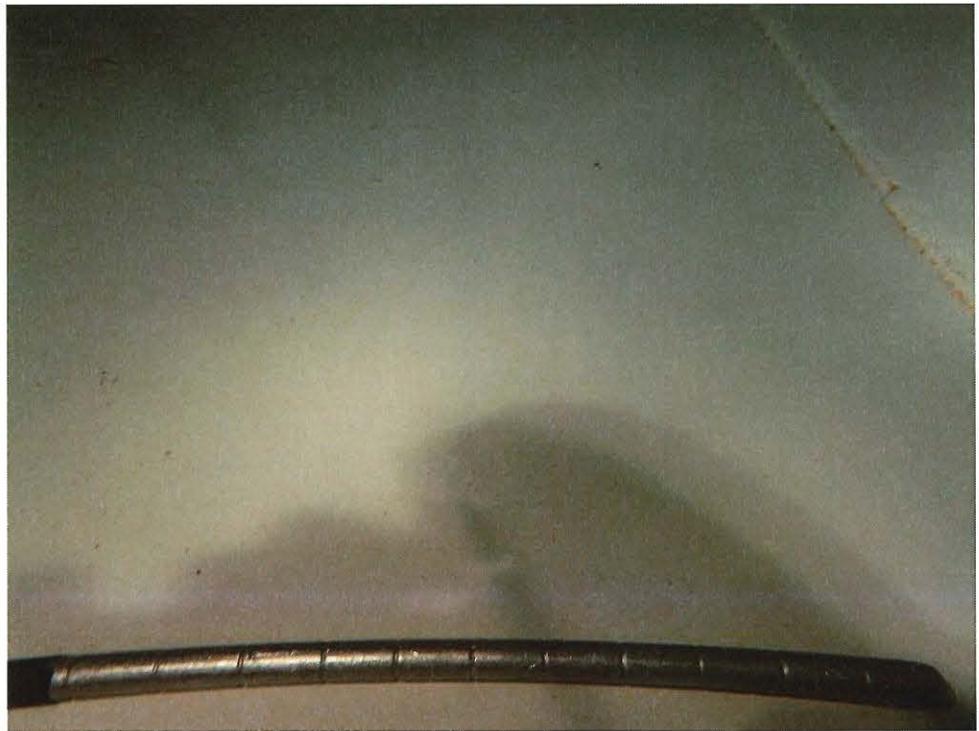


Image #22

Floor 9:00

Condition:
Rust Grade¹ 9.

Description:
Floor appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #23

Wall 9:00

Condition:
Rust Grade¹ 9.

Description:
Wall appeared to be in good condition with a minor amount of corrosion.

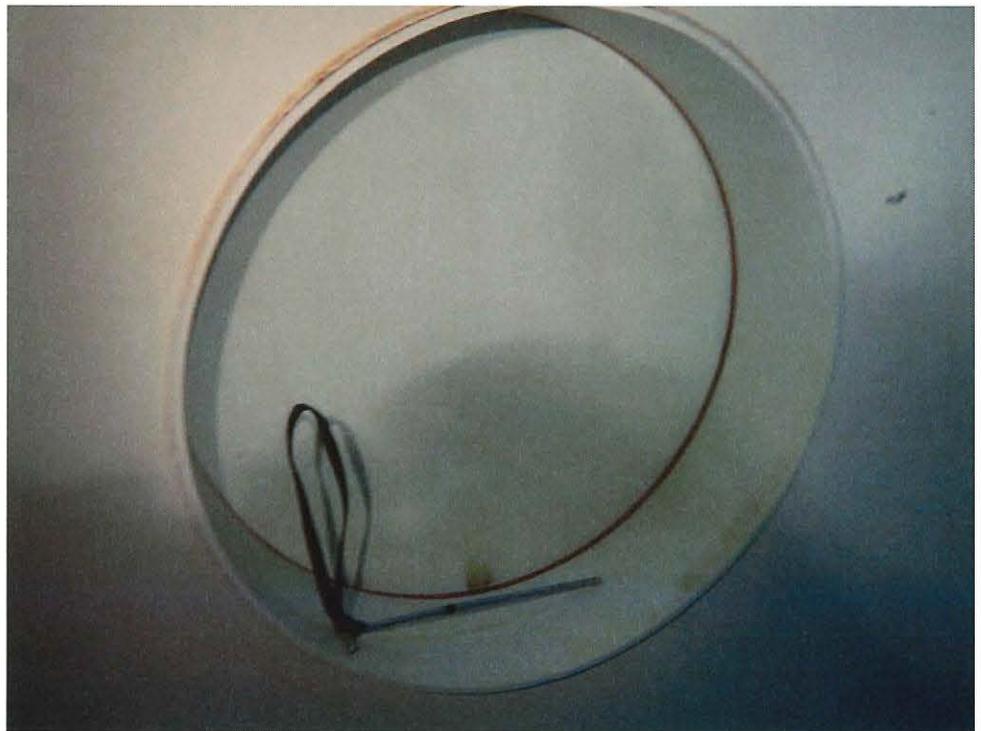


Image #24

Man Way 11:00

Condition:
Rust Grade¹ 8.

Description:
Man Way appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #25

Column Center

Condition:
Rust Grade¹ 7.

Description:
Column appeared to be in good condition with a minor amount of corrosion.

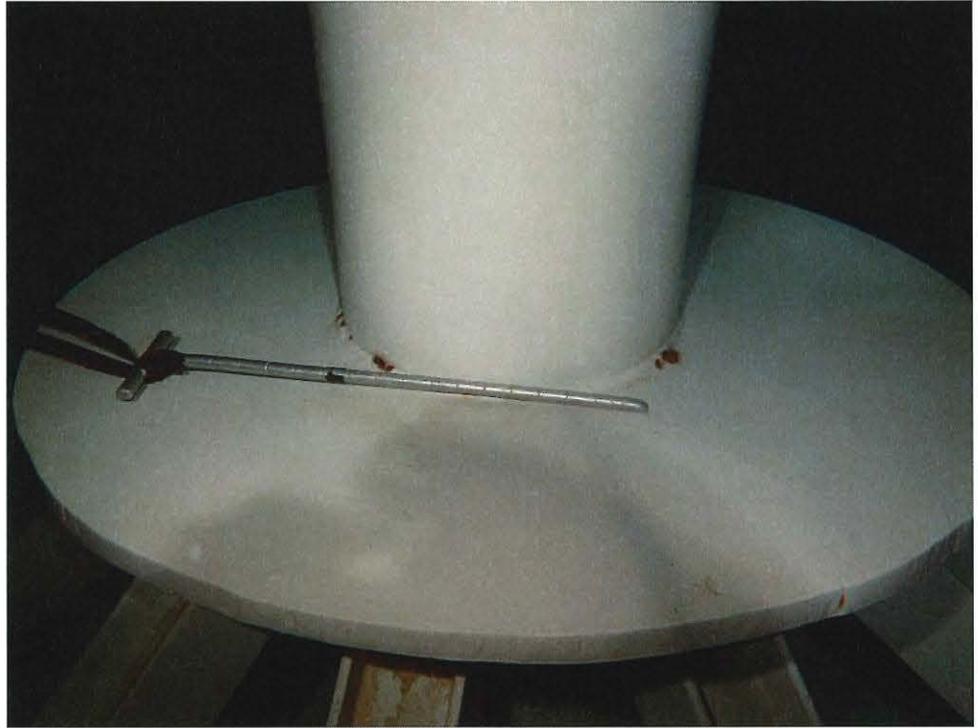
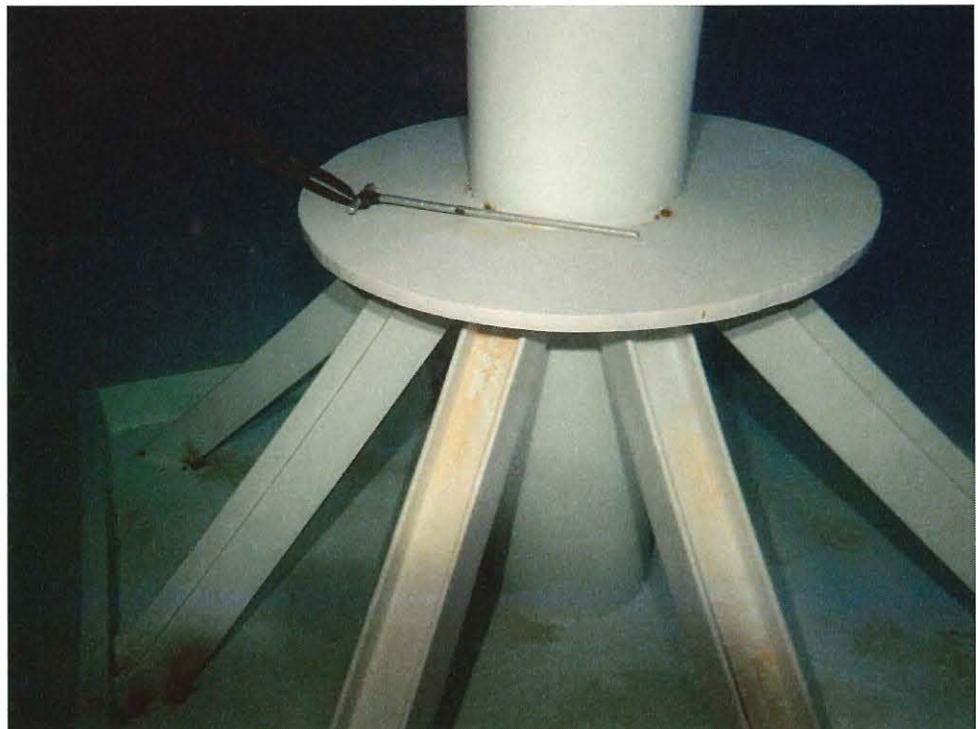


Image #26

Column Center

Condition:
Rust Grade¹ 7.

Description:
Column appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #27

Inlet / Outlet 11:00

Condition:
Rust Grade¹ 8.

Description:
Inlet / Outlet appeared to be in good condition with a minor amount of corrosion.

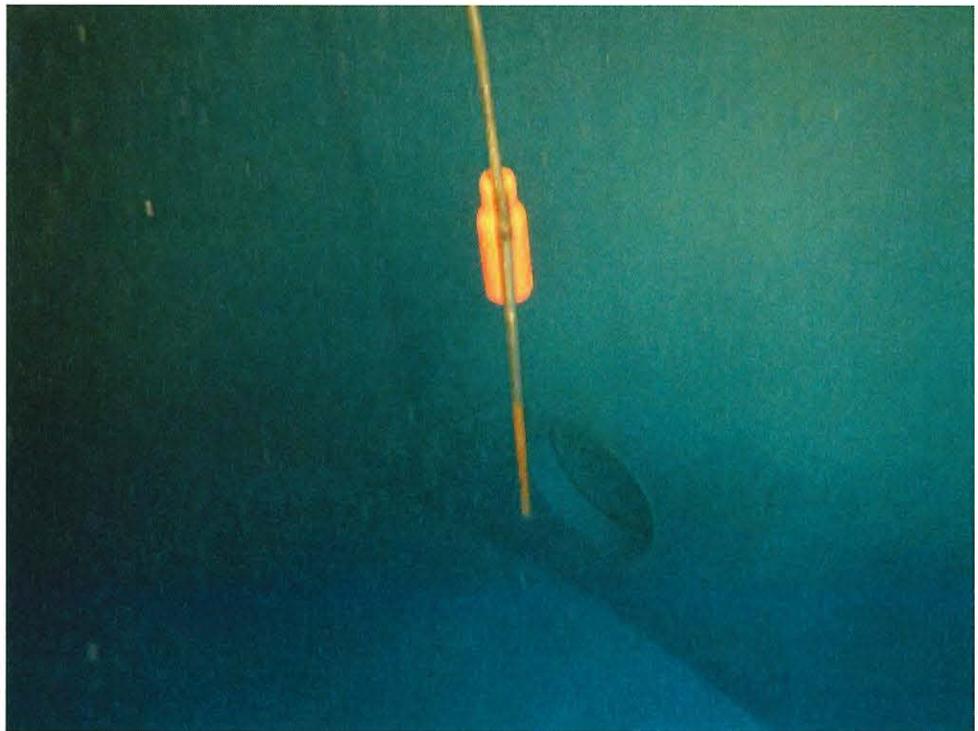


Image #28

Telemetry 11:30

Condition:
Rust Grade¹ 7.

Description:
Telemetry Sensor appeared to be in good working condition with a minor amount of corrosion.



Ski Hill Tank

Image #29

Repair 11:30

Description:

Area with corrosion was repaired by diver by applying NSF approved two-part AquataPoxy after spots were properly prepped.



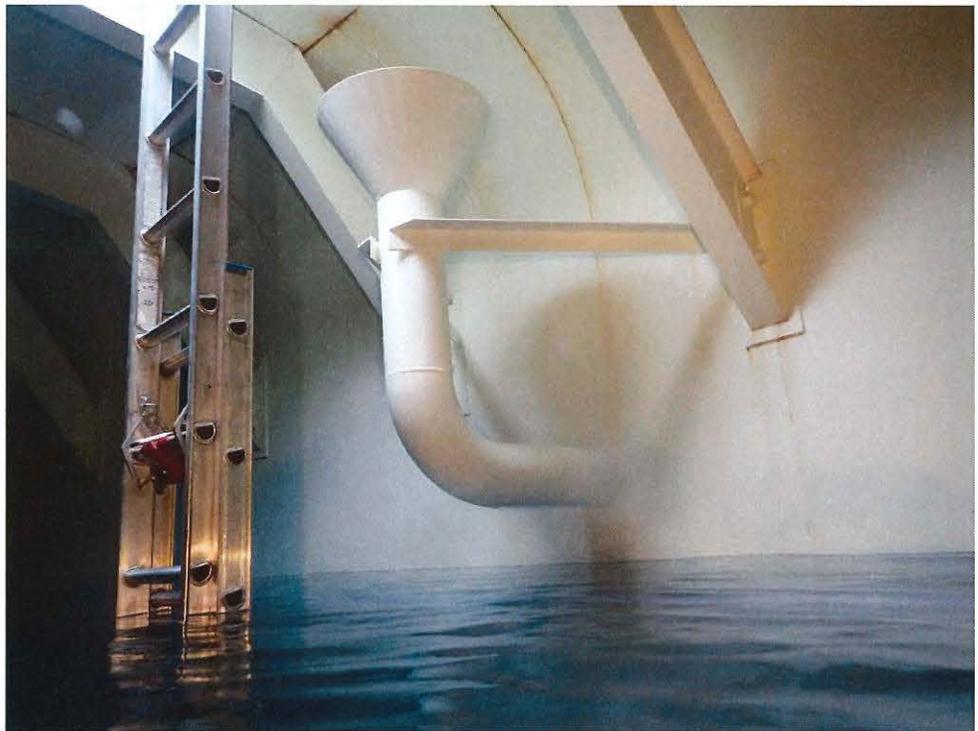
Image #30

Overflow 12:00

Condition:
Rust Grade¹ 9.

Description:

Overflow appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #31

Ceiling 3:00

Condition:
Rust Grade 1 7.

Description:
Ceiling appeared to be in good condition with a minor amount of corrosion.

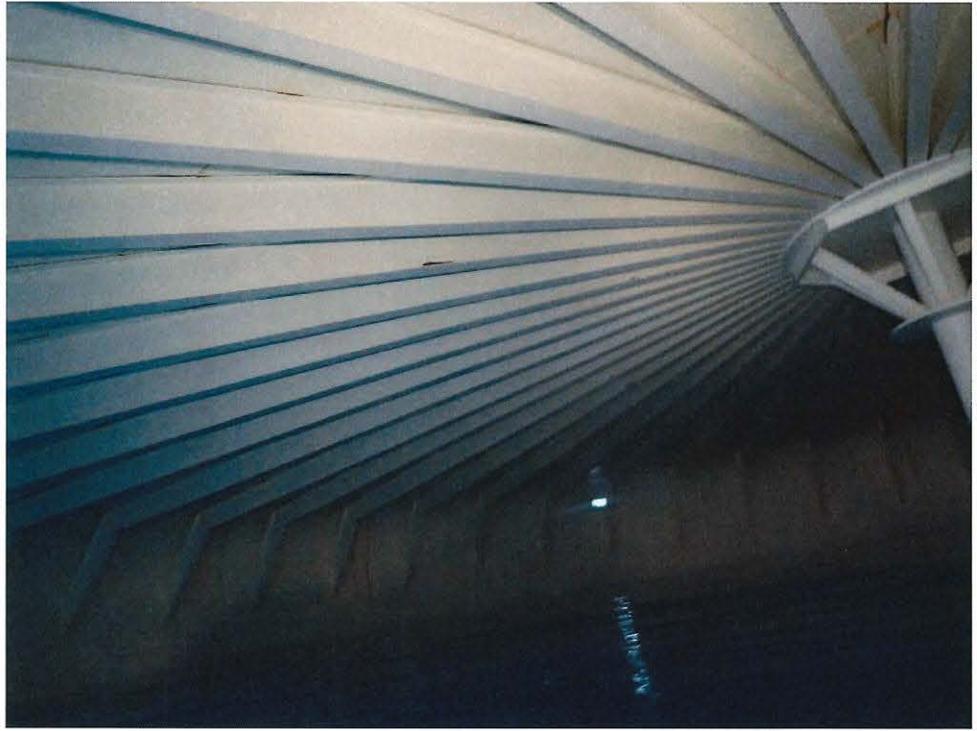


Image #32

Ceiling 6:00

Condition:
Rust Grade 1 7.

Description:
Ceiling appeared to be in good condition with a minor amount of corrosion.



Ski Hill Tank

Image #33

Ceiling 9:00

Condition:
Rust Grade¹ Z.

Description:
Ceiling appeared to be in good condition with a minor amount of corrosion.



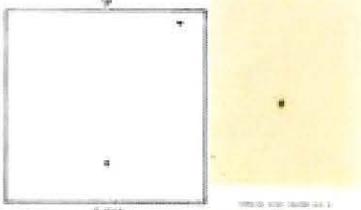
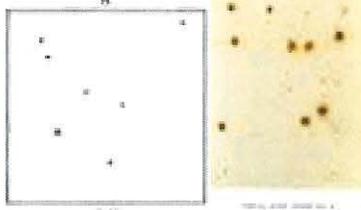
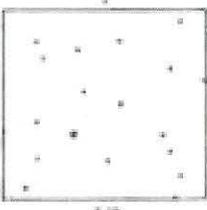
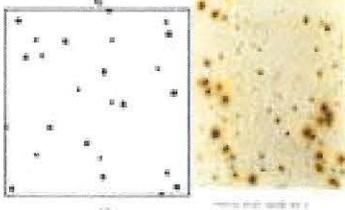
Ski Hill Tank

REFERENCES:

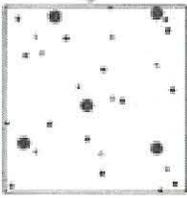
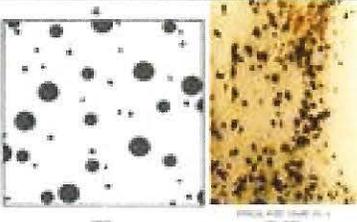
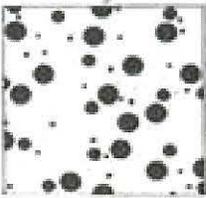
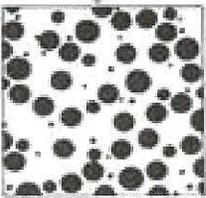
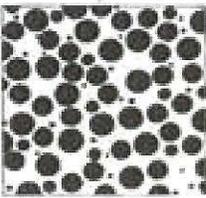
Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 (1989)

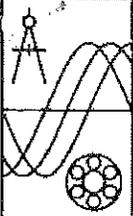
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5. In evaluating surfaces, consideration shall be given to the color of the finish coating, since failures will be more apparent on a finish that shows color contrast with rust, such as white, than on a similar color, such as iron oxide finish.
6. The photographic reference standards are not required for use of the rust-grade scale since the scale is based upon the percent of the area rusted and any method of assessing area rusted may be used to determine the rust grade.

