CHAPTER 6 - OPERATION AND MAINTENANCE PROGRAM

6.1 WATER SYSTEM MANAGEMENT AND PERSONNEL

The purpose of this section is to identify personnel responsible for the day-to-day operation of the water system and those positions responsible for development and/or approval of the operating budget and capital improvement program.

Water System Management Structure

Figure 6-1 Water System Organizational Chart, is a flow chart which depicts the management hierarchy of Selah's water system. Brief descriptions of the general responsibilities of each position identified in Figure 6-1 are listed below:

Mayor and City Council: Responsible for establishing all water system policies, including service area boundaries, user rate structures, water system personnel salaries, water department budget, and capital improvements. Approves all expenditures.

City Administrator: Reviews all water system policy changes and expenditures, approves all personnel hiring, and advises Public Works Director on general water department operation.

Public Works Director: Responsible for the direct coordination of all day-to-day water system operation and maintenance tasks. Reports on the status and needs of the water system to the City Administrator, Mayor and City Council. Prepares annual water department budget. Establishes staff job descriptions and requirements, and recommends hiring of personnel. Serves as public and press contact regarding water system information.

City Clerk-Treasurer: Responsible for supervision of utility billings and budgeting preparation. Allocates funds for approved expenditures.

Utility Billing Clerk: Responsible for entering water meter reading data into the computer, generating monthly water billings, and maintaining water consumption records.

Consulting Engineer: Assists City in long-range planning; aids Public Works Director in technical aspects of water system; and provides design engineering and construction services for capital improvements.

Public Works Supervisor: Responsible for managing and assisting in the operation, maintenance, and preventive maintenance of water system facilities; providing supportive recommendations for policies, procedures, and improvements to the department, budget preparation, and future facilities; and training subordinate employees in aspects and functions of field operations. Must be capable of operating or learning to operate every tool, piece of machinery, and equipment within the Utility Department and must have a working knowledge of all types of materials, i.e., pipes, valves, and pumps. Must have a High School Diploma, and a minimum of five years experience in the public works field with three years in a supervisory position. Must maintain a valid Class II or better Washington State Water Distribution Manger Certificate.

Utility Worker Lead: Responsible for supervising subordinate field personnel; assisting in the operation, maintenance, and preventive maintenance of water system facilities; providing supportive recommendations for policies, procedures, and improvements to the department, personnel issues, and future facilities; and training subordinate employees in aspects and functions of field operations. Must be capable of operating or learning to operate every tool, piece of machinery, and equipment within the Utility Department and must have a working knowledge of all types of materials, i.e., pipes, valves, and pumps. Must have a High School Diploma, a minimum of five years experience in the public works field with three years in a supervisory position. Must maintain a valid Class II, or better, Washington State Water Distribution Manager Certificate.

Utility Worker III: Responsible for maintaining a complete knowledge of all aspects of the operation, maintenance, preventive maintenance, policies, procedures, and safety aspects of water system facilities. Must be capable of performing all duties required without direction or supervision and shall have the ability to supervise subordinate staff effectively. Must maintain a valid Washington State

Water Distribution Specialist Class II Certificate or better. Minimum experience shall be five years in the public works field with two years in a supervisory role.

Utility Worker II: Responsible for having knowledge of all aspects of the general operations, maintenance, and preventive maintenance, policies, and procedures with safety aspects of the water system facilities. Must be capable of performing duties required with a minimum of supervision or direction. Must maintain a valid Washington State Water Distribution Specialist Class I Certificate, or better. Minimum experience shall be three years in the public works field.

Utility Worker I: Responsible for having general knowledge of water system operations and maintenance activities. Must be capable of assisting with duties under supervision or direction. Must maintain a valid Washington State Water Operator-In-Training Certificate.