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10	No rusting or less than 0.01% of surface rusted	Unnecessary
9	Minute rusting, less than 0.03% of surface rusted	
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Ski Hill Tank

5	Rusting to the extent of 3% of surface rusted	
4	Rusting to the extent of 10% of surface rusted	
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0	Approximately 100% of the surface rusted	Unnecessary



INTEGRITech

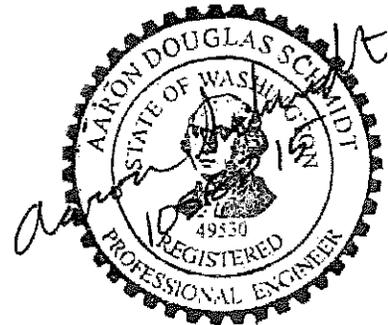
Mechanical and Civil Engineering, Machine Design, and Troubleshooting

ICICLE BOULDER FIELD PASSAGE DESIGN 13-1342

TASK 4 – WATERLINE ASSESSMENT

CITY OF LEAVENWORTH'S
GRAVITY-FEED INTAKE PIPING
TO THE
WATER TREATMENT PLANT

SEPTEMBER 2015



PREPARED FOR: WATERFALL ENGINEERING/TROUT UNLIMITED

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D4	1963 Proposed Construction	
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D6-1 to D6-3	1978 Water System Improvements (Phase II)	
D7-1 to D7-4	1979 Water System Improvements (Phase III)	
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Total = 44 sheets

I. Introduction

Trout Unlimited is studying barriers which prevent fish from reaching the upper portions of the Icicle River. To better understand the partial barriers which often prevent fish passage, and the feasibility of removing them, Trout Unlimited has consulted with several experts, including Mr. Patrick Powers, P.E., of Waterfall Engineering. Mr. Powers has defined the barriers and proposed several possible solutions for a section of river labeled the "Icicle Boulder Field". One of these solutions (known as Option 4) has been chosen for further study.

Unfortunately, the chosen solution will likely impact the City of Leavenworth's water system. The City operates a Water Treatment Plant which utilizes surface water from Icicle River. Intake piping to the plant operates under gravity flow. A portion of this pipeline could be affected by the project.

This report provides an analysis of the City's water system and quantifies the impact of the proposed fish passage solution. Two new full-length pipeline alignments are presented, along with a partial-length replacement (representing the minimum impact) along one of the alignments. Conceptual cost estimates were prepared for all three options, but are not presented in this report.

II. History of the Entire Water System

The City of Leavenworth began using surface water from Icicle River in the early 1900s. The original intake structure was located near the current intake. Wood-stave pipelines provided gravity flow to town without any treatment.

In 1938, a 700,000 gallon reservoir was built near the junction of Highway 2 and Icicle Road.

In 1940, the Screen House was added downstream of the Intake. The Screen House provides large debris screening and sediment settling and functions to this day.

In 1949, the City installed a 30' deep central vertical well with horizontal infiltration pipes at the current wellfield location, and began using Wenatchee River ground water.

Beginning in 1950, the City started to replace wood-stave pipe with steel, cast iron, or ductile iron pipe. It is believed that no more wood-stave pipe remains in the system.

At an unknown time, most likely in the early 1950s, the Intake was revised. The Icicle Irrigation District and the City installed a full-width weir-style dam across Icicle River. Icicle Irrigation District draws water from the eastern side of the dam, and the City draws water from the western (road) side. Several improvements to the City's intake structure have been made since then, including a concrete roof, expanded intake structure, and security improvements (fencing and locks).

In 1954, the original water reservoir was reinforced with a concrete liner.

In 1960, an Infiltration Gallery was constructed beneath Icicle River, just downstream of the surface intake. However, due to clogging of the infiltration beds the Gallery was abandoned.

In 1971, the Water Treatment Plant was built. This plant is an Infilco-Degremont-Westinghouse design, and contains a pretreatment reaction chamber, sand filter beds, and chemical and chlorine injection systems. A chlorine contact basin was later added to improve the chlorine contact time prior to the first water customer.

In 1989, two water wells and a pump house were installed at the well field. The horizontal infiltration system that was installed in 1949 was then abandoned.

In 2004, a new, 700,000 gallon steel reservoir was constructed near the Leavenworth Ski Hill. This reservoir serves a higher pressure zone on Ski Hill Drive (Pressure Zone 2).

In 2006, a booster pump station was constructed near Pine Street which provides water to the Ski Hill reservoir and Pressure Zone 2.

In 2008, the existing reservoir was replaced with a new, 800,000 gallon concrete reservoir.

In 2014, a third well was brought on-line at the well field.

III. Description of the Surface Water System

Please see the photographs of Appendix C.

Intake

Besides drawing water from the Icicle River, the Intake provides three stages of screening for coarse debris. It primarily consists of a concrete structure extending into the river connected to a short tunnel through the adjacent bedrock. The concrete portion has an opening on the downstream side, forcing captured water to turn 180 degrees to enter the structure. This turn prevents large debris and logs from blocking the intake. Next, the flow passes over submerged baffles. This provides a settling basin to capture the more dense sediments. A flushing gate allows sediment to be removed when the baffles are withdrawn. Next, flow must pass through one of two 4' square metal screens. The screens' openings are ¼" by ½". The second screen is lowered into place when the first screen is raised for cleaning.

A final screen has been placed over the entrance to the pipeline. This screen is not intended to filter debris, it is intended to prevent a trespassing human, or animal, from being unintentionally drawn into the pipeline. Please see Appendices A1-1, D2, D3-1, D3-3, D4, D6-2, D6-3, and D8.

Dam

The shared concrete weir-style dam creates a pool, which allows water to reach the intakes located on both sides of the river. In low flow periods, when the pool level would otherwise drop, 2 x 12 planks are placed on edge on top of the dam using steel pins that are inserted into holes in the top of the weir. By managing these planks, the pool level is kept at an acceptable elevation for the intakes. Please see Appendices A1-1, D2, D3-1, and D4.

Upper Pipeline

The upper pipeline carries water from the Intake to the Screen House. The pipeline is steel and 18" in diameter. It is approximately 741' long and drops approximately 5.4' (Flowline elevations are 1,406.0' to 1,400.6'). In operation, both ends of the pipe are fully submerged.

About 307' downstream of the Intake, a tee and shutoff valve can provide water to the center pipe (three parallel pipes in total) of the abandoned Infiltration Gallery. All three pipes are labeled

"Collection Channels", while the center pipe is also labeled the "Charging Line". The purpose of the Charging Line is unclear. Please see Appendices A1-1, A1-2, D2, D3-1, D3-2, and D4.

Screen House

The Screen House provides another layer of debris screening. It consists of an intake chamber, with an overflow and shut-off valve, and two influent shut-off valves which lead to two identical settling chambers. At the far side of the settling chambers are wire screens (2 per side, for cleaning one while the other is in operation) with 1/8" openings. Each settling chamber also has a flushing line with a shut-off valve. Beyond the screens are two effluent shut-off valves, a common chamber, and the connection to the Lower Pipeline. None of the chambers are sealed; all are open to atmosphere. Please see Appendices A1-2, D1, D2, D3-2, and D3-5.

The overflow shut-off valve is left open. In this way, the Upper Pipeline is allowed to remain flowing at its natural rate; no throttling is required. Any excess flow above that demanded by the Water Treatment Plant is simply returned to the river.

Lower Pipeline

The Lower Pipeline carries water from the Screen House to the Water Treatment Plant. The pipeline is steel and 16" in diameter. It is approximately 1,532 feet long and drops a maximum of 36.9' (1,400.2' to 1,363.3'). However, once inside the plant, continuous piping raises the elevation to 1,374.9', making the piping's net elevation change 25.3'. This pipeline, like the Upper Pipeline, normally operates with both ends fully submerged. Please see Appendices A1-3, A1-4, D2, D3-2, D3-5, D5-4, D5-5, D7-2, and D7-4.

Water Treatment Plant

The Water Treatment Plant primarily consists of a pre-treatment clear-well, four filter chambers, and a chlorine contact chamber. The plant has automatically controlled butterfly valves on both influent and effluent pipelines and can operate at variable flows. However, for consistency the plant is currently attempted to be operated at a continuous flow. The rate is chosen to provide a steady, base supply for the City. As demands occur above the plant's output, the wellfield is activated to keep both reservoirs full. The plant's numerous chambers are all open to atmosphere. Please see Appendices A1-4, D5-1 to D5-5, and D7-1 to D7-4.

Abandoned Infiltration Gallery

The Infiltration Gallery consists of a Filter Bed (with imported rock), Collection Channels (three 18" perforated, corrugated steel pipelines), Manhole #1 at the upper end of the center Collection Channel, Manhole #2 at the lower end of the center Collection Channel, and a Collection Chamber which merged flows from the Collection Channels. A chlorination room, for equipment and operator, was installed on top of the chamber.

As previously mentioned, Manhole #1 has a connection to the Upper Pipeline with a shut-off valve. The purpose of this connection is unclear. One possibility is that it could provide an external water source for reverse flushing of the Collection Channels. Unfortunately, an operations manual for the system was not located during the course of this investigation.

Manhole #2 has a cover plate which could be installed to close off the center Collection Channel pipe. The purpose of this manhole is also unclear.

The Collection Chamber has three influent pipelines. Each entrance to the chamber is fitted with studs, allowing for the installation of cover plates. A single 16" gate valve controls flow to the 16" effluent pipeline. Please see Appendices A1-1, A1-2, D3-1 to D3-4, and D4.

The effluent pipeline from the Collection Chamber is actually a straight line extension of the Lower Pipeline. The pipeline coming from the Screen House tees into the Lower Pipeline and has a shut-off valve and drain valve installed in it. It was clearly the designer's intention that the Screen House, Upper Pipeline, and Intake would become a secondary, backup system, and the Infiltration Gallery would become the primary source. However, the infiltration beds apparently became clogged, and the entire system is now abandoned. Despite this, the visible portions of the system have remained in excellent condition. Please see Appendix D3-5.

IV. Pipeline's Capacities

Theory

Both Upper and Lower Pipelines normally operate in fully submerged conditions. Unless the overflow is in use, the Screen House functions as a flow equalizer between the pipelines. If the Screen House water level is high, the tailwater of the Upper Pipeline is high, and its flow will be reduced. Similarly, the headwater of the Lower Pipeline will be high, maximizing its flow. The reverse is also true. Therefore, for a range of flows, the water level in the Screen House will self-adjust, and the influent's flow rate will match the effluent's. Outside this range, if the demand at the plant is less than the minimum for the Upper Pipeline, water will spill into the overflow at the Screenhouse. If the demand at the plant is higher than the maximum the Upper Pipeline can supply, the stabilized water level will drop, eventually extending beyond the Screen House and into the Lower Pipeline.

For a normal range of flows, the condition is best analyzed using submerged culvert methods. Please see Appendix B2-1, B2-2, and B3 for hand and spreadsheet calculations.

Upper Pipeline

It was calculated that the minimum free flow (tailwater high) for this 18" pipeline is 1,565 GPM (headwater = 1,407.39', tailwater = 1,406.32'). The maximum free flow (tailwater low) is theoretically 3,747 GPM (headwater = 1,407.39', tailwater = 1,401.94').

Of course, headwater levels vary with river flow levels. The level used in this analysis is near the minimum, as the 2 x 12 planks mentioned above are used to maintain the river's water level (at the intake) during lower river-flow periods.

Lower Pipeline

It was calculated that the minimum free flow (headwater low) for this 16" pipeline is 4,041 GPM (headwater = 1,401.94', tailwater = 1,379.94'). The maximum free flow (headwater high) is theoretically 4,456 GPM (headwater = 1,406.32', tailwater = 1,379.94').

The tailwater level is controlled by either manual or automatic valves at the plant, and remains relatively constant during the present method of normal operation.

Flow Testing

To verify the accuracy of the calculations, a flow test was accomplished using the plant's flow meter on the incoming Lower Pipeline. By recording Lower Pipeline flows without any overflow at the Screen House, the Upper Pipeline actual flows are determined as well. Measurements of the water level elevation at the time of the flow meter reading were also recorded.

A test was recorded at 1,588 GPM, which was achieved with the clear-well emptied and the plant's influent valve wide open. Calculations using the resulting water level (1,406.02') predicted that the Upper Pipeline's flow should have been 1,786 GPM. By lowering the Hazen-Williams roughness coefficient from 100 to 88, the calculations matched the test. Possible explanations for the difference include sediment or biological growth on the inside of the pipeline, or a leak (~200 GPM) somewhere along the pipeline. It is suspected that the connection valve at Manhole #1 is leaking.

While the test verified the adjusted, calculated flow for the Upper Pipeline, the Lower Pipeline did not match predictions. Using a roughness coefficient of 100, the flow should have been 4,868 GPM. Using a roughness coefficient of 88, the flow should have been 4,308 GPM. Possible explanations for this difference include debris blockage (large woody debris), crushed sections of pipe, significant leaks, or a combination of the above. It is also possible, but unlikely, that the continual flow rates used at the plant have resulted in a stabilized mixture of sediment and debris at various low points, which restricts the flow. The plant Operator, Mr. Stan Adams, noted that during the test the influent was notably more turbid. Mr. Adams is planning on investigating further using extended flushing and/or a camera review.

V. Water Treatment Plant Capacity

In 1996, a study was commissioned by the City to investigate the possibility of increasing the plant's production. Infilco's off-the-shelf design capacity was 2,780 GPM. However, it is believed that the City has never been able to achieve this level of output, due to several limiting, and sometimes inter-related factors. The investigator, Mr. Bob Heggs, P.E. of Process Applications, determined the following restrictions:

Reaction Chamber (Cold Water)	1,390 GPM
Reaction Chamber (Warm Water)	1,600 GPM
Filtering system	1,910 GPM
Disinfection chambers	1,700 GPM

It is also noted, however, that three external factors also influence the plant's production. First, EPA and Washington State DOH regulations (standards) that the plant must meet have varied. Second, raw water coagulation products continue to evolve and improve. Third, the staffing levels of the plant could change. Higher outputs could be reached with the addition of a night crew, for example. Therefore, it is reasonable to assume that at some point in the future, 1,700 GPM could be achieved with the present plant. With modifications, even higher flows may be possible.

VI. Wellfield Production Capacity

Presently, the wellfield has the following maximum physical pumping rates:

Well #1	1,250 GPM
Well #2	750 GPM
<u>Well #3</u>	<u>1,350 GPM</u>
Total	3,350 GPM

APPENDIX E

Hydraulic Model Sample Outputs and Documentation
Hydraulic Model Node Maps

Scenario: Current MDD
Current Time Step: 0.000Hr
Fire Flow Node FlexTable: Fire Flow Report

Label	Zone	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)
Icicle Rd & Reservoir	Zone-1	5,000	60.4	33.3	Meadow Rd & Mtn View Dr	True	2,500
Hwy 2 & Icicle Rd	Zone-1	4,584	41.2	20.0	Meadow Rd & Mtn View Dr	True	2,500
Hwy 2 & Commercial St	Zone-1	3,430	46.3	20.0	Meadow Rd & Mtn View Dr	True	2,500
Commercial St & Enchantment Park Wy	Zone-1	2,944	20.0	22.1	Meadow Rd & Mtn View Dr	True	2,500
Commercial St & Mill St	Zone-1	3,203	45.9	20.0	Meadow Rd & Mtn View Dr	True	2,500
J-020	Zone-1	2,846	20.0	22.2	Meadow Rd & Mtn View Dr	True	2,500
Commercial St & 1st St	Zone-1	2,603	20.0	23.2	Meadow Rd & Mtn View Dr	True	2,500
J-026	Zone-1	1,528	37.2	20.0	J-024	True	1,500
Commercial St & 2nd St	Zone-1	2,640	20.0	23.3	Meadow Rd & Mtn View Dr	True	2,500
Commercial St & 3rd St	Zone-1	3,502	38.8	20.0	Meadow Rd & Mtn View Dr	True	2,500
Front St Alley & 8th St	Zone-1	3,589	41.1	20.0	Meadow Rd & Mtn View Dr	True	3,500
Front St & Division St	Zone-1	3,651	34.4	20.0	Hampton Suites SE	True	3,500
Commercial St Alley & Division St	Zone-1	3,739	33.8	20.0	Hampton Suites SE	True	3,500
Commercial St & 14th St	Zone-1	1,490	20.0	26.7	Meadow Rd & Mtn View Dr	False	2,500
Front St Alley & 14th St	Zone-1	3,010	43.0	20.0	Hampton Suites SE	True	2,500
Front St & 14th St	Zone-1	3,077	40.2	20.0	Hampton Suites SE	True	2,500
Highschool C	Zone-1	3,679	22.2	20.0	North County Shop Rd	True	2,500
Highschool A	Zone-1	3,634	20.0	24.8	Meadow Rd & Mtn View Dr	True	2,500
Titus Rd & Highschool	Zone-1	3,618	20.0	26.1	Meadow Rd & Mtn View Dr	True	1,500
Pine St & Titus Rd	Zone-1	3,949	20.0	23.9	Meadow Rd & Mtn View Dr	True	1,500
Cedar St & Burke Ave	Zone-1	4,000	28.0	22.1	Cedar St & Price Ave	True	1,500
Cedar St & Central Ave	Zone-1	2,467	20.0	23.0	Pine St & Central Ave	True	1,500
Birch St & Central Ave	Zone-1	3,753	28.4	20.0	Cedar St & Central Ave	True	1,500
Birch St & Burke Ave	Zone-1	4,000	31.2	21.0	Meadow Rd & Mtn View Dr	True	1,500
J-104	Zone-1	3,772	28.7	20.0	Meadow Rd & Mtn View Dr	True	1,500
Birch St & Price Ave	Zone-1	3,951	25.9	20.0	Meadow Rd & Mtn View Dr	True	1,500
Ash St & Price Ave	Zone-1	3,878	20.0	20.1	Meadow Rd & Mtn View Dr	True	1,500
J-112	Zone-1	3,882	21.4	20.0	Meadow Rd & Mtn View Dr	True	1,500
Evans St & Orchard St	Zone-1	2,975	20.0	23.0	Meadow Rd & Mtn View Dr	True	1,500
Evans St & Cascade St	Zone-1	2,276	20.0	25.2	Meadow Rd & Mtn View Dr	True	1,500
Evans St & Ski Hill Dr	Zone-1	3,342	20.0	21.9	Meadow Rd & Mtn View Dr	True	1,500
Birch St & Ski Hill Dr	Zone-1	4,000	24.5	22.5	Meadow Rd & Mtn View Dr	True	1,500
Birch St & Cascade St	Zone-1	3,756	20.0	22.4	Meadow Rd & Mtn View Dr	True	1,500
Birch St & Orchard St	Zone-1	4,000	20.8	20.8	Meadow Rd & Mtn View Dr	True	1,500
Pine St & Cascade St	Zone-1	4,000	31.3	27.5	Meadow Rd & Mtn View Dr	True	1,500
Benton St & Ski Hill Dr	Zone-1	3,274	22.3	20.0	Meadow Rd & Mtn View Dr	True	1,500
West St & Cherry St	Zone-1	1,659	20.0	21.3	Meadow Rd & Mtn View Dr	True	1,500
J-156	Zone-1	1,144	35.1	20.0	Meadow Rd & Mtn View Dr	False	1,500
Prospect St & Ski Hill Dr	Zone-1	3,005	41.7	20.0	Meadow Rd & Mtn View Dr	True	2,500
Prospect St & Cherry St	Zone-1	1,393	38.4	20.0	Meadow Rd & Mtn View Dr	False	1,500
Prospect St & Mine St	Zone-1	1,170	40.3	20.0	Meadow Rd & Mtn View Dr	False	2,500
Benton St & Mine St	Zone-1	1,191	41.5	20.0	Meadow Rd & Mtn View Dr	False	2,500
Whitman St & Mill St	Zone-1	2,431	44.1	20.0	Meadow Rd & Mtn View Dr	False	2,500
Prospect St & Whitman St	Zone-1	2,680	40.5	20.0	Meadow Rd & Mtn View Dr	True	2,500
Center St & Ski Hill Dr	Zone-1	3,280	20.0	20.9	Meadow Rd & Mtn View Dr	True	1,500
Center St & Cherry St	Zone-1	1,917	21.3	20.0	J-154	True	1,500
Wheeler St & Ski Hill Dr	Zone-1	3,485	20.0	20.1	J-146	True	1,500
J-146	Zone-1	2,506	20.0	24.8	Meadow Rd & Mtn View Dr	True	1,500
Center St & Ogrady Rd	Zone-1	2,435	20.0	20.9	J-154	True	1,500
East Leavenworth Rd & Dye Rd	Zone-1	2,645	37.8	20.0	Hampton Suites SE	True	1,500
East Leavenworth Rd & Creek Cross	Zone-1	2,702	36.2	20.0	Hampton Suites SE	True	1,500
East Leavenworth Rd 1	Zone-1	2,736	43.6	20.0	Hampton Suites SE	True	1,500
Whitman St & Ski Hill Dr	Zone-1	3,128	38.2	20.0	Meadow Rd & Mtn View Dr	True	2,500
J-120	Zone-1	3,682	27.2	20.0	Meadow Rd & Mtn View Dr	True	2,500
J-018	Zone-1	1,651	20.0	25.1	Meadow Rd & Mtn View Dr	False	2,500
Pine St & Central Ave	Zone-1	1,982	20.0	26.2	Meadow Rd & Mtn View Dr	True	1,500
J-154	Zone-1	511	20.1	32.7	Meadow Rd & Mtn View Dr	False	1,500
Icicle Rd & Wells	Zone-1	4,000	70.3	30.6	Meadow Rd & Mtn View Dr	True	1,500
Wells	Zone-1	4,000	81.1	30.6	Meadow Rd & Mtn View Dr	True	1,500
Icicle Rd E	Zone-1	4,000	32.7	26.6	Meadow Rd & Mtn View Dr	True	1,500
Icicle Rd D	Zone-1	3,843	20.0	20.9	Icicle Rd C	True	1,500
Icicle Rd C	Zone-1	3,219	20.0	26.7	Meadow Rd & Mtn View Dr	True	1,500
East Leavenworth Rd & Icicle Rd	Zone-1	3,318	23.0	20.0	Icicle Rd A	True	1,500
East Leavenworth Rd 2	Zone-1	3,147	20.0	26.3	Meadow Rd & Mtn View Dr	True	1,500
J-012	Zone-1	1,476	20.0	27.1	Meadow Rd & Mtn View Dr	False	2,500
Commercial St & 13th St	Zone-1	1,667	20.0	26.4	Meadow Rd & Mtn View Dr	False	2,500
Alpensee St Loop 1	Zone-1	1,695	27.4	20.0	Alpensee St Loop 2	False	2,500
Hwy 2 near 12th St	Zone-1	3,993	24.9	20.0	Meadow Rd & Mtn View Dr	True	2,500
Cedar St & Price Ave	Zone-1	1,380	20.0	27.4	Meadow Rd & Mtn View Dr	False	1,500
Cedar St & Summit Ave	Zone-1	1,733	20.0	26.7	Meadow Rd & Mtn View Dr	True	1,500
Pine St & Ski Hill Dr	Zone-1	4,000	35.1	28.1	Meadow Rd & Mtn View Dr	True	1,500
Stafford St & Ogrady Rd	Zone-1	2,637	20.0	23.8	Meadow Rd & Mtn View Dr	True	1,500
Stafford St & Ski Hill Dr	Zone-1	3,367	20.0	21.7	Meadow Rd & Mtn View Dr	True	1,500
Park Ave & Cherry St	Zone-1	1,297	31.5	20.0	Meadow Rd & Mtn View Dr	False	1,500
J-014	Zone-1	1,683	20.0	24.5	J-018	False	2,500
Chumstick Hwy & Highschool	Zone-1	1,787	26.5	20.0	North County Shop Rd	False	2,500
Chumstick Hwy & County Shop Rd	Zone-1	1,610	22.2	20.0	North County Shop Rd	False	2,500
North County Shop Rd	Zone-1	1,337	20.0	26.9	Meadow Rd & Mtn View Dr	False	2,500

Hwy 2 & 3rd St	Zone-1	3,305	36.9	20.0	Meadow Rd & Mtn View Dr	True	2,500
J-034	Zone-1	3,221	20.0	21.2	Meadow Rd & Mtn View Dr	True	2,500
J-036	Zone-1	2,815	20.0	23.0	Meadow Rd & Mtn View Dr	False	3,500
Front St & 8th St	Zone-1	3,353	20.0	20.7	Meadow Rd & Mtn View Dr	False	3,500
J-010	Zone-1	1,835	20.0	21.5	J-012	False	2,500
J-024	Zone-1	1,151	20.0	26.6	Meadow Rd & Mtn View Dr	False	1,500
Alpensee St Loop 2	Zone-1	1,260	20.0	27.0	Meadow Rd & Mtn View Dr	False	1,500
Pine St & Orchard St	Zone-1	4,000	25.8	27.3	Meadow Rd & Mtn View Dr	True	1,500
Front St & 13th St	Zone-1	3,219	37.3	20.0	Hampton Suites SE	True	2,500
Park Ave & Smyth St	Zone-1	1,156	37.3	20.0	Meadow Rd & Mtn View Dr	False	2,500
Park Ave & Mtn View Dr	Zone-1	1,116	20.8	20.0	Meadow Rd & Mtn View Dr	False	2,500
Meadow Rd & Mtn View Dr	Zone-1	1,087	20.0	22.5	Tumwater Dr & Mtn View Dr	False	1,500
J-164	Zone-1	1,141	39.2	20.0	Meadow Rd & Mtn View Dr	False	1,500
Alpensee St & Hwy 2	Zone-1	2,852	35.5	20.0	Hampton Suites SE	True	2,500
East Leavenworth Rd & Hwy 2	Zone-1	2,621	44.7	20.0	Hampton Suites SE	True	2,500
Riverbend Dr	Zone-1	2,370	31.7	20.0	Hampton Suites SE	False	2,500
Safeway	Zone-1	2,314	25.2	20.0	Hampton Suites SE	False	2,500
Highschool B	Zone-1	3,052	20.0	25.7	Meadow Rd & Mtn View Dr	True	2,500
Icicle Rd A	Zone-1	3,144	20.0	23.5	Icicle Rd B	True	1,500
Icicle Rd F	Zone-1	5,000	69.8	29.6	Meadow Rd & Mtn View Dr	True	2,500
East Leavenworth Rd & Dempsey Rd	Zone-1	2,651	20.0	25.7	Meadow Rd & Mtn View Dr	True	1,500
Icicle Rd B	Zone-1	3,202	21.7	20.0	Icicle Rd A	True	1,500
Commercial St & 9th St	Zone-1	3,632	37.7	20.0	Meadow Rd & Mtn View Dr	True	3,500
Front St. Alley & 9th St	Zone-1	3,635	33.7	20.0	Meadow Rd & Mtn View Dr	True	3,500
Front St. Alley & 10th St	Zone-1	3,736	24.2	20.0	Hampton Suites SE	True	3,500
Commercial St Alley & 10th St	Zone-1	3,675	36.4	20.0	Meadow Rd & Mtn View Dr	True	3,500
J-226	Zone-1	2,145	28.5	20.0	North County Shop Rd	False	2,500
Commercial St & 8th St	Zone-1	3,601	40.5	20.0	Meadow Rd & Mtn View Dr	True	3,500
Hwy 2 & Riverbend Dr	Zone-1	2,389	29.5	20.0	Hampton Suites SE	False	2,500
Chumstick Hwy & Meadowlark	Zone-1	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	2,500
Front St & 10th St	Zone-1	3,683	26.4	20.0	Hampton Suites SE	True	3,500
Front St & 9th St	Zone-1	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	3,500
Tumwater Dr & Mtn View Dr	Zone-1	1,105	21.3	20.0	Meadow Rd & Mtn View Dr	False	1,500
Commercial St Alley & 9th St	Zone-1	3,643	36.9	20.0	Meadow Rd & Mtn View Dr	True	3,500
Main St & 8th St	Zone-1	3,601	40.8	20.0	Meadow Rd & Mtn View Dr	True	3,500
Main St & Hospital	Zone-1	3,601	38.1	20.0	Meadow Rd & Mtn View Dr	True	3,500
Main St & 9th St	Zone-1	3,643	39.3	20.0	Meadow Rd & Mtn View Dr	True	3,500
Front St & 12th St	Zone-1	3,393	35.8	20.0	Hampton Suites SE	True	1,500
Commercial St & 12th St	Zone-1	1,954	20.0	24.8	Commercial St & 13th St	True	1,500
J-278	Zone-1	3,673	35.1	20.0	Hampton Suites SE	True	3,500
Hampton Suites NW	Zone-1	2,309	25.2	20.0	Hampton Suites SE	False	2,500
Hampton Suites SE	Zone-1	2,245	20.0	25.5	Meadow Rd & Mtn View Dr	False	2,500
FF Calibration 1	Zone-1	2,533	40.3	20.0	Hampton Suites SE	True	1,500
FF Calibration 2	Zone-1	2,770	20.0	22.4	Meadow Rd & Mtn View Dr	True	1,500
J-132	Zone 2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Bergstrasse Rd & Ski Hill Dr	Zone 2	2,582	20.0	33.0	Emig Dr & Ski Hill Dr	True	1,500
Detillion Rd & Titus Rd	Zone 2	2,582	35.0	20.0	Bergstrasse Rd & Ski Hill Dr	True	2,500
J-212	Zone 2	2,487	20.0	20.7	Bergstrasse Rd & Ski Hill Dr	False	2,500
Emig Dr & Ski Hill Dr	Zone 2	3,034	30.4	20.0	Bergstrasse Rd & Ski Hill Dr	True	1,500
Emig Dr Mid	Zone 2	1,709	20.0	26.5	Bergstrasse Rd & Ski Hill Dr	True	1,500
Emig Dr & Titus Rd	Zone 2	2,582	41.5	20.0	Bergstrasse Rd & Ski Hill Dr	True	2,500
Ranger St & Ski Hill Dr	Zone 2	3,761	48.7	20.0	Bergstrasse Rd & Ski Hill Dr	True	1,500
J-230	Zone 2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Village View Dr & Ski Hill Dr	Zone 2	3,761	45.1	20.0	Bergstrasse Rd & Ski Hill Dr	True	1,500
Bergstrasse Rd & Detillion Rd	Zone 2	2,582	27.9	20.0	Bergstrasse Rd & Ski Hill Dr	True	1,500
Spring St & Ski Hill Dr	Zone 2	3,761	37.7	20.0	Bergstrasse Rd & Ski Hill Dr	True	1,500
Ranger St West	Zone 2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Ranger St Mid	Zone 2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Wheeler St West	Zone 2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Titus Rd & Meadowlark	Zone 2	2,582	34.5	20.0	Bergstrasse Rd & Ski Hill Dr	True	2,500
Titus Rd NE	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
J-238	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Spring St. West	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Bergstrasse Rd West	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Maple St & Ski Hill Dr	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Maple St West	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
J-252	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Zone 4 Suction	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
J-258	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
J-260	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
J-262	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Titus Rd & Ski Hill Dr	Zone 3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Zone 4 Demands	Zone 4	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	1,500
Water Treatment Plant	No Fire Flow	0	2.5	2.5	Water Treatment Plant	False	1,500
J-284	KOA	2,690	20.0	22.2	J-291	True	1,500
J-289	KOA	2,155	23.0	20.0	J-291	True	1,500
J-290	KOA	2,091	20.0	22.2	J-291	True	1,500
J-291	KOA	1,806	20.0	34.1	J-289	True	1,500
J-292	KOA	2,156	20.1	20.0	J-291	True	1,500

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Scenario: Current MDD
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-132	1,210.00	Zone 2	(N/A)	(N/A)	(N/A)
J-230	1,260.00	Zone 2	(N/A)	(N/A)	(N/A)
Titus Rd NE	1,390.00	Zone 3	(N/A)	(N/A)	(N/A)
J-238	1,410.00	Zone 3	(N/A)	(N/A)	(N/A)
Spring St. West	1,400.00	Zone 3	(N/A)	(N/A)	(N/A)
Ranger St West	1,300.00	Zone 2	(N/A)	(N/A)	(N/A)
Bergstrasse Rd West	1,400.00	Zone 3	(N/A)	(N/A)	(N/A)
Maple St & Ski Hill Dr	1,370.00	Zone 3	(N/A)	(N/A)	(N/A)
Maple St West	1,400.00	Zone 3	(N/A)	(N/A)	(N/A)
J-252	1,350.00	Zone 3	(N/A)	(N/A)	(N/A)
Zone 4 Suction	1,400.00	Zone 3	(N/A)	(N/A)	(N/A)
Zone 4 Demands	1,520.00	Zone 4	(N/A)	(N/A)	(N/A)
J-258	1,340.00	Zone 3	(N/A)	(N/A)	(N/A)
J-260	1,280.00	Zone 3	(N/A)	(N/A)	(N/A)
J-262	1,300.00	Zone 3	(N/A)	(N/A)	(N/A)
Chumstick Hwy & Meadowlark	1,160.00	Zone-1	(N/A)	(N/A)	(N/A)
Front St & 9th St	1,165.00	Zone-1	(N/A)	(N/A)	(N/A)
Ranger St Mid	1,250.00	Zone 2	(N/A)	(N/A)	(N/A)
Wheeler St West	1,220.00	Zone 2	(N/A)	(N/A)	(N/A)
Titus Rd & Ski Hill Dr	1,440.00	Zone 3	(N/A)	(N/A)	(N/A)
Water Treatment Plant	1,367.00	No Fire Flow	0	1,372.73	2.5
Bergstrasse Rd & Ski Hill Dr	1,341.00	Zone 2	4	1,410.49	30.1
Meadow Rd & Mtn View Dr	1,235.00	Zone-1	4	1,321.36	37.4
Tumwater Dr & Mtn View Dr	1,230.00	Zone-1	4	1,321.36	39.5
Park Ave & Mtn View Dr	1,230.00	Zone-1	5	1,321.36	39.5
Emig Dr & Ski Hill Dr	1,317.00	Zone 2	4	1,410.50	40.5
Bergstrasse Rd & Detillion Rd	1,300.00	Zone 2	9	1,410.49	47.8
Spring St & Ski Hill Dr	1,300.00	Zone 2	0	1,410.50	47.8
J-156	1,200.00	Zone-1	7	1,321.36	52.5
Pine St & Ski Hill Dr	1,199.00	Zone-1	15	1,320.72	52.7
Cedar St & Central Ave	1,197.00	Zone-1	4	1,320.76	53.5
Hampton Suites SE	1,197.00	Zone-1	27	1,321.98	54.1
Park Ave & Smyth St	1,195.00	Zone-1	7	1,321.36	54.7
Pine St & Cascade St	1,193.00	Zone-1	7	1,320.72	55.3
Pine St & Orchard St	1,192.00	Zone-1	7	1,320.72	55.7
Birch St & Cascade St	1,192.00	Zone-1	7	1,320.73	55.7
Emig Dr Mid	1,280.00	Zone 2	4	1,410.49	56.5
Pine St & Central Ave	1,190.00	Zone-1	6	1,320.76	56.6
J-164	1,190.00	Zone-1	5	1,321.36	56.8
Birch St & Ski Hill Dr	1,188.00	Zone-1	7	1,320.73	57.4
Cedar St & Price Ave	1,188.00	Zone-1	8	1,320.77	57.4
Prospect St & Mine St	1,188.00	Zone-1	24	1,321.37	57.7
J-146	1,187.00	Zone-1	2	1,320.73	57.9
Wheeler St & Ski Hill Dr	1,185.00	Zone-1	9	1,320.73	58.7
Benton St & Mine St	1,185.00	Zone-1	8	1,321.42	59.0
Safeway	1,185.00	Zone-1	22	1,321.98	59.3
Hampton Suites NW	1,185.00	Zone-1	0	1,321.98	59.3
Prospect St & Cherry St	1,183.00	Zone-1	13	1,321.31	59.8
Cedar St & Summit Ave	1,182.00	Zone-1	2	1,320.76	60.0
Birch St & Orchard St	1,181.00	Zone-1	7	1,320.74	60.5
J-154	1,181.00	Zone-1	2	1,320.74	60.5
Stafford St & Ogrady Rd	1,180.00	Zone-1	2	1,320.74	60.9
Center St & Ogrady Rd	1,180.00	Zone-1	11	1,320.74	60.9
J-112	1,179.00	Zone-1	4	1,320.76	61.3
Hwy 2 & Icicle Rd	1,183.00	Zone-1	28	1,324.79	61.3
West St & Cherry St	1,179.00	Zone-1	12	1,320.97	61.4
Park Ave & Cherry St	1,179.00	Zone-1	9	1,321.26	61.5

Evans St & Ski Hill Dr	1,178.00	Zone-1	2	1,320.74	61.8
Center St & Cherry St	1,178.00	Zone-1	10	1,320.75	61.8
Birch St & Central Ave	1,177.00	Zone-1	9	1,320.76	62.2
J-104	1,177.00	Zone-1	11	1,320.77	62.2
J-120	1,177.00	Zone-1	0	1,320.79	62.2
Titus Rd & Highschool	1,177.00	Zone-1	4	1,320.79	62.2
Evans St & Orchard St	1,176.00	Zone-1	11	1,320.76	62.6
Whitman St & Mill St	1,177.00	Zone-1	12	1,322.58	63.0
Stafford St & Ski Hill Dr	1,175.00	Zone-1	0	1,320.74	63.1
Evans St & Cascade St	1,174.00	Zone-1	7	1,320.75	63.5
Pine St & Titus Rd	1,174.00	Zone-1	4	1,320.79	63.5
Hwy 2 & Riverbend Dr	1,175.00	Zone-1	0	1,321.99	63.6
Prospect St & Whitman St	1,173.00	Zone-1	13	1,321.26	64.1
Center St & Ski Hill Dr	1,172.00	Zone-1	12	1,320.75	64.4
Icicle Rd & Reservoir	1,177.00	Zone-1	8	1,326.13	64.5
Detillion Rd & Titus Rd	1,261.00	Zone 2	4	1,410.49	64.7
Commercial St & Mill St	1,173.00	Zone-1	4	1,323.39	65.1
Village View Dr & Ski Hill Dr	1,260.00	Zone 2	0	1,410.50	65.1
Ash St & Price Ave	1,170.00	Zone-1	15	1,320.77	65.2
Birch St & Price Ave	1,170.00	Zone-1	9	1,320.77	65.2
Hwy 2 near 12th St	1,170.00	Zone-1	0	1,320.86	65.3
Front St & 10th St	1,170.00	Zone-1	4	1,320.89	65.3
Highschool B	1,170.00	Zone-1	18	1,321.01	65.3
Highschool A	1,170.00	Zone-1	18	1,321.01	65.3
J-010	1,172.00	Zone-1	30	1,323.05	65.4
Hwy 2 & Commercial St	1,172.00	Zone-1	13	1,323.66	65.6
Riverbend Dr	1,170.00	Zone-1	9	1,321.99	65.8
Prospect St & Ski Hill Dr	1,169.00	Zone-1	0	1,320.99	65.8
FF Calibration 2	1,168.00	Zone-1	0	1,320.79	66.1
Benton St & Ski Hill Dr	1,168.00	Zone-1	14	1,320.80	66.1
Whitman St & Ski Hill Dr	1,168.00	Zone-1	13	1,320.93	66.2
Commercial St & 2nd St	1,168.00	Zone-1	27	1,321.24	66.3
Cedar St & Burke Ave	1,167.00	Zone-1	10	1,320.79	66.5
Birch St & Burke Ave	1,167.00	Zone-1	9	1,320.80	66.5
J-034	1,167.00	Zone-1	10	1,320.82	66.6
Hwy 2 & 3rd St	1,167.00	Zone-1	27	1,320.92	66.6
J-012	1,169.00	Zone-1	10	1,323.03	66.6
J-020	1,167.00	Zone-1	4	1,322.77	67.4
J-036	1,165.00	Zone-1	9	1,320.81	67.4
Front St. Alley & 10th St	1,165.00	Zone-1	22	1,320.88	67.4
North County Shop Rd	1,165.00	Zone-1	4	1,321.04	67.5
J-018	1,166.00	Zone-1	10	1,322.89	67.9
J-284	1,164.00	KOA	5	1,321.98	68.4
Commercial St & 1st St	1,164.00	Zone-1	18	1,321.99	68.4
J-014	1,163.00	Zone-1	4	1,322.95	69.2
Front St & 8th St	1,160.00	Zone-1	30	1,320.82	69.6
Front St. Alley & 9th St	1,160.00	Zone-1	29	1,320.85	69.6
Front St & Division St	1,160.00	Zone-1	31	1,320.89	69.6
Chumstick Hwy & County Shop Rd	1,160.00	Zone-1	2	1,321.04	69.7
J-024	1,160.00	Zone-1	6	1,321.23	69.8
Alpensee St & Hwy 2	1,160.00	Zone-1	2	1,321.51	69.9
J-291	1,159.00	KOA	5	1,321.98	70.5
Front St & 12th St	1,157.00	Zone-1	0	1,321.00	71.0
Commercial St & Enchantment Park Wy	1,158.00	Zone-1	9	1,322.43	71.1
J-278	1,156.00	Zone-1	0	1,320.89	71.3
Commercial St & 3rd St	1,156.00	Zone-1	27	1,320.91	71.3
Front St & 13th St	1,154.00	Zone-1	22	1,321.08	72.3
Commercial St & 9th St	1,153.00	Zone-1	29	1,320.85	72.6
Commercial St Alley & 9th St	1,153.00	Zone-1	0	1,320.85	72.6
Commercial St Alley & Division St	1,153.00	Zone-1	44	1,320.87	72.6
Highschool C	1,152.00	Zone-1	18	1,321.03	73.1
J-289	1,152.00	KOA	5	1,321.98	73.5
Emig Dr & Titus Rd	1,240.00	Zone 2	4	1,410.49	73.8
Chumstick Hwy & Highschool	1,150.00	Zone-1	0	1,321.04	74.0
J-226	1,150.00	Zone-1	4	1,321.09	74.0
Commercial St Alley & 10th St	1,149.00	Zone-1	22	1,320.85	74.4
FF Calibration 1	1,150.00	Zone-1	0	1,322.00	74.4