6.2 OPERATOR CERTIFICATION

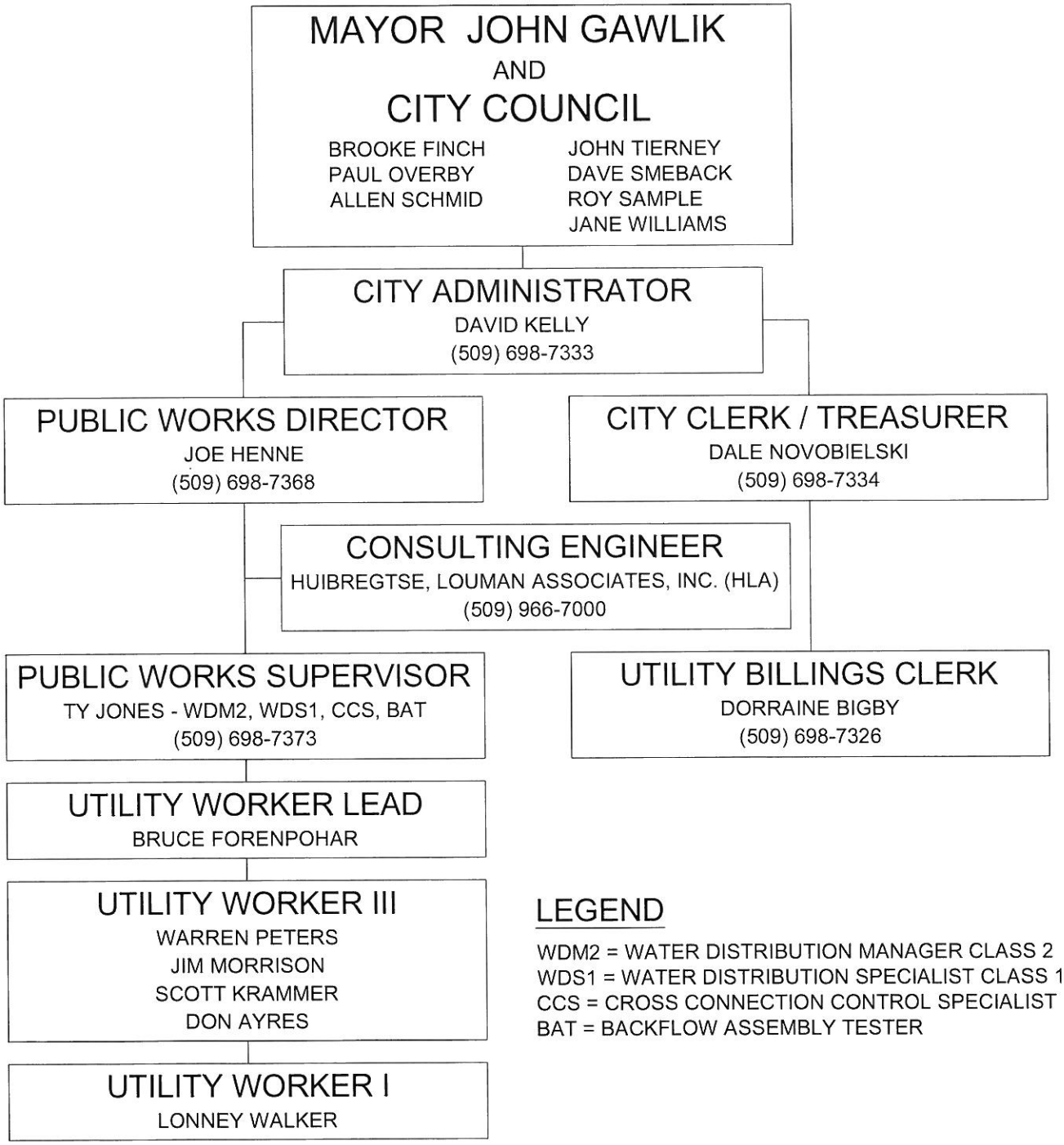
All Group A water systems within the State of Washington are classified according to the population they serve and are required by state regulation to have a certified operator in charge of system operation. Operators are required to be certified at or above the certification level of the distribution system. Selah's water distribution system, which serves 1,501 and 15,000 persons, is considered a Class 2 system and is, therefore, required to have a Class 2 (or greater) Water Distribution Manager (WDM) responsible for system operation. Selah is also required to have a Cross-connection Control Specialist (CCS) responsible for the system's cross-connection control program, and is required to have a Backflow Assembly Tester (BAT) responsible for monitoring backflow prevention assemblies.

Included within Figure 6-1 are the water certifications of the various Public Works employees responsible for the operation and maintenance of Selah's water system. Selah currently has one utility employee with Water Distribution Manager certification at the Class 2 level, one utility employee with Cross-Connection Control Specialist certification, and one utility employee with Backflow Assembly Tester certification. Figure 6-1 provides the current certifications of all of Selah's water system employees who work in and have water system responsibilities.