Commercial St & 8th St	1,150.00	Zone-1	22	1,322.54	74.7
Front St Alley & 8th St	1,148.00	Zone-1	27	1,320.85	74.8
Commercial St & 12th St	1,148.00	Zone-1	27	1,320.85	74.8
Front St & 14th St	1,148.00	Zone-1	0	1,320.87	74.8
J-292	1,148.00	Zone-1	22	1,321.18	74.9
Commercial St & 13th St	1,145.00	KOA	0	1,321.98	76.6
Main St & 9th St	1,143.00	Zone-1	22	1,320.87	77.0
Front St Alley & 14th St	1,142.00	Zone-1	0	1,320.85	77.4
J-212	1,142.00	Zone-1	6	1,321.26	77.6
Titus Rd & Meadowlark	1,230.00	Zone 2	0	1,410.49	78.1
Ranger St & Ski Hill Dr	1,230.00	Zone 2	0	1,410.49	78.1
East Leavenworth Rd & Hwy 2	1,230.00	Zone 2	0	1,410.50	78.1
Alpensee St Loop 2	1,140.00	Zone-1	0	1,322.00	78.7
Main St & 8th St	1,138.00	Zone-1	7	1,321.50	79.4
Main St & Hospital	1,137.00	Zone-1	0	1,320.85	79.5
East Leavenworth Rd & Creek Cross	1,137.00	Zone-1	0	1,320.85	79.5
Commercial St & 14th St	1,140.00	Zone-1	22	1,323.96	79.6
J-290	1,137.00	Zone-1	22	1,320.99	79.6
Icicle Rd C	1,125.00	KOA	5	1,321.98	85.2
Alpensee St Loop 1	1,175.00	Zone-1	21	1,374.18	86.2
J-026	1,121.00	Zone-1	7	1,321.50	86.7
Icicle Rd D	1,120.00	Zone-1	8	1,321.23	87.1
Icicle Rd E	1,175.00	Zone-1	29	1,376.88	87.3
East Leavenworth Rd 1	1,175.00	Zone-1	22	1,379.21	88.4
East Leavenworth Rd & Dempsey Rd	1,115.00	Zone-1	36	1,324.87	90.8
Icicle Rd A	1,125.00	Zone-1	11	1,341.44	93.6
Icicle Rd B	1,155.00	Zone-1	13	1,372.73	94.2
East Leavenworth Rd & Icicle Rd	1,151.00	Zone-1	4	1,372.73	95.9
Icicle Rd & Wells	1,148.00	Zone-1	11	1,372.73	97.2
East Leavenworth Rd 2	1,142.00	Zone-1	0	1,382.28	104.0
Icicle Rd F	1,125.00	Zone-1	0	1,367.29	104.8
Wells	1,120.00	Zone-1	15	1,364.47	105.8
	1,117.00	Zone-1	-3,050	1,383.18	115.2

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Scenario: Current MDD
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Is Active?
P-002	579.19	Zone 1 Tank (0.80 MG)	Icicle Rd & Reservoir	14.0	Ductile Iron	120.0	True
P-004	901.85	Icicle Rd & Reservoir	Hwy 2 & Icicle Rd	12.0	Steel (normal)	110.0	True
P-006	829.28	Hwy 2 & Icicle Rd	Hwy 2 & Commercial St	12.0	Steel (normal)	110.0	True
P-008	535.14	Hwy 2 & Commercial St	J-010	6.0	Ductile Iron	120.0	True
P-010	281.84	J-010	J-012	6.0	Ductile Iron	120.0	True
P-012	651.38	J-012	J-018	4.0	Steel (normal)	110.0	True
P-014	264.34	J-018	J-014	6.0	Cast iron	120.0	True
P-016	291.28	Hwy 2 & Commercial St	Commercial St & Mill St	12.0	Steel (normal)	110.0	True
P-018	226.91	J-018	Commercial St & Enchantment Park Wy	4.0	Steel (normal)	110.0	True
P-020	337.77	Commercial St & Mill St	J-020	6.0	Cast iron	120.0	True
P-022	401.95	J-024	J-026	6.0	Cast iron	120.0	True
P-024	201.20	J-020	Commercial St & Enchantment Park Wy	6.0	Cast iron	120.0	True
P-026	362.02	Commercial St & 1st St	J-024	2.0	Cast iron	120.0	True
P-028	163.61	Commercial St & Enchantment Park Wy	Commercial St & 1st St	6.0	Cast iron	120.0	True
P-030	394.97	Commercial St & 1st St	Commercial St & 2nd St	6.0	Cast iron	120.0	True
P-032	301.17	Commercial St & 2nd St	Commercial St & 3rd St	6.0	Cast iron	120.0	True
P-034	361.19	J-026	Commercial St & 2nd St	6.0	Cast iron	120.0	True
P-036	335.55	Hwy 2 & 3rd St	Commercial St & 3rd St	8.0	Ductile Iron	120.0	True
P-038	294.19	Prospect St & Ski Hill Dr	Hwy 2 & 3rd St	8.0	Ductile Iron	120.0	True
P-040	678.80	Hwy 2 & 3rd St	J-034	6.0	Ductile Iron	120.0	True
P-042	810.79	J-034	J-036	8.0	Ductile Iron	120.0	True
P-044	446.53	J-036	J-120	6.0	Cast iron	120.0	True
P-046	157.07	Front St Alley & 8th St	Front St & 8th St	6.0	Ductile Iron	120.0	True
P-048	1,534.20	Commercial St & 3rd St	Front St Alley & 8th St	12.0	Ductile Iron	120.0	True
P-050	421.25	Front St Alley & 8th St	Front St Alley & 8th St	6.0	Cast iron	120.0	True
P-056	360.08	Commercial St & 13th St	Commercial St & 14th St	4.0	Cast iron	120.0	True
P-058	178.29	Commercial St & 14th St	Front St Alley & 14th St	4.0	Cast iron	120.0	True
P-060	189.69	Front St Alley & 14th St	Front St & 14th St	12.0	Ductile Iron	120.0	True
P-062	1,365.79	Alpensee St & Hwy 2	Alpensee St Loop 1	8.0	Steel (normal)	110.0	True
P-064	356.08	Front St & 14th St	Front St & 13th St	12.0	Ductile Iron	120.0	True
P-066	439.84	Front St Alley & 14th St	Alpensee St & Hwy 2	12.0	Ductile Iron	120.0	True
P-070	811.56	Alpensee St & Hwy 2	East Leavenworth Rd & Hwy 2	12.0	Ductile Iron	120.0	True
P-074	209.57	Hwy 2 & Riverbend Dr	Riverbend Dr	16.0	Ductile Iron	120.0	True
P-076	905.93	Safeway	Riverbend Dr	8.0	Ductile Iron	120.0	True
P-078	1,106.64	Alpensee St Loop 1	Alpensee St Loop 2	6.0	Steel (normal)	110.0	True
P-080	861.55	Riverbend Dr	Safeway	16.0	Ductile Iron	120.0	True
P-082	1,050.46	Alpensee St Loop 1	Alpensee St Loop 2	6.0	Steel (normal)	110.0	True
P-084	778.27	Titus Rd & Highschool	Highschool A	8.0	Ductile Iron	120.0	True
P-086	147.63	Chumstick Hwy & Highschool	Highschool C	8.0	Ductile Iron	120.0	True
P-088	850.77	Chumstick Hwy & Highschool	Chumstick Hwy & County Shop Rd	10.0	Ductile Iron	120.0	True
P-090	665.37	Chumstick Hwy & County Shop Rd	North County Shop Rd	8.0	Ductile Iron	120.0	True
P-092	1,054.88	Highschool C	Highschool A	8.0	Ductile Iron	120.0	True
P-094	851.75	Titus Rd & Highschool	Pine St & Titus Rd	8.0	Ductile Iron	120.0	True
P-096	993.95	Pine St & Titus Rd	Highschool B	6.0	Steel (normal)	110.0	True
P-098	167.66	Highschool B	Highschool A	6.0	Steel (normal)	110.0	True
P-100	398.18	Highschool B	Highschool C	6.0	Steel (normal)	110.0	True
P-102	323.41	Pine St & Titus Rd	Cedar St & Burke Ave	8.0	Ductile Iron	120.0	True
P-104	195.11	Birch St & Burke Ave	Cedar St & Burke Ave	8.0	Ductile Iron	120.0	True
P-106	687.40	Cedar St & Burke Ave	Cedar St & Price Ave	6.0	Cast iron	120.0	True
P-108	328.22	Cedar St & Price Ave	Cedar St & Summit Ave	4.0	Cast iron	120.0	True
P-110	318.41	Cedar St & Summit Ave	Cedar St & Central Ave	6.0	Ductile Iron	120.0	True
P-112	1,334.08	Pine St & Central Ave	Pine St & Titus Rd	12.0	Ductile Iron	120.0	False
P-114	310.69	Pine St & Central Ave	Cedar St & Central Ave	8.0	Ductile Iron	120.0	True
P-116	335.52	Cedar St & Central Ave	Birch St & Central Ave	8.0	Ductile Iron	120.0	True
P-118	650.55	Birch St & Central Ave	Birch St & Price Ave	8.0	Ductile Iron	120.0	True
P-120	736.82	Birch St & Price Ave	Birch St & Burke Ave	8.0	Ductile Iron	120.0	True
P-122	299.80	Birch St & Burke Ave	Hwy 2 near 12th St	8.0	Ductile Iron	120.0	True
P-124	307.12	Ash St & Price Ave	Birch St & Price Ave	8.0	Cast iron	120.0	True
P-126	819.94	J-104	Ash St & Price Ave	8.0	Cast iron	120.0	True
P-128	321.38	Birch St & Central Ave	J-112	8.0	Ductile Iron	120.0	True
P-130	326.06	J-112	J-104	8.0	Ductile Iron	120.0	True
P-132	655.36	Ash St & Price Ave	J-112	4.0	Cast iron	120.0	True
P-134	127.17	J-104	J-120	8.0	Ductile Iron	120.0	True
P-136	188.91	Whitman St & Ski Hill Dr	Prospect St & Ski Hill Dr	8.0	Cast iron	120.0	True
P-138	1,653.32	Whitman St & Ski Hill Dr	J-120	8.0	Ductile Iron	120.0	True
P-140	427.24	Benton St & Ski Hill Dr	Whitman St & Ski Hill Dr	6.0	Cast iron	120.0	True
P-144	438.82	J-104	Evans St & Orchard St	6.0	Cast iron	120.0	True
P-146	442.23	Evans St & Orchard St	Evans St & Cascade St	6.0	Ductile Iron	120.0	True
P-148	601.42	Center St & Ski Hill Dr	Evans St & Cascade St	4.0	Cast iron	120.0	True
P-150	327.27	Center St & Ski Hill Dr	Benton St & Ski Hill Dr	6.0	Cast iron	120.0	True
P-152	277.05	Stafford St & Ski Hill Dr	Center St & Ski Hill Dr	6.0	Cast iron	120.0	True
P-154	118.37	Evans St & Ski Hill Dr	Stafford St & Ski Hill Dr	8.0	Cast iron	120.0	True
P-156	450.54	Evans St & Cascade St	Evans St & Ski Hill Dr	4.0	Cast iron	120.0	True
P-158	328.65	Evans St & Ski Hill Dr	Wheeler St & Ski Hill Dr	8.0	Steel (normal)	110.0	True
P-160	338.48	Wheeler St & Ski Hill Dr	Birch St & Ski Hill Dr	8.0	Steel (normal)	110.0	True
P-162	460.44	Birch St & Ski Hill Dr	Birch St & Cascade St	8.0	Ductile Iron	120.0	True
P-164	452.93	Pine St & Orchard St	Pine St & Central Ave	12.0	Ductile Iron	120.0	False
P-166	429.24	Birch St & Cascade St	Birch St & Orchard St	8.0	Ductile Iron	120.0	True
P-168	448.75	Birch St & Orchard St	Birch St & Central Ave	8.0	Ductile Iron	120.0	True
P-170	669.15	Birch St & Cascade St	Evans St & Cascade St	4.0	Cast iron	120.0	True

P-172	672.64	Birch St & Orchard St	Evans St & Orchard St	4.0	Cast iron	120.0	True
P-174	655.57	Pine St & Orchard St	Birch St & Orchard St	4.0	Cast iron	120.0	True
P-176	421.48	Pine St & Cascade St	Pine St & Orchard St	12.0	Ductile iron	120.0	True
P-178	660.53	Birch St & Ski Hill Dr	Pine St & Ski Hill Dr	8.0	Ductile iron	120.0	True
P-180	124.46	J-164	J-132	12.0	Ductile iron	120.0	False
P-182	472.96	Pine St & Ski Hill Dr	Pine St & Cascade St	12.0	Ductile iron	120.0	True
P-184	645.25	Pine St & Cascade St	Birch St & Cascade St	4.0	Cast iron	120.0	True
P-186	504.46	Wheeler St & Ski Hill Dr	J-146	8.0	Ductile Iron	120.0	True
P-188	446.91	J-146	Stafford St & Ogrady Rd	6.0	Ductile iron	120.0	True
P-190	285.56	Stafford St & Ogrady Rd	Center St & Ogrady Rd	6.0	Ductile iron	120.0	True
P-192	501.48	Center St & Ski Hill Dr	Center St & Ogrady Rd	6.0	Ductile iron	120.0	True
P-194	135.25	Center St & Ogrady Rd	Center St & Cherry St	6.0	Steel (normal)	110.0	True
P-196	351.07	J-154	Center St & Cherry St	4.0	Steel (normal)	110.0	True
P-198	320.08	Center St & Cherry St	West St & Cherry St	4.0	Cast iron	120.0	True
P-200	667.51	Benton St & Ski Hill Dr	West St & Cherry St	4.0	Cast iron	120.0	True
P-202	711.11	West St & Cherry St	J-156	4.0	Cast iron	120.0	True
P-204	308.85	West St & Cherry St	Park Ave & Cherry St	4.0	Cast iron	120.0	True
P-206	708.43	Park Ave & Cherry St	Park Ave & Smyth St	6.0	Steel (normal)	110.0	True
P-208	624.37	Park Ave & Smyth St	Park Ave & Mtn View Dr	8.0	Steel (normal)	110.0	True
P-210	363.57	Park Ave & Mtn View Dr	Meadow Rd & Mtn View Dr	8.0	Steel (normal)	110.0	True
P-212	322.17	Park Ave & Cherry St	Prospect St & Cherry St	4.0	Steel (normal)	110.0	True
P-214	648.00	Meadow Rd & Mtn View Dr	J-156	8.0	Steel (normal)	110.0	True
P-216	274.66	J-156	J-164	12.0	Ductile Iron	120.0	True
P-218	320.90	Park Ave & Smyth St	J-156	12.0	Ductile Iron	120.0	True
P-220	712.56	Prospect St & Cherry St	Prospect St & Mine St	6.0	Steel (normal)	110.0	True
P-222	478.09	Prospect St & Whitman St	Prospect St & Cherry St	6.0	Steel (normal)	110.0	True
P-224	652.76	Prospect St & Mine St	Benton St & Mine St	12.0	Ductile Iron	120.0	True
P-226	207.65	Prospect St & Ski Hill Dr	Prospect St & Whitman St	8.0	Steel (normal)	110.0	True
P-228	322.00	Benton St & Mine St	Whitman St & Mill St	6.0	Steel (normal)	110.0	True
P-230	825.08	Prospect St & Cherry St	Benton St & Mine St	6.0	Steel (normal)	110.0	True
P-232	617.18	Whitman St & Mill St	Commercial St & Mill St	10.0	Steel (normal)	110.0	True
P-234	1,172.55	Prospect St & Whitman St	Whitman St & Mill St	8.0	Steel (normal)	110.0	True
P-236	1,060.20	Icicle Rd F	Icicle Rd & Wells	12.0	Steel (normal)	110.0	True
P-238	2,308.39	Icicle Rd & Reservoir	Icicle Rd F	12.0	Steel (normal)	110.0	True
P-240	1,129.08	Icicle Rd & Wells	Wells	24.0	Ductile Iron	120.0	True
P-242	1,720.22	Icicle Rd & Wells	Icicle Rd E	12.0	Steel (normal)	110.0	True
P-244	1,391.72	Icicle Rd E	Icicle Rd D	12.0	Steel (normal)	110.0	True
P-246	1,741.62	Icicle Rd D	Icicle Rd C	12.0	Steel (normal)	110.0	True
P-248	10,739.15	Water Treatment Plant	Icicle Rd A	16.0	Steel (normal)	120.0	True
P-250	669.14	Icicle Rd B	Icicle Rd A	16.0	Steel (normal)	120.0	True
P-252	1,213.59	East Leavenworth Rd & Icicle Rd	Icicle Rd B	16.0	Steel (normal)	120.0	True
P-254	994.68	East Leavenworth Rd & Icicle Rd	Icicle Rd C	12.0	Steel (normal)	110.0	True
P-256	1,406.50	East Leavenworth Rd & Icicle Rd	East Leavenworth Rd 2	10.0	Steel (ROUGH)	100.0	True
P-258	6,687.86	East Leavenworth Rd 2	East Leavenworth Rd & Dempsey Rd	10.0	Steel (ROUGH)	100.0	True
P-260	4,435.50	East Leavenworth Rd & Dempsey Rd	East Leavenworth Rd 1	10.0	Steel (ROUGH)	100.0	True
P-262	3,777.85	East Leavenworth Rd & Creek Cross	East Leavenworth Rd 1	16.0	Ductile Iron	120.0	True
P-264	1,574.35	East Leavenworth Rd & Dye Rd	East Leavenworth Rd & Creek Cross	12.0	Ductile Iron	120.0	True
P-266	1,551.78	East Leavenworth Rd & Creek Cross	Commercial St Alley & Division St	10.0	Cast iron	120.0	False
P-268	305.58	Park Ave & Smyth St	Prospect St & Mine St	12.0	Ductile Iron	120.0	True
P-270	343.81	Bergstrasse Rd & Ski Hill Dr	Emig Dr & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-272	1,324.19	Emig Dr & Ski Hill Dr	Emig Dr Mid	8.0	Ductile Iron	120.0	True
P-274	341.80	Detillion Rd & Titus Rd	Emig Dr & Titus Rd	12.0	Ductile Iron	120.0	True
P-278	1,311.51	Emig Dr Mid	Emig Dr & Titus Rd	8.0	Ductile Iron	120.0	False
P-280	415.60	Front St. Alley & 9th St	Front St. Alley & 10th St	6.0	Cast iron	120.0	True
P-282	437.76	Front St. Alley & 10th St	Front St & Division St	6.0	Cast iron	120.0	True
P-284	389.06	Commercial St Alley & 10th St	Commercial St Alley & Division St	8.0	Ductile Iron	120.0	True
P-286	307.23	Ski Hill BS #1	Ranger St & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-288	356.10	Pine St & Ski Hill Dr	Ski Hill BS #1	12.0	Ductile Iron	120.0	True
P-290	374.20	Ranger St & Ski Hill Dr	Zone 2 PRV A	12.0	Ductile Iron	120.0	True
P-292	421.02	Zone 2 PRV A	Pine St & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-294	648.69	Front St & 14th St	J-226	8.0	Ductile Iron	120.0	True
P-296	386.21	J-226	Chumstick Hwy & Highschool	8.0	Ductile Iron	120.0	True
P-298	649.29	East Leavenworth Rd & Dye Rd	East Leavenworth Rd & Hwy 2	12.0	Ductile Iron	120.0	True
P-300	688.82	Emig Dr Mid	J-230	8.0	Ductile Iron	120.0	False
P-302	636.11	Ranger St & Ski Hill Dr	Village View Dr & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-304	1,536.16	J-230	Village View Dr & Ski Hill Dr	8.0	Ductile Iron	120.0	False
P-306	2,220.95	J-230	J-212	8.0	Ductile Iron	120.0	False
P-308	1,321.43	Bergstrasse Rd & Ski Hill Dr	Bergstrasse Rd & Detillion Rd	12.0	Ductile Iron	120.0	True
P-310	1,319.34	Bergstrasse Rd & Detillion Rd	Detillion Rd & Titus Rd	12.0	Ductile Iron	120.0	True
P-312	1,326.22	Titus Rd NE	J-238	8.0	Ductile Iron	120.0	False
P-314	673.50	Village View Dr & Ski Hill Dr	Spring St & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-316	2,231.81	Emig Dr & Ski Hill Dr	Spring St. West	8.0	Ductile Iron	120.0	False
P-318	1,577.82	Bergstrasse Rd & Ski Hill Dr	Bergstrasse Rd West	8.0	Ductile Iron	120.0	False
P-320	621.75	Bergstrasse Rd & Ski Hill Dr	Maple St & Ski Hill Dr	8.0	Ductile Iron	120.0	False
P-322	463.62	Maple St & Ski Hill Dr	Maple St West	8.0	Ductile Iron	120.0	False
P-324	667.19	J-238	J-252	8.0	Ductile Iron	120.0	False
P-326	1,277.40	J-252	Bergstrasse Rd & Detillion Rd	8.0	Ductile Iron	120.0	False
P-328	1,305.48	J-252	Zone 4 Suction	8.0	Ductile Iron	120.0	False
P-330	630.16	Zone 4 Suction	Maple St & Ski Hill Dr	8.0	Ductile Iron	120.0	False
P-332	177.07	Zone 4 Suction	Ski Hill BS #3	10.0	Ductile Iron	120.0	False
P-334	1,177.60	Ski Hill BS #3	Zone 4 Demands	10.0	Ductile Iron	120.0	False
P-336	668.88	Titus Rd NE	J-258	8.0	Ductile Iron	120.0	False
P-338	1,334.53	J-252	J-258	8.0	Ductile Iron	120.0	False
P-340	1,314.29	J-258	J-260	8.0	Ductile Iron	120.0	False
P-342	670.72	J-260	J-262	8.0	Ductile Iron	120.0	False
P-344	1,313.96	J-262	Titus Rd NE	8.0	Ductile Iron	120.0	False
P-346	1,201.15	Chumstick Hwy & County Shop Rd	Chumstick Hwy & Meadowlark	12.0	Ductile Iron	120.0	False
P-348	704.60	J-212	Zone 2 PRV B	8.0	Ductile Iron	120.0	True
P-350	380.00	Zone 2 PRV B	Titus Rd & Highschool	8.0	Ductile Iron	120.0	True
P-352	609.77	J-258	Zone 3 PRV B	8.0	Ductile Iron	120.0	False
P-354	678.01	Zone 3 PRV B	Detillion Rd & Titus Rd	8.0	Ductile Iron	120.0	False

P-358	479.52	Front St & Division St	Front St & 10th St	12.0	Ductile Iron	120.0	True
P-360	420.80	Front St & 10th St	Front St & 9th St	12.0	Ductile Iron	120.0	False
P-362	422.26	Front St & 9th St	Front St & 8th St	12.0	Ductile Iron	120.0	False
P-364	139.79	Front St & 9th St	Front St. Alley & 9th St	8.0	Ductile Iron	120.0	False
P-366	136.54	Front St & 10th St	Front St. Alley & 10th St	8.0	Ductile Iron	120.0	True
P-368	151.40	Front St. Alley & 9th St	Commercial St & 9th St	12.0	Ductile Iron	120.0	True
P-372	416.14	Commercial St & 8th St	Commercial St & 9th St	12.0	Ductile Iron	120.0	True
P-374	149.40	Front St Alley & 8th St	Commercial St & 8th St	12.0	Ductile Iron	120.0	True
P-376	500.54	Front St & Division St	Hwy 2 near 12th St	10.0	Steel (normal)	110.0	True
P-378	972.96	Front St & 8th St	J-034	8.0	Ductile Iron	120.0	True
P-380	1,656.02	J-014	J-010	8.0	Ductile Iron	120.0	True
P-382	1,315.96	Ranger St & Ski Hill Dr	Ranger St Mid	8.0	Ductile Iron	120.0	False
P-384	970.95	Ranger St Mid	Ranger St West	8.0	Ductile Iron	120.0	False
P-386	1,619.24	Ranger St Mid	Wheeler St West	8.0	Ductile Iron	120.0	False
P-388	504.21	Stafford St & Ogrady Rd	Stafford St & Ski Hill Dr	6.0	Ductile Iron	120.0	True
P-390	159.47	Emig Dr & Ski Hill Dr	Zone 3 PRV A	12.0	Ductile Iron	120.0	True
P-392	165.05	Zone 3 PRV A	Spring St & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-394	693.03	Zone 4 Suction	Titus Rd & Ski Hill Dr	8.0	Ductile Iron	120.0	False
P-396	1,317.24	Titus Rd & Ski Hill Dr	J-238	8.0	Ductile Iron	120.0	False
P-398	249.31	Zone 2 Tank (0.75 MG)	Ski Hill BS #2	12.0	Ductile Iron	120.0	False
P-400	374.47	Ski Hill BS #2	Zone 4 Suction	12.0	Ductile Iron	120.0	False
P-402	774.01	Zone 3 Tank	Titus Rd & Ski Hill Dr	12.0	Ductile Iron	120.0	False
P-404	2,722.98	Spring St & Ski Hill Dr	Zone 2 Tank (0.75 MG)	16.0	Ductile Iron	120.0	True
P-406	594.87	J-164	Tumwater Dr & Mtn View Dr	8.0	Steel (normal)	110.0	True
P-408	203.74	Tumwater Dr & Mtn View Dr	Meadow Rd & Mtn View Dr	8.0	Steel (normal)	110.0	True
P-410	876.39	J-132	Wheeler St West	8.0	Ductile Iron	120.0	False
P-412	213.33	Emig Dr & Titus Rd	Titus Rd & Meadowlark	8.0	Ductile Iron	120.0	True
P-414	352.08	Titus Rd & Meadowlark	J-212	8.0	Ductile Iron	120.0	True
P-416	682.16	Titus Rd & Meadowlark	Zone 2 PRV C	12.0	Ductile Iron	120.0	False
P-418	1,208.12	Zone 2 PRV C	Chumstick Hwy & Meadowlark	12.0	Ductile Iron	120.0	False
P-420	2,683.84	Village View Dr & Ski Hill Dr	Ranger St West	8.0	Ductile Iron	120.0	False
P-422	752.85	Bergstrasse Rd West	Spring St. West	8.0	Ductile Iron	120.0	False
P-424	960.08	East Leavenworth Rd & Creek Cross	Future Main Zone Res	16.0	Ductile Iron	120.0	False
P-426	139.63	Commercial St & 9th St	Commercial St Alley & 9th St	12.0	Ductile Iron	120.0	True
P-428	458.57	Commercial St Alley & 9th St	Commercial St Alley & 10th St	12.0	Ductile Iron	120.0	True
P-430	326.96	Commercial St & 8th St	Main St & 8th St	12.0	Ductile Iron	120.0	True
P-432	200.05	Main St & 8th St	Main St & Hospital	12.0	Ductile Iron	120.0	True
P-434	167.09	Commercial St Alley & 9th St	Main St & 9th St	12.0	Ductile Iron	120.0	True
P-436	362.32	Front St & 13th St	Front St & 12th St	12.0	Ductile Iron	120.0	True
P-438	436.58	Front St & 12th St	Front St & Division St	12.0	Ductile Iron	120.0	True
P-440	441.30	Commercial St Alley & Division St	Commercial St & 12th St	6.0	Cast iron	120.0	True
P-442	333.14	Commercial St & 12th St	Commercial St & 13th St	6.0	Cast iron	120.0	True
P-444	168.62	Front St & Division St	J-278	12.0	Ductile Iron	120.0	True
P-446	159.73	J-278	Commercial St Alley & Division St	10.0	Steel (normal)	110.0	True
P-448	71.36	Safeway	Hampton Suites NW	16.0	Ductile Iron	120.0	True
P-450	735.08	Hampton Suites NW	Hampton Suites SE	12.0	Ductile Iron	120.0	True
P-452	757.92	Hampton Suites SE	Hampton Suites NW	12.0	Ductile Iron	120.0	True
P-454	197.74	East Leavenworth Rd & Hwy 2	FF Calibration 1	12.0	Ductile Iron	120.0	True
P-456	365.73	FF Calibration 1	Hwy 2 & Riverbend Dr	12.0	Ductile Iron	120.0	True
P-458	102.50	Benton St & Ski Hill Dr	FF Calibration 2	6.0	Cast iron	120.0	True
P-460	1,029.13	FF Calibration 2	Evans St & Orchard St	6.0	Cast iron	120.0	True
P-462	815.88	Safeway	J-284	12.0	Ductile Iron	120.0	True
P-464	1,153.12	J-284	J-289	10.0	Ductile Iron	120.0	True
P-466	403.26	J-289	J-291	8.0	Ductile Iron	120.0	True
P-468	155.68	J-289	J-292	8.0	Ductile Iron	120.0	True
P-470	312.04	J-292	J-290	8.0	Ductile Iron	120.0	True
WTP	365.27	Icicle Creek Clearwell	Water Treatment Plant	16.0	Ductile Iron	120.0	True

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Scenario: Current MDD
 Current Time Step: 0.000Hr
 FlexTable: PRV Table

ID	Label	Elevation (ft)	Diameter (Valve) (in)	Minor Loss Coefficient (Local)	Hydraulic Grade Setting (Initial) (ft)	Pressure Setting (Initial) (psi)	Flow (gpm)	Hydraulic Grade (From) (ft)	Hydraulic Grade (To) (ft)	Headloss (ft)
321	Zone 2 PRV A	1,210.00	8.0	0.000	1,290.00	0.0	0	1,410.50	1,320.72	0.00
322	Zone 2 PRV B	1,200.00	8.0	0.000	1,290.00	0.0	0	1,410.49	1,320.79	0.00
323	Zone 3 PRV B	1,300.00	8.0	0.000	1,380.00	0.0	(N/A)	(N/A)	(N/A)	(N/A)
324	Zone 3 PRV A	1,300.00	6.0	0.000	1,380.00	0.0	-31	1,410.50	1,410.50	0.00
325	Zone 2 PRV C	1,200.00	6.0	0.000	1,290.00	0.0	(N/A)	(N/A)	(N/A)	(N/A)

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Scenario: Current MDD
Current Time Step: 0.000Hr
FlexTable: Tank Table

Label	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Maximum) (ft)	Flow (In net) (gpm)	Status (Calculated)	Hydraulic Grade (ft)	Percent Full (%)
Zone 1 Tank (0.80 MG)	1,322.50	1,322.50	1,341.00	1,693	Filling	1,324.00	8.1
Zone 2 Tank (0.75 MG)	1,400.50	1,400.50	1,423.75	-31	Emptying	1,410.50	43.0
Zone 3 Tank	1,496.00	1,496.00	1,520.00	(N/A)	<None>	(N/A)	(N/A)
Future Main Zone Res	1,312.00	1,312.00	1,336.00	(N/A)	<None>	(N/A)	(N/A)

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Scenario: Current PHD
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-132	1,210.00	Zone 2	(N/A)	(N/A)	(N/A)
J-230	1,260.00	Zone 2	(N/A)	(N/A)	(N/A)
Titus Rd NE	1,390.00	Zone 3	(N/A)	(N/A)	(N/A)
J-238	1,410.00	Zone 3	(N/A)	(N/A)	(N/A)
Spring St. West	1,400.00	Zone 3	(N/A)	(N/A)	(N/A)
Ranger St West	1,300.00	Zone 2	(N/A)	(N/A)	(N/A)
Bergstrasse Rd West	1,400.00	Zone 3	(N/A)	(N/A)	(N/A)
Maple St & Ski Hill Dr	1,370.00	Zone 3	(N/A)	(N/A)	(N/A)
Maple St West	1,400.00	Zone 3	(N/A)	(N/A)	(N/A)
J-252	1,350.00	Zone 3	(N/A)	(N/A)	(N/A)
Zone 4 Suction	1,400.00	Zone 3	(N/A)	(N/A)	(N/A)
Zone 4 Demands	1,520.00	Zone 4	(N/A)	(N/A)	(N/A)
J-258	1,340.00	Zone 3	(N/A)	(N/A)	(N/A)
J-260	1,280.00	Zone 3	(N/A)	(N/A)	(N/A)
J-262	1,300.00	Zone 3	(N/A)	(N/A)	(N/A)
Chumstick Hwy & Meadowlark	1,160.00	Zone-1	(N/A)	(N/A)	(N/A)
Front St & 9th St	1,165.00	Zone-1	(N/A)	(N/A)	(N/A)
Ranger St Mid	1,250.00	Zone 2	(N/A)	(N/A)	(N/A)
Wheeler St West	1,220.00	Zone 2	(N/A)	(N/A)	(N/A)
Titus Rd & Ski Hill Dr	1,440.00	Zone 3	(N/A)	(N/A)	(N/A)
Water Treatment Plant	1,367.00	No Fire Flow	-1,600	1,367.02	0.0
Meadow Rd & Mtn View Dr	1,235.00	Zone-1	7	1,305.93	30.7
Tumwater Dr & Mtn View Dr	1,230.00	Zone-1	7	1,305.93	32.9
Park Ave & Mtn View Dr	1,230.00	Zone-1	8	1,305.94	32.9
Bergstrasse Rd & Ski Hill Dr	1,341.00	Zone 2	14	1,420.68	34.5
Pine St & Ski Hill Dr	1,199.00	Zone-1	23	1,295.28	41.7
Cedar St & Central Ave	1,197.00	Zone-1	7	1,298.01	43.7
Hampton Suites SE	1,197.00	Zone-1	143	1,298.89	44.1
Pine St & Cascade St	1,193.00	Zone-1	11	1,295.30	44.3
Pine St & Orchard St	1,192.00	Zone-1	11	1,295.31	44.7
Emig Dr & Ski Hill Dr	1,317.00	Zone 2	14	1,420.69	44.9
Birch St & Cascade St	1,192.00	Zone-1	11	1,297.20	45.5
J-156	1,200.00	Zone-1	11	1,305.93	45.8
Pine St & Central Ave	1,190.00	Zone-1	10	1,298.01	46.7
Birch St & Ski Hill Dr	1,188.00	Zone-1	11	1,296.97	47.1
Cedar St & Price Ave	1,188.00	Zone-1	13	1,298.12	47.6
J-146	1,187.00	Zone-1	4	1,297.46	47.8
Park Ave & Smyth St	1,195.00	Zone-1	11	1,305.95	48.0
Wheeler St & Ski Hill Dr	1,185.00	Zone-1	14	1,297.40	48.6
Hampton Suites NW	1,185.00	Zone-1	0	1,298.90	49.3
Safeway	1,185.00	Zone-1	35	1,298.91	49.3
J-164	1,190.00	Zone-1	8	1,305.93	50.2
Cedar St & Summit Ave	1,182.00	Zone-1	4	1,298.02	50.2
Birch St & Orchard St	1,181.00	Zone-1	11	1,297.52	50.4
J-154	1,181.00	Zone-1	4	1,298.18	50.7
Stafford St & Ogrady Rd	1,180.00	Zone-1	4	1,297.73	50.9
Prospect St & Mine St	1,188.00	Zone-1	37	1,306.01	51.1
Center St & Ogrady Rd	1,180.00	Zone-1	17	1,298.03	51.1
J-112	1,179.00	Zone-1	7	1,298.17	51.6
Evans St & Ski Hill Dr	1,178.00	Zone-1	4	1,297.64	51.8
Center St & Cherry St	1,178.00	Zone-1	16	1,298.19	52.0
Bergstrasse Rd & Detillion Rd	1,300.00	Zone 2	28	1,420.66	52.2
Spring St & Ski Hill Dr	1,300.00	Zone 2	0	1,420.70	52.2
Birch St & Central Ave	1,177.00	Zone-1	14	1,298.01	52.4
Titus Rd & Highschool	1,177.00	Zone-1	7	1,298.20	52.4
Benton St & Mine St	1,185.00	Zone-1	13	1,306.31	52.5
J-104	1,177.00	Zone-1	18	1,298.34	52.5

J-120	1,177.00	Zone-1	0	1,298.58	52.6
Prospect St & Cherry St	1,183.00	Zone-1	21	1,305.16	52.9
Evans St & Orchard St	1,176.00	Zone-1	18	1,298.22	52.9
West St & Cherry St	1,179.00	Zone-1	19	1,301.56	53.0
Stafford St & Ski Hill Dr	1,175.00	Zone-1	0	1,297.69	53.1
Hwy 2 & Riverbend Dr	1,175.00	Zone-1	0	1,298.94	53.6
Evans St & Cascade St	1,174.00	Zone-1	11	1,297.99	53.6
Pine St & Titus Rd	1,174.00	Zone-1	7	1,298.21	53.7
Park Ave & Cherry St	1,179.00	Zone-1	14	1,304.91	54.5
Center St & Ski Hill Dr	1,172.00	Zone-1	19	1,298.05	54.5
Birch St & Price Ave	1,170.00	Zone-1	14	1,298.17	55.5
Ash St & Price Ave	1,170.00	Zone-1	23	1,298.19	55.5
Highschool B	1,170.00	Zone-1	28	1,298.20	55.5
Highschool A	1,170.00	Zone-1	28	1,298.20	55.5
Hwy 2 near 12th St	1,170.00	Zone-1	0	1,298.39	55.5
Front St & 10th St	1,170.00	Zone-1	7	1,298.49	55.6
Riverbend Dr	1,170.00	Zone-1	14	1,298.93	55.8
Prospect St & Whitman St	1,173.00	Zone-1	21	1,303.81	56.6
FF Calibration 2	1,168.00	Zone-1	0	1,298.83	56.6
Benton St & Ski Hill Dr	1,168.00	Zone-1	22	1,298.90	56.6
Cedar St & Burke Ave	1,167.00	Zone-1	16	1,298.21	56.8
Birch St & Burke Ave	1,167.00	Zone-1	14	1,298.24	56.8
J-034	1,167.00	Zone-1	16	1,299.05	57.1
Prospect St & Ski Hill Dr	1,169.00	Zone-1	0	1,301.07	57.1
Whitman St & Ski Hill Dr	1,168.00	Zone-1	21	1,300.35	57.3
North County Shop Rd	1,165.00	Zone-1	7	1,298.26	57.7
Hwy 2 & 3rd St	1,167.00	Zone-1	42	1,300.35	57.7
Front St. Alley & 10th St	1,165.00	Zone-1	35	1,298.50	57.8
J-036	1,165.00	Zone-1	14	1,298.87	57.9
J-284	1,164.00	KOA	8	1,298.90	58.4
Commercial St & 2nd St	1,168.00	Zone-1	42	1,304.28	59.0
Whitman St & Mill St	1,177.00	Zone-1	19	1,314.61	59.5
Chumstick Hwy & County Shop Rd	1,160.00	Zone-1	4	1,298.26	59.8
Front St & Division St	1,160.00	Zone-1	50	1,298.49	59.9
Alpensee St & Hwy 2	1,160.00	Zone-1	4	1,298.74	60.0
Front St. Alley & 9th St	1,160.00	Zone-1	46	1,298.84	60.1
Front St & 8th St	1,160.00	Zone-1	47	1,299.03	60.2
J-291	1,159.00	KOA	8	1,298.89	60.5
Emig Dr Mid	1,280.00	Zone 2	14	1,420.68	60.9
Front St & 12th St	1,157.00	Zone-1	0	1,298.51	61.2
J-278	1,156.00	Zone-1	0	1,298.49	61.7
Commercial St & 3rd St	1,156.00	Zone-1	42	1,300.16	62.4
J-024	1,160.00	Zone-1	9	1,304.29	62.4
Front St & 13th St	1,154.00	Zone-1	35	1,298.52	62.5
Commercial St Alley & Division St	1,153.00	Zone-1	70	1,298.50	63.0
Commercial St Alley & 9th St	1,153.00	Zone-1	0	1,298.83	63.1
Commercial St & 9th St	1,153.00	Zone-1	46	1,298.85	63.1
Highschool C	1,152.00	Zone-1	28	1,298.24	63.3
Commercial St & 1st St	1,164.00	Zone-1	28	1,310.82	63.5
J-289	1,152.00	KOA	8	1,298.89	63.6
Hwy 2 & Icicle Rd	1,183.00	Zone-1	44	1,330.06	63.6
Commercial St & Mill St	1,173.00	Zone-1	7	1,320.60	63.9
J-010	1,172.00	Zone-1	47	1,319.66	63.9
Chumstick Hwy & Highschool	1,150.00	Zone-1	0	1,298.27	64.1
J-226	1,150.00	Zone-1	7	1,298.36	64.2
FF Calibration 1	1,150.00	Zone-1	0	1,299.01	64.5
J-020	1,167.00	Zone-1	7	1,316.54	64.7
East Leavenworth Rd & Dye Rd	1,150.00	Zone-1	35	1,299.70	64.8
Commercial St Alley & 10th St	1,149.00	Zone-1	35	1,298.76	64.8
Commercial St & 12th St	1,148.00	Zone-1	0	1,298.42	65.1
Front St & 14th St	1,148.00	Zone-1	35	1,298.55	65.1
J-012	1,169.00	Zone-1	16	1,319.55	65.1
Hwy 2 & Commercial St	1,172.00	Zone-1	21	1,322.57	65.1
Commercial St & 8th St	1,148.00	Zone-1	42	1,298.98	65.3
Front St Alley & 8th St	1,148.00	Zone-1	42	1,299.04	65.3
J-018	1,166.00	Zone-1	16	1,318.49	66.0
J-292	1,145.00	KOA	0	1,298.89	66.6