CITY OF SELAH

Water System Plan Update

WATER SYSTEM ORGANIZATIONAL CHART



LEGEND

WDM2 = WATER DISTRIBUTION MANAGER CLASS 2
WDS1 = WATER DISTRIBUTION SPECIALIST CLASS 1
CCS = CROSS CONNECTION CONTROL SPECIALIST
BAT = BACKFLOW ASSEMBLY TESTER

HLA
Huibregtse, Louman Associates, Inc.
Civil Engineering ◆ Land Surveying ◆ Planning
2803 River Road
Yakima, WA 98902
509.966.7000
Fax 509.965.3800
www.hlacivil.com

05-20-14
P:\Projects\2013\13046\WSP-Figures.dwg

FIGURE 6-1

6.3 SYSTEM OPERATION AND CONTROL

Section 3.3 System Description and Analysis, provides a detailed description of the various water system components and their interrelationship. This interrelationship is depicted in Figure 3-1 Static Pressure Zone Map and Map A in the back of this Plan. It is important that water department personnel fully understand the system in order to evaluate its operation and maintenance requirements.

Routine System Operation and Preventative Maintenance

An outline of routine operational tasks for the various major system components is provided below:

A. Source Wells and Pumps

1. Daily Tasks

   a. Check all well facilities visually.
   b. Maintain oil levels for well pumps.
   c. Check telemetry system.
   d. Check disinfection systems.
   e. Record flow meter totalizer readings.

2. Monthly Tasks

   a. Check and grease well pump packing and pump motor seal bearings.
   b. Check oil level in pump bearing reservoir and fill, if necessary.
   c. Check floor drains and clean, if necessary.
   d. Clean pumphouse floors.

3. Seasonal Tasks

   a. Winterize or de-winterize pumphouse facilities.
   b. Check heating equipment and thermostats.
   c. Monitor and record well levels from ground level to the static water level during low (winter) demand and high (summer) demand periods.

4. Yearly Tasks

   a. Clean disinfection system equipment.
   b. Summarize flow meter totalizer records.
   c. Take sample of raw water from each well and submit to a state certified laboratory for required nitrate analysis, as directed by the Washington State Department of Health.

5. Every Three Years Task

   a. Take sample of raw water from each well and submit to the State Department of Health Lab for an Inorganic Chemical and Physical Analysis (IOC), for Volatile Organic Chemical (VOC) Analysis, and for Synthetic Organic Chemical (SOC) analysis, unless sources have been granted a waiver under the susceptibility waiver program.
   b. Take sample of raw water from each well and submit to a state certified laboratory for required lead and copper analysis, and radionuclide analysis, as directed by the Washington State Department of Health.

6. Every Four Years Task

   a. Conduct sampling for required radionuclides testing and submit to the Department of Health Lab.

B. Booster Pump Stations

1. Daily Tasks

   a. Visually check alarm status at Hospital Hill Booster Pump Station, at the Brader Hill Booster Pump Station, and at the Well No. 6 Booster Pump Station.

2. Weekly Tasks

   a. Check all booster pump stations operations.
   b. Grease all fittings.
   c. Check floor drains and clean, if necessary.
   d. Check oil levels.
   e. Record flow meter totalizer readings.

3. Seasonal Tasks

   a. Winterize or de-winterize pumphouse facilities.
   b. Check heating equipment and thermostats.

C. Reservoirs

1. Daily Tasks

   a. Visually check reservoir level indicator.

2. Quarterly Tasks

   a. Check all reservoir screens.

3. Yearly Tasks

   a. Visually inspect reservoir exteriors.
   b. Inspect reservoir interiors as possible without removing from service.

4. Every Five Years Task

   a. Empty reservoirs individually and inspect interiors. Clean, refill, and chlorinate reservoir before removing the next one from service.

5. As Required Tasks

   a. Inspect and video record reservoir interiors using diver, and vacuum remove accumulated debris.

D. Distribution System

1. Weekly Tasks

   a. Conduct free and total chlorine count tests at random sites within the distribution system. Report test results to Public Works and submit to the Washington State Department of Health at month end.

2. Monthly Tasks

   a. Take required number of water samples from various representative sites within the distribution system and submit them to a certified laboratory for bacteriological analysis in accordance with the *Coliform Monitoring Plan*.

3. Seasonal Tasks

    a. Insulate service meters.