J-014	1,143.00	Zone-1	35	1,298.36	67.2
Commercial St & Enchantment Park Wy	1,163.00	Zone-1	7	1,318.92	67.5
Front St Alley & 14th St	1,158.00	Zone-1	14	1,314.22	67.6
Main St & 9th St	1,142.00	Zone-1	9	1,298.59	67.8
East Leavenworth Rd & Hwy 2	1,142.00	Zone-1	0	1,298.83	67.9
Detillion Rd & Titus Rd	1,140.00	Zone-1	0	1,299.05	68.8
Alpensee St Loop 2	1,261.00	Zone 2	14	1,420.66	69.1
Village View Dr & Ski Hill Dr	1,138.00	Zone-1	11	1,298.70	69.5
Commercial St & 14th St	1,260.00	Zone 2	0	1,421.05	69.7
East Leavenworth Rd & Creek Cross	1,137.00	Zone-1	35	1,298.36	69.8
Icicle Rd & Reservoir	1,140.00	Zone-1	35	1,301.46	69.9
Main St & 8th St	1,177.00	Zone-1	13	1,338.61	69.9
Main St & Hospital	1,137.00	Zone-1	0	1,298.98	70.1
J-290	1,137.00	Zone-1	0	1,298.98	70.1
Alpensee St Loop 1	1,125.00	KOA	8	1,298.89	75.2
Ernig Dr & Titus Rd	1,121.00	Zone-1	11	1,298.71	76.9
J-026	1,240.00	Zone 2	14	1,420.65	78.2
East Leavenworth Rd 1	1,120.00	Zone-1	13	1,304.28	79.7
J-212	1,115.00	Zone-1	57	1,302.63	81.2
Titus Rd & Meadowlark	1,230.00	Zone 2	0	1,420.65	82.5
Ranger St & Ski Hill Dr	1,230.00	Zone 2	0	1,420.65	82.5
Icicle Rd C	1,230.00	Zone 2	0	1,421.37	82.8
Icicle Rd D	1,175.00	Zone-1	33	1,369.61	84.2
East Leavenworth Rd & Dempsey Rd	1,175.00	Zone-1	46	1,374.27	86.2
Icicle Rd E	1,125.00	Zone-1	17	1,324.80	86.4
Icicle Rd A	1,175.00	Zone-1	35	1,378.37	88.0
Icicle Rd B	1,155.00	Zone-1	21	1,367.11	91.8
East Leavenworth Rd & Icicle Rd	1,151.00	Zone-1	7	1,367.11	93.5
East Leavenworth Rd 2	1,148.00	Zone-1	18	1,367.13	94.8
Icicle Rd & Wells	1,125.00	Zone-1	0	1,359.77	101.6
Icicle Rd F	1,142.00	Zone-1	0	1,383.80	104.6
Wells	1,120.00	Zone-1	23	1,369.38	107.9
	1,117.00	Zone-1	-3,050	1,384.70	115.8

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Scenario: Current PHD
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Is Active?
P-002	579.19	Zone 1 Tank (0.80 MG)	Icicle Rd & Reservoir	14.0	Ductile Iron	120.0	True
P-004	901.85	Icicle Rd & Reservoir	Hwy 2 & Icicle Rd	12.0	Steel (normal)	110.0	True
P-006	829.28	Hwy 2 & Icicle Rd	Hwy 2 & Commercial St	12.0	Steel (normal)	110.0	True
P-008	535.14	Hwy 2 & Commercial St	J-010	6.0	Ductile Iron	120.0	True
P-010	281.84	J-010	J-012	6.0	Ductile Iron	120.0	True
P-012	651.38	J-012	J-018	4.0	Steel (normal)	110.0	True
P-014	264.34	J-018	J-014	6.0	Cast iron	120.0	True
P-016	291.28	Hwy 2 & Commercial St	Commercial St & Mill St	12.0	Steel (normal)	110.0	True
P-018	226.91	J-018	Commercial St & Enchantment Park Wy	4.0	Steel (normal)	110.0	True
P-020	337.77	Commercial St & Mill St	J-020	6.0	Cast iron	120.0	True
P-022	401.95	J-024	J-026	6.0	Cast iron	120.0	True
P-024	201.20	J-020	Commercial St & Enchantment Park Wy	6.0	Cast iron	120.0	True
P-026	362.02	Commercial St & 1st St	J-024	2.0	Cast iron	120.0	True
P-028	163.61	Commercial St & Enchantment Park Wy	Commercial St & 1st St	6.0	Cast iron	120.0	True
P-030	394.97	Commercial St & 1st St	Commercial St & 2nd St	6.0	Cast iron	120.0	True
P-032	301.17	Commercial St & 2nd St	Commercial St & 3rd St	6.0	Cast iron	120.0	True
P-034	361.19	J-026	Commercial St & 2nd St	6.0	Cast iron	120.0	True
P-036	335.55	Hwy 2 & 3rd St	Commercial St & 3rd St	8.0	Ductile Iron	120.0	True
P-038	294.19	Prospect St & Ski Hill Dr	Hwy 2 & 3rd St	8.0	Ductile Iron	120.0	True
P-040	678.80	Hwy 2 & 3rd St	J-034	6.0	Ductile Iron	120.0	True
P-042	810.79	J-034	J-036	8.0	Ductile Iron	120.0	True
P-044	446.53	J-036	J-120	6.0	Cast iron	120.0	True
P-046	157.07	Front St Alley & 8th St	Front St & 8th St	6.0	Ductile Iron	120.0	True
P-048	1,534.20	Commercial St & 3rd St	Front St Alley & 8th St	12.0	Ductile Iron	120.0	True
P-050	421.25	Front St Alley & 8th St	Front St Alley & 9th St	6.0	Cast iron	120.0	True
P-056	360.08	Commercial St & 13th St	Commercial St & 14th St	4.0	Cast iron	120.0	True
P-058	178.29	Commercial St & 14th St	Front St Alley & 14th St	4.0	Cast iron	120.0	True
P-060	189.69	Front St Alley & 14th St	Front St & 14th St	12.0	Ductile Iron	120.0	True
P-062	1,365.79	Alpensee St & Hwy 2	Alpensee St Loop 1	8.0	Steel (normal)	110.0	True
P-064	356.08	Front St & 14th St	Front St & 13th St	12.0	Ductile Iron	120.0	True
P-066	439.84	Front St Alley & 14th St	Alpensee St & Hwy 2	12.0	Ductile Iron	120.0	True
P-070	811.56	Alpensee St & Hwy 2	East Leavenworth Rd & Hwy 2	12.0	Ductile Iron	120.0	True
P-074	209.57	Hwy 2 & Riverbend Dr	Riverbend Dr	16.0	Ductile Iron	120.0	True
P-076	905.93	Safeway	Riverbend Dr	8.0	Ductile Iron	120.0	True
P-078	1,106.64	Alpensee St Loop 1	Alpensee St Loop 2	6.0	Steel (normal)	110.0	True
P-080	861.55	Riverbend Dr	Safeway	16.0	Ductile Iron	120.0	True
P-082	1,050.46	Alpensee St Loop 1	Alpensee St Loop 2	6.0	Steel (normal)	110.0	True
P-084	778.27	Titus Rd & Highschool	Highschool A	8.0	Ductile Iron	120.0	True
P-086	147.63	Chumstick Hwy & Highschool	Highschool C	8.0	Ductile Iron	120.0	True
P-088	850.77	Chumstick Hwy & Highschool	Chumstick Hwy & County Shop Rd	10.0	Ductile Iron	120.0	True
P-090	665.37	Chumstick Hwy & County Shop Rd	North County Shop Rd	8.0	Ductile Iron	120.0	True
P-092	1,054.88	Highschool C	Highschool A	8.0	Ductile Iron	120.0	True
P-094	651.75	Titus Rd & Highschool	Pine St & Titus Rd	8.0	Ductile Iron	120.0	True
P-096	993.95	Pine St & Titus Rd	Highschool B	6.0	Steel (normal)	110.0	True
P-098	167.66	Highschool B	Highschool A	6.0	Steel (normal)	110.0	True
P-100	398.18	Highschool B	Highschool C	6.0	Steel (normal)	110.0	True
P-102	323.41	Pine St & Titus Rd	Cedar St & Burke Ave	8.0	Ductile Iron	120.0	True
P-104	195.11	Birch St & Burke Ave	Cedar St & Burke Ave	8.0	Ductile Iron	120.0	True
P-106	687.40	Cedar St & Burke Ave	Cedar St & Price Ave	6.0	Cast iron	120.0	True
P-108	328.22	Cedar St & Price Ave	Cedar St & Summit Ave	4.0	Cast iron	120.0	True
P-110	318.41	Cedar St & Summit Ave	Cedar St & Central Ave	6.0	Ductile Iron	120.0	True
P-112	1,334.08	Pine St & Central Ave	Pine St & Titus Rd	12.0	Ductile Iron	120.0	False
P-114	310.69	Pine St & Central Ave	Cedar St & Central Ave	8.0	Ductile Iron	120.0	True
P-116	335.52	Cedar St & Central Ave	Birch St & Central Ave	8.0	Ductile Iron	120.0	True
P-118	650.55	Birch St & Central Ave	Birch St & Price Ave	8.0	Ductile Iron	120.0	True
P-120	736.82	Birch St & Price Ave	Birch St & Burke Ave	8.0	Ductile Iron	120.0	True
P-122	299.80	Birch St & Burke Ave	Hwy 2 near 12th St	8.0	Ductile Iron	120.0	True
P-124	307.12	Ash St & Price Ave	Birch St & Price Ave	8.0	Cast iron	120.0	True
P-126	819.94	J-104	Ash St & Price Ave	8.0	Cast iron	120.0	True
P-128	321.38	Birch St & Central Ave	J-112	8.0	Ductile Iron	120.0	True
P-130	326.06	J-112	J-104	8.0	Ductile Iron	120.0	True
P-132	655.36	Ash St & Price Ave	J-112	4.0	Cast iron	120.0	True
P-134	127.17	J-104	J-120	8.0	Ductile Iron	120.0	True
P-136	188.91	Whitman St & Ski Hill Dr	Prospect St & Ski Hill Dr	8.0	Cast iron	120.0	True
P-138	1,653.32	Whitman St & Ski Hill Dr	J-120	8.0	Ductile Iron	120.0	True
P-140	427.24	Benton St & Ski Hill Dr	Whitman St & Ski Hill Dr	6.0	Cast iron	120.0	True
P-144	438.82	J-104	Evans St & Orchard St	6.0	Cast iron	120.0	True
P-146	442.23	Evans St & Orchard St	Evans St & Cascade St	6.0	Ductile Iron	120.0	True
P-148	601.42	Center St & Ski Hill Dr	Evans St & Cascade St	4.0	Cast iron	120.0	True
P-150	327.27	Center St & Ski Hill Dr	Benton St & Ski Hill Dr	6.0	Cast iron	120.0	True
P-152	277.05	Stafford St & Ski Hill Dr	Center St & Ski Hill Dr	6.0	Cast iron	120.0	True
P-154	118.37	Evans St & Ski Hill Dr	Stafford St & Ski Hill Dr	8.0	Cast iron	120.0	True
P-156	450.54	Evans St & Cascade St	Evans St & Ski Hill Dr	4.0	Cast iron	120.0	True
P-158	328.65	Evans St & Ski Hill Dr	Wheeler St & Ski Hill Dr	8.0	Steel (normal)	110.0	True
P-160	338.48	Wheeler St & Ski Hill Dr	Birch St & Ski Hill Dr	8.0	Steel (normal)	110.0	True
P-162	460.44	Birch St & Ski Hill Dr	Birch St & Cascade St	8.0	Ductile Iron	120.0	True
P-164	452.93	Pine St & Orchard St	Pine St & Central Ave	12.0	Ductile Iron	120.0	False
P-166	429.24	Birch St & Cascade St	Birch St & Orchard St	8.0	Ductile Iron	120.0	True
P-168	448.75	Birch St & Orchard St	Birch St & Central Ave	8.0	Ductile Iron	120.0	True
P-170	669.15	Birch St & Cascade St	Evans St & Cascade St	4.0	Cast iron	120.0	True

P-172	672.64	Birch St & Orchard St	Evans St & Orchard St	4.0	Cast iron	120.0	True
P-174	655.57	Pine St & Orchard St	Birch St & Orchard St	4.0	Cast iron	120.0	True
P-176	421.48	Pine St & Cascade St	Pine St & Orchard St	12.0	Ductile Iron	120.0	True
P-178	660.53	Birch St & Ski Hill Dr	Pine St & Ski Hill Dr	8.0	Ductile Iron	120.0	True
P-180	124.46	J-164	J-132	12.0	Ductile Iron	120.0	False
P-182	472.96	Pine St & Ski Hill Dr	Pine St & Cascade St	12.0	Ductile Iron	120.0	True
P-184	645.25	Pine St & Cascade St	Birch St & Cascade St	4.0	Cast iron	120.0	True
P-186	504.46	Wheeler St & Ski Hill Dr	J-146	8.0	Ductile Iron	120.0	True
P-188	446.91	J-146	Stafford St & Ogrady Rd	6.0	Ductile Iron	120.0	True
P-190	285.56	Stafford St & Ogrady Rd	Center St & Ogrady Rd	6.0	Ductile Iron	120.0	True
P-192	501.48	Center St & Ski Hill Dr	Center St & Ogrady Rd	6.0	Ductile Iron	120.0	True
P-194	135.25	Center St & Ogrady Rd	Center St & Cherry St	6.0	Steel (normal)	110.0	True
P-196	351.07	J-154	Center St & Cherry St	4.0	Steel (normal)	110.0	True
P-198	320.08	Center St & Cherry St	West St & Cherry St	4.0	Cast iron	120.0	True
P-200	667.51	Benton St & Ski Hill Dr	West St & Cherry St	4.0	Cast iron	120.0	True
P-202	711.11	West St & Cherry St	J-156	4.0	Cast iron	120.0	True
P-204	308.85	West St & Cherry St	Park Ave & Cherry St	4.0	Cast iron	120.0	True
P-206	708.43	Park Ave & Cherry St	Park Ave & Smyth St	6.0	Steel (normal)	110.0	True
P-208	624.37	Park Ave & Smyth St	Park Ave & Mtn View Dr	8.0	Steel (normal)	110.0	True
P-210	363.57	Park Ave & Mtn View Dr	Meadow Rd & Mtn View Dr	8.0	Steel (normal)	110.0	True
P-212	322.17	Park Ave & Cherry St	Prospect St & Cherry St	4.0	Steel (normal)	110.0	True
P-214	648.00	Meadow Rd & Mtn View Dr	J-156	8.0	Steel (normal)	110.0	True
P-216	274.66	J-156	J-164	12.0	Ductile Iron	120.0	True
P-218	320.90	Park Ave & Smyth St	J-156	12.0	Ductile Iron	120.0	True
P-220	712.56	Prospect St & Cherry St	Prospect St & Mine St	6.0	Steel (normal)	110.0	True
P-222	478.09	Prospect St & Whitman St	Prospect St & Cherry St	6.0	Steel (normal)	110.0	True
P-224	652.76	Prospect St & Mine St	Benton St & Mine St	12.0	Ductile Iron	120.0	True
P-226	207.65	Prospect St & Ski Hill Dr	Prospect St & Whitman St	8.0	Steel (normal)	110.0	True
P-228	322.00	Benton St & Mine St	Whitman St & Mill St	6.0	Steel (normal)	110.0	True
P-230	825.08	Prospect St & Cherry St	Benton St & Mine St	6.0	Steel (normal)	110.0	True
P-232	617.18	Whitman St & Mill St	Commercial St & Mill St	10.0	Steel (normal)	110.0	True
P-234	1,172.55	Prospect St & Whitman St	Whitman St & Mill St	8.0	Steel (normal)	110.0	True
P-236	1,060.20	Icicle Rd F	Icicle Rd & Wells	12.0	Steel (normal)	110.0	True
P-238	2,308.39	Icicle Rd & Reservoir	Icicle Rd F	12.0	Steel (normal)	110.0	True
P-240	1,129.08	Icicle Rd & Wells	Wells	24.0	Ductile Iron	120.0	True
P-242	1,720.22	Icicle Rd & Wells	Icicle Rd E	12.0	Steel (normal)	110.0	True
P-244	1,391.72	Icicle Rd E	Icicle Rd D	12.0	Steel (normal)	110.0	True
P-246	1,741.62	Icicle Rd D	Icicle Rd C	12.0	Steel (normal)	110.0	True
P-248	10,739.15	Water Treatment Plant	Icicle Rd A	16.0	Steel (normal)	120.0	True
P-250	669.14	Icicle Rd B	Icicle Rd A	16.0	Steel (normal)	120.0	True
P-252	1,213.59	East Leavenworth Rd & Icicle Rd	Icicle Rd B	16.0	Steel (normal)	120.0	True
P-254	994.68	East Leavenworth Rd & Icicle Rd	Icicle Rd C	12.0	Steel (normal)	110.0	True
P-256	1,406.50	East Leavenworth Rd & Icicle Rd	East Leavenworth Rd 2	10.0	Steel (ROUGH)	100.0	True
P-258	6,687.86	East Leavenworth Rd 2	East Leavenworth Rd & Dempsey Rd	10.0	Steel (ROUGH)	100.0	True
P-260	4,435.50	East Leavenworth Rd & Dempsey Rd	East Leavenworth Rd 1	10.0	Steel (ROUGH)	100.0	True
P-262	3,777.85	East Leavenworth Rd & Creek Cross	East Leavenworth Rd 1	16.0	Ductile Iron	120.0	True
P-264	1,574.35	East Leavenworth Rd & Dye Rd	East Leavenworth Rd & Creek Cross	12.0	Ductile Iron	120.0	True
P-266	1,551.78	East Leavenworth Rd & Creek Cross	Commercial St Alley & Division St	10.0	Cast iron	120.0	False
P-268	305.58	Park Ave & Smyth St	Prospect St & Mine St	12.0	Ductile Iron	120.0	True
P-270	343.81	Bergstrasse Rd & Ski Hill Dr	Emig Dr & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-272	1,324.19	Emig Dr & Ski Hill Dr	Emig Dr Mid	8.0	Ductile Iron	120.0	True
P-274	341.80	Detillion Rd & Titus Rd	Emig Dr & Titus Rd	12.0	Ductile Iron	120.0	True
P-278	1,311.51	Emig Dr Mid	Emig Dr & Titus Rd	8.0	Ductile Iron	120.0	False
P-280	415.60	Front St. Alley & 9th St	Front St. Alley & 10th St	6.0	Cast iron	120.0	True
P-282	437.76	Front St. Alley & 10th St	Front St & Division St	6.0	Cast iron	120.0	True
P-284	389.06	Commercial St Alley & 10th St	Commercial St Alley & Division St	8.0	Ductile Iron	120.0	True
P-286	307.23	Ski Hill BS #1	Ranger St & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-288	356.10	Pine St & Ski Hill Dr	Ski Hill BS #1	12.0	Ductile Iron	120.0	True
P-290	374.20	Ranger St & Ski Hill Dr	Zone 2 PRV A	12.0	Ductile Iron	120.0	True
P-292	421.02	Zone 2 PRV A	Pine St & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-294	648.69	Front St & 14th St	J-226	8.0	Ductile Iron	120.0	True
P-296	386.21	J-226	Chumstick Hwy & Highschool	8.0	Ductile Iron	120.0	True
P-298	649.29	East Leavenworth Rd & Dye Rd	East Leavenworth Rd & Hwy 2	12.0	Ductile Iron	120.0	True
P-300	688.82	Emig Dr Mid	J-230	8.0	Ductile Iron	120.0	False
P-302	636.11	Ranger St & Ski Hill Dr	Village View Dr & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-304	1,536.16	J-230	Village View Dr & Ski Hill Dr	8.0	Ductile Iron	120.0	False
P-306	2,220.95	J-230	J-212	8.0	Ductile Iron	120.0	False
P-308	1,321.43	Bergstrasse Rd & Ski Hill Dr	Bergstrasse Rd & Detillion Rd	12.0	Ductile Iron	120.0	True
P-310	1,319.34	Bergstrasse Rd & Detillion Rd	Detillion Rd & Titus Rd	12.0	Ductile Iron	120.0	True
P-312	1,326.22	Titus Rd NE	J-238	8.0	Ductile Iron	120.0	False
P-314	673.50	Village View Dr & Ski Hill Dr	Spring St & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-316	2,231.81	Emig Dr & Ski Hill Dr	Spring St. West	8.0	Ductile Iron	120.0	False
P-318	1,577.82	Bergstrasse Rd & Ski Hill Dr	Bergstrasse Rd West	8.0	Ductile Iron	120.0	False
P-320	621.75	Bergstrasse Rd & Ski Hill Dr	Maple St & Ski Hill Dr	8.0	Ductile Iron	120.0	False
P-322	463.62	Maple St & Ski Hill Dr	Maple St West	8.0	Ductile Iron	120.0	False
P-324	667.19	J-238	J-252	8.0	Ductile Iron	120.0	False
P-326	1,277.40	J-252	Bergstrasse Rd & Detillion Rd	8.0	Ductile Iron	120.0	False
P-328	1,305.48	J-252	Zone 4 Suction	8.0	Ductile Iron	120.0	False
P-330	630.16	Zone 4 Suction	Maple St & Ski Hill Dr	8.0	Ductile Iron	120.0	False
P-332	177.07	Zone 4 Suction	Ski Hill BS #3	10.0	Ductile Iron	120.0	False
P-334	1,177.60	Ski Hill BS #3	Zone 4 Demands	10.0	Ductile Iron	120.0	False
P-336	668.88	Titus Rd NE	J-258	8.0	Ductile Iron	120.0	False
P-338	1,334.53	J-252	J-258	8.0	Ductile Iron	120.0	False
P-340	1,314.29	J-258	J-260	8.0	Ductile Iron	120.0	False
P-342	670.72	J-260	J-262	8.0	Ductile Iron	120.0	False
P-344	1,313.96	J-262	Titus Rd NE	8.0	Ductile Iron	120.0	False
P-346	1,201.15	Chumstick Hwy & County Shop Rd	Chumstick Hwy & Meadowlark	12.0	Ductile Iron	120.0	False
P-348	704.60	J-212	Zone 2 PRV B	8.0	Ductile Iron	120.0	True
P-350	380.00	Zone 2 PRV B	Titus Rd & Highschool	8.0	Ductile Iron	120.0	True
P-352	609.77	J-258	Zone 3 PRV B	8.0	Ductile Iron	120.0	False
P-354	678.01	Zone 3 PRV B	Detillion Rd & Titus Rd	8.0	Ductile Iron	120.0	False

P-358	479.52	Front St & Division St	Front St & 10th St	12.0	Ductile Iron	120.0	True
P-360	420.80	Front St & 10th St	Front St & 9th St	12.0	Ductile Iron	120.0	False
P-362	422.26	Front St & 9th St	Front St & 8th St	12.0	Ductile Iron	120.0	False
P-362	139.79	Front St & 9th St	Front St. Alley & 9th St	8.0	Ductile Iron	120.0	False
P-364	136.54	Front St & 10th St	Front St. Alley & 10th St	8.0	Ductile Iron	120.0	True
P-366	151.40	Front St. Alley & 9th St	Commercial St & 9th St	12.0	Ductile Iron	120.0	True
P-368	416.14	Commercial St & 8th St	Commercial St & 9th St	12.0	Ductile Iron	120.0	True
P-372	149.40	Front St Alley & 8th St	Commercial St & 8th St	12.0	Ductile Iron	120.0	True
P-374	500.54	Front St & Division St	Hwy 2 near 12th St	10.0	Steel (normal)	110.0	True
P-376	972.96	Front St & 8th St	J-034	8.0	Ductile Iron	120.0	True
P-378	1,656.02	J-014	J-010	8.0	Ductile Iron	120.0	True
P-380	1,315.96	Ranger St & Ski Hill Dr	Ranger St Mid	8.0	Ductile Iron	120.0	False
P-382	970.95	Ranger St Mid	Ranger St West	8.0	Ductile Iron	120.0	False
P-384	1,619.24	Ranger St Mid	Wheeler St West	8.0	Ductile Iron	120.0	False
P-386	504.21	Stafford St & Ogrady Rd	Stafford St & Ski Hill Dr	6.0	Ductile Iron	120.0	True
P-388	159.47	Emig Dr & Ski Hill Dr	Zone 3 PRV A	12.0	Ductile Iron	120.0	True
P-390	165.05	Zone 3 PRV A	Spring St & Ski Hill Dr	12.0	Ductile Iron	120.0	True
P-392	693.03	Zone 4 Suction	Titus Rd & Ski Hill Dr	8.0	Ductile Iron	120.0	False
P-394	1,317.24	Titus Rd & Ski Hill Dr	J-238	8.0	Ductile Iron	120.0	False
P-396	249.31	Zone 2 Tank (0.75 MG)	Ski Hill BS #2	12.0	Ductile Iron	120.0	False
P-398	374.47	Ski Hill BS #2	Zone 4 Suction	12.0	Ductile Iron	120.0	False
P-400	774.01	Zone 3 Tank	Titus Rd & Ski Hill Dr	12.0	Ductile Iron	120.0	False
P-402	2,722.98	Spring St & Ski Hill Dr	Zone 2 Tank (0.75 MG)	16.0	Ductile Iron	120.0	True
P-404	594.87	J-164	Tumwater Dr & Mtn View Dr	8.0	Steel (normal)	110.0	True
P-406	203.74	Tumwater Dr & Mtn View Dr	Meadow Rd & Mtn View Dr	8.0	Steel (normal)	110.0	True
P-408	676.39	J-132	Wheeler St West	8.0	Ductile Iron	120.0	False
P-410	213.33	Emig Dr & Titus Rd	Titus Rd & Meadowlark	8.0	Ductile Iron	120.0	True
P-412	352.08	Titus Rd & Meadowlark	J-212	8.0	Ductile Iron	120.0	True
P-414	682.16	Titus Rd & Meadowlark	Zone 2 PRV C	12.0	Ductile Iron	120.0	False
P-416	1,208.12	Zone 2 PRV C	Chumstick Hwy & Meadowlark	12.0	Ductile Iron	120.0	False
P-418	2,683.84	Village View Dr & Ski Hill Dr	Ranger St West	8.0	Ductile Iron	120.0	False
P-420	752.85	Bergstrasse Rd West	Spring St. West	8.0	Ductile Iron	120.0	False
P-422	960.08	East Leavenworth Rd & Creek Cross	Future Main Zone Res	18.0	Ductile Iron	120.0	False
P-424	139.63	Commercial St & 9th St	Commercial St Alley & 9th St	12.0	Ductile Iron	120.0	True
P-426	458.57	Commercial St Alley & 9th St	Commercial St Alley & 10th St	12.0	Ductile Iron	120.0	True
P-428	326.96	Commercial St & 8th St	Main St & 8th St	12.0	Ductile Iron	120.0	True
P-430	200.05	Main St & 8th St	Main St & Hospital	12.0	Ductile Iron	120.0	True
P-432	167.09	Commercial St Alley & 9th St	Main St & 9th St	12.0	Ductile Iron	120.0	True
P-434	362.32	Front St & 13th St	Front St & 12th St	12.0	Ductile Iron	120.0	True
P-436	436.58	Front St & 12th St	Front St & Division St	12.0	Ductile Iron	120.0	True
P-438	441.30	Commercial St Alley & Division St	Commercial St & 12th St	6.0	Cast iron	120.0	True
P-440	333.14	Commercial St & 12th St	Commercial St & 13th St	6.0	Cast iron	120.0	True
P-442	168.62	Front St & Division St	J-278	12.0	Ductile Iron	120.0	True
P-443	159.73	J-278	Commercial St Alley & Division St	10.0	Steel (normal)	110.0	True
P-444	71.36	Safeway	Hampton Suites NW	16.0	Ductile Iron	120.0	True
P-445	735.08	Hampton Suites NW	Hampton Suites SE	12.0	Ductile Iron	120.0	True
P-446	757.92	Hampton Suites SE	Hampton Suites NW	12.0	Ductile Iron	120.0	True
P-447	197.74	East Leavenworth Rd & Hwy 2	FF Calibration 1	12.0	Ductile Iron	120.0	True
P-448	365.73	FF Calibration 1	Hwy 2 & Riverbend Dr	12.0	Ductile Iron	120.0	True
P-449	102.50	Benton St & Ski Hill Dr	FF Calibration 2	6.0	Cast iron	120.0	True
P-450	1,029.13	FF Calibration 2	Evans St & Orchard St	6.0	Cast iron	120.0	True
P-452	815.88	Safeway	J-284	12.0	Ductile Iron	120.0	True
P-455	1,153.12	J-284	J-289	10.0	Ductile Iron	120.0	True
P-457	403.26	J-289	J-291	8.0	Ductile Iron	120.0	True
P-458	155.68	J-289	J-292	8.0	Ductile Iron	120.0	True
P-459	312.04	J-292	J-290	8.0	Ductile Iron	120.0	True
WTP	365.27	Icicle Creek Clearwell	Water Treatment Plant	16.0	Ductile Iron	120.0	True

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Scenario: Current PHD
 Current Time Step: 0.000Hr
 FlexTable: PRV Table

ID	Label	Elevation (ft)	Diameter (Valve) (in)	Minor Loss Coefficient (Local)	Hydraulic Grade Setting (Initial) (ft)	Pressure Setting (Initial) (psi)	Flow (gpm)	Hydraulic Grade (From) (ft)	Hydraulic Grade (To) (ft)	Headloss (ft)
321	Zone 2 PRV A	1,210.00	8.0	0.000	1,290.00	0.0	0	1,421.37	1,295.28	0.00
322	Zone 2 PRV B	1,200.00	8.0	0.000	1,290.00	0.0	0	1,420.65	1,298.20	0.00
323	Zone 3 PRV B	1,300.00	8.0	0.000	1,380.00	0.0	(N/A)	(N/A)	(N/A)	(N/A)
324	Zone 3 PRV A	1,300.00	6.0	0.000	1,380.00	0.0	-99	1,420.69	1,420.69	0.00
325	Zone 2 PRV C	1,200.00	6.0	0.000	1,290.00	0.0	(N/A)	(N/A)	(N/A)	(N/A)

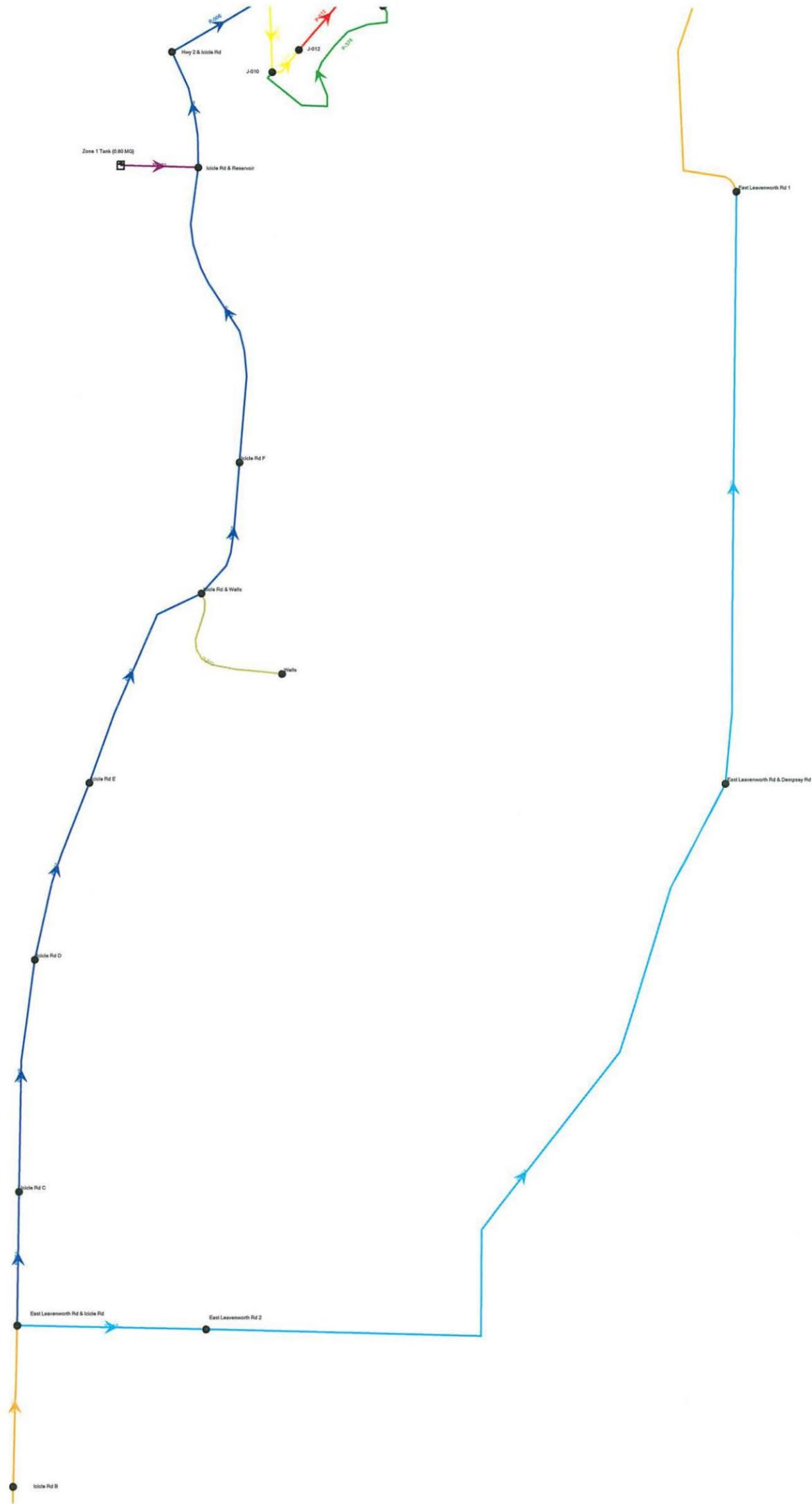
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Scenario: Current PHD
Current Time Step: 0.000Hr
FlexTable: Tank Table

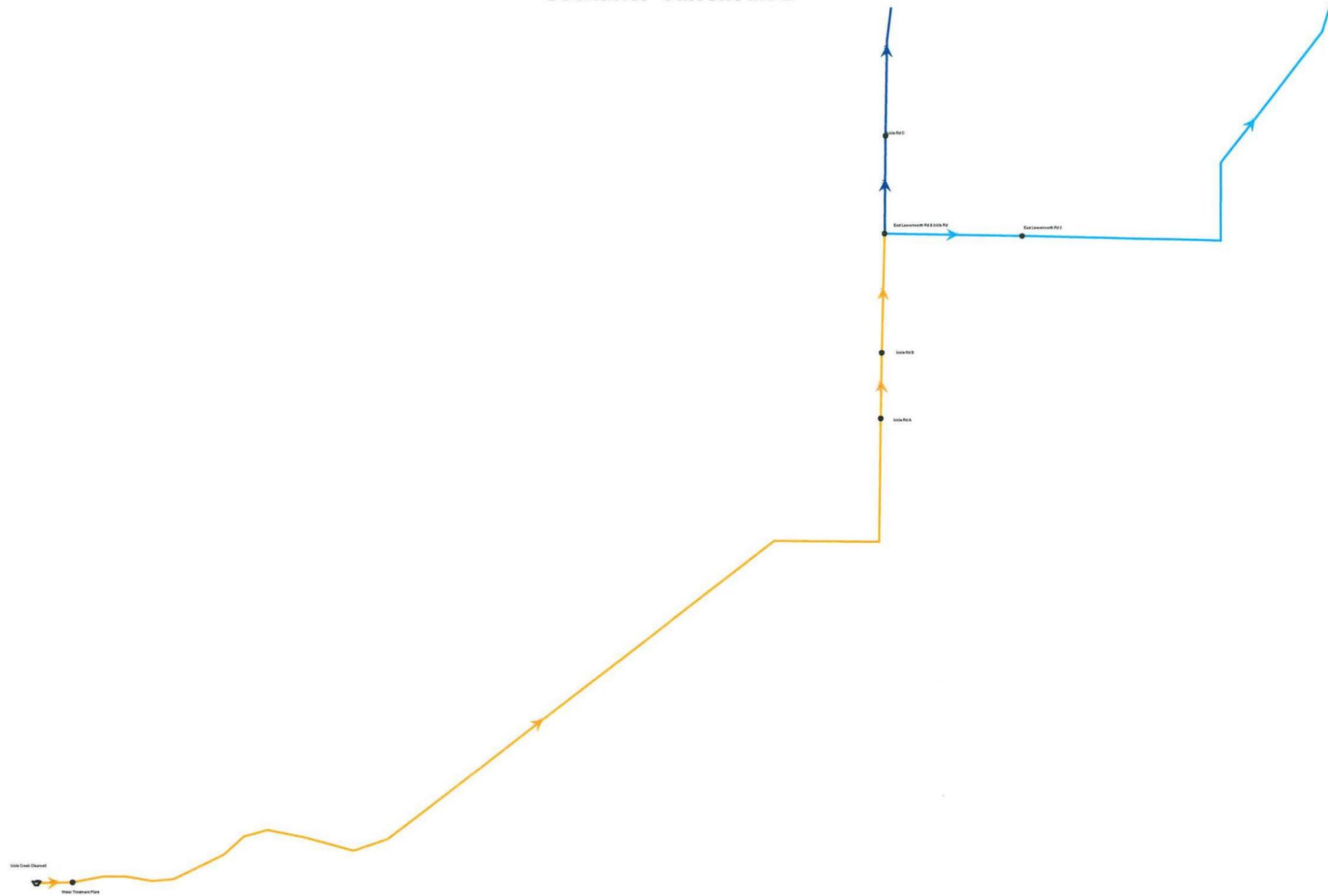
Label	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Maximum) (ft)	Flow (In net) (gpm)	Status (Calculated)	Hydraulic Grade (ft)	Percent Full (%)
Zone 1 Tank (0.80 MG)	1,322.50	1,322.50	1,341.00	336	Filling	1,338.50	86.5
Zone 2 Tank (0.75 MG)	1,400.50	1,400.50	1,423.75	291	Filling	1,420.50	86.0
Zone 3 Tank	1,496.00	1,496.00	1,520.00	(N/A)	<None>	(N/A)	(N/A)
Future Main Zone Res	1,312.00	1,312.00	1,336.00	(N/A)	<None>	(N/A)	(N/A)

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Scenario: Current MDD



Scenario: Current MDD



APPENDIX F

Improvement Cost Estimates

Improvement Designation: 1-A

Description: mains in Icicle Rd from East Leavenworth Rd to connection w/ well field

Length of new/replacement mains: 5,800 LF

Diameter of new/replacement mains: 16 in

Cost per LF: \$ 122

Subtotal for Construction: \$ 707,600

Taxes: \$ 59,438 (tax rate) 8.4%

Engineering (des., insp., constr. admin.): \$ 176,900 (rate) 25%

Contingencies: \$ 141,520 (rate) 20%

Total: \$ 1,090,000 (rounded to nearest \$10,000)

Assumptions:

Project timed with County road project - no asphalt replacement required

Improvement Designation: 1-B

Description: Icicle Rd from well t-main to Icicle Reservoir

Length of new/replacement mains: 3,400 LF

Diameter of new/replacement mains: 18 in

Cost per LF: \$ 134

Subtotal for Construction: \$ 455,600

Taxes: \$ 38,270 (tax rate) 8.4%

Engineering (des., insp., constr. admin.): \$ 113,900 (rate) 25%

Contingencies: \$ 91,120 (rate) 20%

Total: \$ 700,000 (rounded to nearest \$10,000)

Assumptions:

Project timed with County road project - no asphalt replacement required

Description: Icicle Rd from Icicle Reservoir to Commercial St & Mill St

Length of new/replacement mains: 2,000 LF

Diameter of new/replacement mains: 20 in

Cost per LF: \$ 170

Subtotal for Construction: \$ 340,000

Taxes: \$ 28,560 (tax rate) 8.4%

Engineering (des., insp., constr. admin.): \$ 85,000 (rate) 25%

Contingencies: \$ 68,000 (rate) 20%

Total: \$ 520,000 (rounded to nearest \$10,000)

Assumptions:

Asphalt replacement required

Improvement Designation: 1-C

Description: East Leavenworth Rd from Icicle Rd to Dye Rd

Length of new/replacement mains: 12,000 LF
Diameter of new/replacement mains: 12 in
Cost per LF: \$ 92

Subtotal for Construction: \$ 1,104,000
Taxes: \$ 92,736 (tax rate) 8.4%
Engineering (des., insp., constr. admin.): \$ 276,000 (rate) 25%
Contingencies: \$ 220,800 (rate) 20%
Total: \$ 1,700,000 (rounded to nearest \$100,000)

Assumptions:

Project timed with County road project - no asphalt replacement required

Description: East Leavenworth Rd from Icicle Rd to Dye Rd

Length of new/replacement mains: 12,000 LF
Diameter of new/replacement mains: 16 in
Cost per LF: \$ 122

Subtotal for Construction: \$ 1,464,000
Taxes: \$ 122,976 (tax rate) 8.4%
Engineering (des., insp., constr. admin.): \$ 366,000 (rate) 25%
Contingencies: \$ 292,800 (rate) 20%
Total: \$ 2,200,000 (rounded to nearest \$100,000)

Assumptions:

Project timed with County road project - no asphalt replacement required

Improvement Designation: 2

Description: Commercial St from Mill St to 3rd St

Length of new/replacement mains: 1,400 LF
Diameter of new/replacement mains: 18 in
Cost per LF: \$ 154

Subtotal for Construction: \$ 215,600
Taxes: \$ 18,110 (tax rate) 8.4%
Engineering (des., insp., constr. admin.): \$ 53,900 (rate) 25%
Contingencies: \$ 43,120 (rate) 20%
Total: \$ 330,000 (rounded to nearest \$10,000)

Assumptions:

Asphalt replacement required

Description: Front St from 8th St to between 9th and 10th St

Length of new/replacement mains: 800 LF
Diameter of new/replacement mains: 12 in
Cost per LF: \$ 112

Subtotal for Construction: \$ 89,600
Taxes: \$ 7,526 (tax rate) 8.4%
Engineering (des., insp., constr. admin.): \$ 22,400 (rate) 25%
Contingencies: \$ 17,920 (rate) 20%
Total: \$ 140,000 (rounded to nearest \$10,000)

Assumptions:

Asphalt replacement required

Description: Commercial St from Division St to 14th St

Length of new/replacement mains: 1,300 LF
Diameter of new/replacement mains: 12 in
Cost per LF: \$ 112

Subtotal for Construction: \$ 145,600
Taxes: \$ 12,230 (tax rate) 8.4%
Engineering (des., insp., constr. admin.): \$ 36,400 (rate) 25%
Contingencies: \$ 29,120 (rate) 20%
Total: \$ 220,000 (rounded to nearest \$10,000)

Assumptions:

Asphalt replacement required

Improvement Designation: 3

Description: Ski Hill Dr from downtown to Zone 2 booster

Length of new/replacement mains: 3,300 LF

Diameter of new/replacement mains: 12 in

Cost per LF: \$ 112

Subtotal for Construction: \$ 369,600

Taxes: \$ 31,046 (tax rate) 8.4%

Engineering (des., insp., constr. admin.): \$ 92,400 (rate) 25%

Contingencies: \$ 73,920 (rate) 20%

Total: \$ 570,000 (rounded to nearest \$10,000)

Assumptions:

Asphalt replacement required

Description: Pine St from Central Ave to Burke Ave

Length of new/replacement mains: 1,400 LF

Diameter of new/replacement mains: 12 in

Cost per LF: \$ 112

Subtotal for Construction: \$ 156,800

Taxes: \$ 13,171 (tax rate) 8.4%

Engineering (des., insp., constr. admin.): \$ 39,200 (rate) 25%

Contingencies: \$ 31,360 (rate) 20%

Total: \$ 240,000 (rounded to nearest \$10,000)

Assumptions:

Asphalt replacement required

Improvement Designation: 5

Description: Mains and PRV connecting Zone 2 to Zone 1 at Chumstick Highway

Length of new/replacement mains: 3,200 LF

Diameter of new/replacement mains: 12 in

Cost per LF: \$ 92

Cost per LF (w/asphalt replacement): \$ 112

Subtotal for Construction (main): \$ 310,400

Add'd Const. Costs (PRVs, etc.) \$ 50,000

Taxes: \$ 26,074 (tax rate) 8.4%

Engineering (des., insp., constr. admin.): \$ 77,600 (rate) 25%

Contingencies: \$ 62,080 (rate) 20%

Total: \$ 530,000 (rounded to nearest \$10,000)

Assumptions:

Partial asphalt replacement required (assume 25%)

Improvement Designation: 7

Description: replace deteriorated 16" main from WTP

Length of new/replacement mains: 12,400 LF

Diameter of new/replacement mains: 18 in

Cost per LF: \$ 134

Subtotal for Construction: \$ 1,661,600

Taxes: \$ 139,574 (tax rate) 8.4%

Engineering (des., insp., constr. admin.): \$ 415,400 (rate) 25%

Contingencies: \$ 332,320 (rate) 20%

Total: \$ 2,500,000 (rounded to nearest \$100,000)

Assumptions:

Project timed with County road project - no asphalt replacement required

Improvement Designation: N/A

Description: replace all 4" mains with 8"

Length of new/replacement mains: 9,200 LF

Diameter of new/replacement mains: 8 in

Cost per LF: \$ 105

Subtotal for Construction: \$ 966,000

Taxes: \$ 78,246 (tax rate) 8.1%

Engineering (des., insp., constr. admin.): \$ 241,500 (rate) 25%

Contingencies: \$ 193,200 (rate) 20%

Total: \$ 1,480,000 (rounded to nearest \$10,000)

Assumptions:

Asphalt replacement required

APPENDIX G

State Environmental Policy Act (SEPA) Documentation

WAC 197-11-970 Determination of nonsignificance (DNS).

DETERMINATION OF NONSIGNIFICANCE

Description of proposal: Adoption of amendments to the City of Leavenworth's Water System Plan

Proponent: City of Leavenworth

Location of proposal, including street address, if any: The updated plan will apply within the City limits, it's urban growth area and within unincorporated areas where more remote facilities such as reservoirs, the water treatment plant, and appurtenant infrastructure are located.

Lead agency: City of Leavenworth

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.

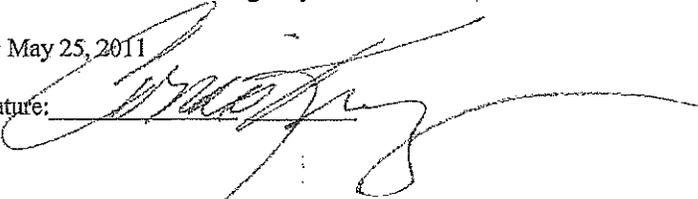
This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by June 8, 2011.

Responsible official: Connie Krueger, AICP

Position/title: Director of Economic Development and Community Services
Phone. 509-548-5275

Address: PO Box 287/700 Highway 2 Leavenworth, WA 98826

Date: May 25, 2011

Signature: 

This determination may be appealed to the City of Leavenworth's Hearing Examiner by submitting written notice meeting the requirements of the Leavenworth Municipal Code. Please contact the City to read or ask about the procedures for SEPA appeals. Appeals shall be filed with all required materials no later than 5:00 p.m. on June 15, 2011 at 700 Highway 2/PO Box 287 Leavenworth, WA 98826. Only the final threshold determination may be appealed. Only those persons who submit written comments during the comment period may appeal the threshold determination.

CITY OF LEAVENWORTH
WATER SYSTEM PLAN - DECEMBER 2010

ENVIRONMENTAL CHECKLIST

Purpose of checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

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.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable:

Adoption of an Updated Water System Plan

2. Name of applicant:

City of Leavenworth

3. Address and phone number of applicant and contact person:

Dave Schettler - Public Works Director, P.O. Box 287, Leavenworth, WA 98826, 509-548-5275.

4. Date checklist prepared:

May 18, 2011

5. Agency requesting checklist:

Washington State Department of Health

6. Proposed timing or schedule (including phasing, if applicable):

The Water System Plan describes capital improvements that will occur over the next 20 years or so; this checklist covers the plan itself, not the capital improvements described therein. Hence description of project timing is not applicable.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Yes, the Capital Facilities Plan covers a 20 year planning period during which the City plans to implement capital improvements.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

An update to the City's 2002 Water System Plan has been prepared.

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.

The Water System Plan itself does not affect property; subsequent plans resulting from the Water System Plan may affect property.

10. List any government approvals or permits that will be needed for your proposal, if known.

- Department of Health's approval of the Water System Plan update.

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.)

The Water System Plan is a non-project action; it is a planning document that identifies the City's water system deficiencies and corresponding improvement alternatives. This WSP is in compliance with Washington State DOH requirements and has been prepared in accordance with the WAC 246-290 and the Water System Design Manual.

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.

The City of Leavenworth's water service area is located in the Wenatchee River and Icicle Creek Valleys within Chelan County, in Township 24N, Ranges 17E and 18E. A detailed map is included in the Water System Plan update.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other

Not applicable.

b. What is the steepest slope on the site (approximate percent slope)?

Not applicable.

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 prime farmland.

Not applicable.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Not applicable.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Not applicable. If implemented certain improvements proposed by the plan may cause impact.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Not applicable. If implemented certain improvements proposed by the plan may cause impact.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Not applicable. If implemented certain improvements proposed by the plan may impervious surface cover.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Not applicable. If implemented improvements proposed by the plan may cause impact. Future projects proposed in the WSP will include compliance with environmental review requirements.

2. Air

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Not applicable. Future project proposed in the WSP will include compliance with environmental review requirements including WAC 173-400-040 (General Standards for Maximum Emissions).

3. Water

a. Surface:

- 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.

The scope of work for this project includes planning activities only; there is no project "site". Icicle Creek and the Wenatchee River bisects the City's water service boundary and may be in the vicinity of future projects discussed in the WSP.

- 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.

The scope of work for this project includes planning activities only; there is no project "site".

- 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.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

- 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.

No. The scope of work for this project includes planning activities only. If implemented, improvements to the plan may cause impact.

b. Ground:

- 1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

The City currently withdraws water under a current water right. However, the Water System Plan does not directly affect water rights.

- 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.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

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.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

- 2) Could waste materials enter ground or surface waters? If so, generally describe.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

- d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Not applicable. Future projects proposed in the WSP will include compliance with environmental review requirements.

4. Plants

- a. Check or circle types of vegetation found on the site:

Not applicable.

- _____ deciduous tree: alder, maple, aspen, other
_____ evergreen tree: fir, cedar, pine, other
_____ shrubs
_____ grass
_____ pasture
_____ crop or grain
_____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
_____ water plants: water lily, eelgrass, milfoil, other
_____ other types of vegetation

- b. What kind and amount of vegetation will be removed or altered?

Not applicable. If implemented, improvements proposed by the plan may cause impact.

- c. List threatened or endangered species known to be on or near the site.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Not applicable. If implemented, improvements proposed by the plan may cause impact.

5. Animals

- a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

Not applicable. The scope of work for this project includes planning activities only; there is no project "site". The following birds and animals have been observed within the City's water service boundary.

birds: hawk, heron, eagle, songbirds, other:

mammals: deer, bear, elk, beaver, other:

fish: bass, salmon, trout, herring, shellfish, other:

- b. List any threatened or endangered species known to be on or near the site.

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

c. Is the site part of a migration route? If so, explain.

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

d. Proposed measures to preserve or enhance wildlife, if any:

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

6. Energy and natural resources

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.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

b. Would your project affect the potential use of solar energy by adjacent properties?

If so, generally describe.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

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:

Not applicable. If implemented, improvements proposed by the plan may cause impact.

7. Environmental health

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.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

1) Describe special emergency services that might be required.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

2) Proposed measures to reduce or control environmental health hazards, if any:

Not applicable. If implemented, future projects proposed in the WSP will include compliance with environmental review requirements.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Not applicable. If implemented, improvements proposed by the plan may cause impact.

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.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

3) Proposed measures to reduce or control noise impacts, if any:

Not applicable. If implemented, improvements proposed by the plan may cause impact. If implemented, future projects proposed in the WSP will include compliance with environmental review requirements.

8. Land and shoreline use

a. What is the current use of the site and adjacent properties?

The scope of work for this project includes planning activities only; there is no project "site". Land use throughout the City' water service boundary varies.

b. Has the site been used for agriculture? If so, describe.

The scope of work for this project includes planning activities only; there is no project "site". Portions of the City' water service boundary have been or are currently used for agriculture.

c. Describe any structures on the site.

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

d. Will any structures be demolished? If so, what?

Not applicable. If implemented, improvements proposed by the plan may cause impact.

e. What is the current zoning classification of the site?

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

f. What is the current comprehensive plan designation of the site?

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

i. Approximately how many people would reside or work in the completed project?

The Water System Plan does not involve the construction of a facility/structure. The City's current water service residential population is approximately 3,020.

j. Approximately how many people would the completed project displace?

is no project site.

Not applicable because there

k. Proposed measures to avoid or reduce displacement impacts, if any: Not applicable because there is no project site.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: The City has coordinated the Water System Plan with area planning agencies (Chelan County and Peshastin)

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. None.

c. Proposed measures to reduce or control housing impacts, if any: None.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?
Not applicable. If implemented, improvements proposed by the plan may cause impact.

b. What views in the immediate vicinity would be altered or obstructed?
Not applicable. If implemented, improvements proposed by the plan may cause impact.

c. Proposed measures to reduce or control aesthetic impacts, if any:
Not applicable. If implemented, future projects proposed in the WSP will include compliance with environmental review requirements.

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
Not applicable. If implemented, improvements proposed by the plan may cause impact.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
Not applicable. If implemented, improvements proposed by the plan may cause impact.

c. What existing off-site sources of light or glare may affect your proposal?
Not applicable. If implemented, improvements proposed by the plan may cause impact.

d. Proposed measures to reduce or control light and glare impacts, if any:

Not applicable. If implemented, future projects proposed in the WSP will include compliance with environmental review requirements.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Hiking, biking, fishing, and boating take place on or near Icicle Creek and the Wenatchee River which divide the City's water service boundary area. There are several recreation-designated locations, such as parks located throughout the City's water service boundary area.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Not applicable. If implemented, future projects proposed in the WSP will include compliance with environmental review requirements.

13. Historic and cultural preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

c. Proposed measures to reduce or control impacts, if any:

Not applicable. If implemented, future projects proposed in the WSP will include compliance with environmental review requirements, including Executive Order 05-05 and if federal monies become involved, Section 106 review(s).

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop? **Not applicable. The scope of work for this project includes planning activities only; there is no project "site".**

c. How many parking spaces would the completed project have? How many would the project eliminate?

Not applicable. If implemented, improvements proposed by the plan may cause impact and could either create or eliminate some parking.

- d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

Not applicable. If implemented, improvements proposed by the plan may cause impact.

- e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Not applicable. If implemented, improvements proposed by the plan are unlikely to involve such transportation.

- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

Not applicable. If implemented, improvements proposed by the plan may cause impact.

- g. Proposed measures to reduce or control transportation impacts, if any:

Not applicable. If implemented, future projects proposed in the WSP will include compliance with environmental review requirements.

15. Public services

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

Not applicable. If implemented, improvements proposed by the plan may result in an increased need for public services.

- b. Proposed measures to reduce or control direct impacts on public services, if any.

Not applicable. The WSP has planned for a population growth for a 20-year period.

16. Utilities

- a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

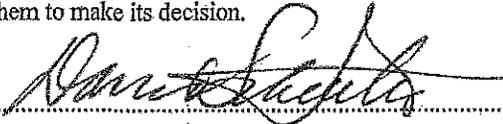
Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

- b. 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.

Not applicable. The scope of work for this project includes planning activities only; there is no project "site".

C. SIGNATURE

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: 

Date Submitted: *May 23, 2011*

D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS

(do not use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

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?

The proposal is to adopt the City's Water System Plan update, dated December 2010, which provides for a plan for continued and improved public water service. It is unlikely the adoption of the WSP will increase the production, storage, or release of toxic or hazardous substances or long-term noise production. If water system improvement projects in the WSP are implemented noise and emissions to air would temporarily increase during construction.

Proposed measures to avoid or reduce such increases are:

- a. **Compliance with environmental review and implementation requirements applicable to water system improvement projects included in the WSP (i.e., SEPA and in some cases NEPA).**
- b. **Requiring private and public project proposals in the water system service area to comply with the applicable environmental review and implementation regulations.**
- c. **Obtaining permits for the water system improvements projects in the WSP from agencies with jurisdiction applicable to water quality, air quality, noise, and toxic or hazardous substances (i.e., Department of Ecology, Department of Health, Army Corps, etc.)**
- d. **Requiring control measures during construction of water system improvements projects in the WSP and requiring contractors of same to be responsible for implementing appropriate measures during construction in compliance with environmental regulations, including those related to air emissions, noise and discharge to water and production, storage, or release of toxic or hazardous substances.**

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

If adopted, the WSP will facilitate growth resulting from the provision of continued and improved public water service. Therefore, the adoption of the WSP could indirectly affect plants, animals, fish or marine life. In addition, water system improvement projects included in the WSP could have a direct impact on these environmental elements.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

- a. **Compliance with environmental review and implementation requirements applicable to water system improvement projects included in the WSP (i.e., SEPA and in some cases, NEPA).**
- b. **Requiring private and public project proposals in the water system service area to comply with applicable environmental review and implementation regulations.**

- c. Requiring contractors of water system improvement projects in the WSP to be responsible for implementing appropriate measures during construction in compliance with environmental regulations, including those related to the protection and conservation of plants, animals, fish, or marine life.
- d. Obtaining permits for water system improvement projects included in the WSP from agencies with jurisdiction applicable to the protection and conservation of plants, animals, fish, or marine life (i.e. Dept. of Ecology, Army Corps of Engineers, etc.).

3. How would the proposal be likely to deplete energy or natural resources?

If adopted, the WSP will facilitate growth resulting from the provision of continued and improved public water service. Therefore, adoption of the WSP could indirectly affect energy or natural resources. In addition, water system improvement projects included in the WSP could have a direct impact on the same environmental elements.

Proposed measures to protect or conserve energy and natural resources are:

- a. Measures may include public conservation education and use of energy efficient materials when economically and otherwise feasible.
- b. Compliance with environmental review and implementation requirements applicable to water system improvement projects included in the WSP (i.e., SEPA and in some cases, NEPA).
- c. Requiring private and public proposals in the water system service area to comply with applicable environmental review and implementation regulations.
- d. Requiring contractors to be responsible for implementing appropriate measures during construction in compliance with environmental regulations, including those related to the protection and conservation of energy and natural resources.
- e. Obtaining permits for water system improvement projects included in the WSP from agencies with jurisdiction applicable to the protection and conservation of energy and natural resources (i.e. Wa. Dept. of Natural Resources, ECY, DOH, etc.).

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 City of Leavenworth is unaware of any environmentally sensitive areas in its water service area. The City believes it is unlikely that adoption of the WSP will impact environmentally sensitive areas.

Proposed measures to protect such resources or to avoid or reduce impacts are:

- a. Compliance with environmental review and implementation requirements applicable to water system improvement projects included in the WSP (i.e. SEPA and in some cases NEPA).
- b. Compliance with Chelan County critical areas regulations, including regulation of wetlands and floodplains.
- c. Requiring private and public project proposals in the water system service area to comply with applicable environmental review and implementation regulations.

- d. Obtaining permits from agencies with jurisdiction applicable to water system improvement projects included in the WSP, including those related to environmentally sensitive areas (i.e. Dept. of Ecology, Army Corp of Engineers, etc.).
- e. Requiring contractors of water system improvement projects in the WSP to be responsible for implementing appropriate measures during construction in compliance with environmental regulations, including environmentally sensitive areas or areas designated or eligible or under study for governmental protection.

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?

If adopted, the WSP will facilitate growth resulting from the provision of continued and improved public water service. Therefore, adoption of the WSP could indirectly affect land and shoreline use. In addition, water system improvement projects included in the WSP could have a direct impact on the same environmental elements.

Proposed measures to avoid or reduce shoreline and land use impacts are:

- a. The City will follow applicable Comprehensive Plans (Chelan County, City of Leavenworth, etc.) which include land use and shoreline policies.
- b. Compliance with environmental review and implementation requirements applicable to water system improvement projects included in the WSP (i.e., SEPA and in some cases, NEPA).
- c. Requiring private and public project proposals in the water system service area to comply with applicable environmental review and implementation regulations.
- d. Requiring contractors of water system improvement projects in the WSP to be responsible for implementing appropriate measures during construction in compliance with land and shoreline policies and environmental regulations.
- e. Obtaining permits for water system improvement projects included in the WSP from agencies with jurisdiction of land and shoreline use.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

If adopted, the WSP will facilitate growth resulting from the provision of continued and improved public water service. Therefore, adoption of the WSP could indirectly increase demands on transportation or public services and utilities. In addition, water system improvement projects included in the WSP could have a direct impact on the same public demands.

Proposed measures to reduce or respond to such demand(s) are:

- a. The City of Leavenworth and Chelan County residents have sewer and wastewater facilities in the vicinity of the City of Leavenworth's water service area. The City will continue to comply with State and Federal wastewater regulations when appropriate when planning water system improvements.
- b. Following plans, priorities, guidelines, and rules in applicable Comprehensive Plans (Chelan County and City of Leavenworth, etc.)

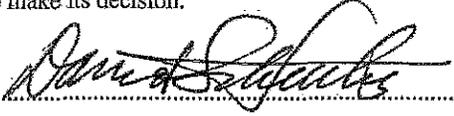
- c. Requiring private and public project proposals in the water system service area to comply with existing plans, including Chelan County and the City of Leavenworth Comprehensive Plan, and comply with applicable review and implementation regulations.
- d. Obtaining permits for public works projects from agencies with jurisdiction over transportation, public services and utilities.
- e. Compliance with environmental review and implementation requirements applicable to water system improvement projects included in the WSP (i.e., SEPA and in some cases NEPA).

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The Washington State Department of Health must approve the WSP. In addition, the City will comply with environmental review and implementation requirements applicable to water system improvement projects included in the WSP. Therefore, the proposal to adopt the City of Leavenworth's WSP to provide continued and improved public water service is unlikely to conflict with local, state, or federal laws or requirements for the protection of the environment.

E. SIGNATURE

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: 

Date Submitted: 