4. Yearly Tasks

    a. Operate all valves through their full range and listen for leaks.
    b. Lubricate hydrant caps and threads. Touch-up paint as required. Operate and flush all fire hydrants near dead end mains or low points in the distribution system.
    c. Inspect all cross-connection control devices.
    d. Take required number of water samples from various representative sites within the distribution system and submit them for disinfection byproducts analysis in accordance with the *Stage 2 DBP Monitoring Plan.*

5. Every Three Years Task

    a. Take required number of water samples from various representative sites within the distribution system and submit them to a certified laboratory for lead and copper analysis.

6. As Required Tasks

    a. Flush low velocity water mains as required to remove sedimentation.
    b. Review plans for installation of cross-connection control devices on proposed new construction.
    c. Inspect installation of required devices on new construction.
    d. Repair and/or replace service meters.

E. Telemetry System

1. Daily Tasks

    a. Observe telemetry system operation and alarms.

2. Weekly Tasks

    a. Check automatic dialer status.

3. Monthly Tasks

    a. Check total well production and compare to recorded consumption.

4. As Required Tasks

    a. Make any required changes to pump Start / Stop settings.
    b. Replace printer paper.
    c. Replace printer ribbon cartridge.

6.4 SAFETY PROCEDURES

All City personnel are instructed to exercise the utmost care when working on any water system facility. Safety of City staff and the public is the number one priority. Selah's Public Works Department has developed the following safety programs that apply to City employees working on Selah's water system:

- *Accident Prevention and Safety Program*;
- *Hazard Communication Program*;
- *Confined Space Entry Program*; and
- *Chlorine Safety Plan.*

City employees working in and on the water system are expected to follow the policies and procedures specified within these safety programs. Specific work in and around chlorine and chlorine equipment

shall be done in accordance with the procedures specified in the City's *Chlorine Safety Program*, and all work conducted in confined spaces shall be done in accordance with the procedures specified in the City's *Confined Space Entry Safety Program*. Copies of these safety programs are included within CHAPTER 10 of this Plan.

Provided below is an outline of safety procedures to be followed when working on water system facilities:

A. Pumping Equipment

1. Removing Pump

   a. All work conducted within confined spaces shall be done in accordance with the procedures specified in the City's *Confined Space Entry Safety Program*.
   b. Close valves.
   c. Shut off power to the pump, use lockout, tagout policy and procedures.
   d. Ensure power is disconnected and then remove electrical cables.
   e. Lift pump with proper equipment.

2. Installing Pump

   a. All work conducted within confined spaces shall be done in accordance with the procedures specified in the City's *Confined Space Entry Safety Program*.
   b. Lift pump with proper equipment.
   c. Ensure all pipe connections are properly installed and tightened.
   d. Employ an electrician to properly connect power cables.
   e. Check pump rotation.
   f. Open valves.
   g. Ensure pump control valve (if present) is operating properly.
   h. Turn on power to the pump and remove lockout, tagout tag.

B. Chlorination Equipment

1. All work conducted within confined spaces shall be done in accordance with the procedures specified in the City's *Confined Space Entry Safety Program*.
2. Verify leak alarm status before entering the room.
3. Immediately check for chlorine odors.
4. Routinely inspect for leaks.
5. Check ventilation system equipment for proper operation.
6. Properly maintain emergency breathing equipment.

C. Reservoir – Interior Inspection

1. All work conducted within confined spaces shall be done in accordance with the procedures specified in the City's *Confined Space Entry Safety Program*.
2. Inspection to be conducted in accordance with the confined space entry plan.
3. Ensure the reservoir interior is properly ventilated and illuminated.
4. Properly set and secure ladder before climbing into reservoir.

D. Distribution System – Pipeline Installation

1. All construction work requiring excavation, trenching, and shoring shall be conducted in accordance with the Department of Labor and Industries Safety Standards for Construction Work.
2. Close all valves connecting to pipe segment.
3. Properly set traffic control signing, barricades, and cones.
4. Install shoring or cribbing in all trenches over 48 inches in depth.
5. Install joint restraints or construct thrust blocking, if required, and partially backfill the trench at a minimum prior to charging the pipeline.
6. Flush, disinfect pipe, and conduct bacteriological testing prior to putting new line into service.

6.5 SERVICE AND SUPPLY REPRESENTATIVES

Provided below is a list of service and supply representatives for the various system components:

A. Pipe, Valves, and Fittings

1. H.D. Fowler Co.
   1100 River Road
   Yakima, WA 98902
   Phone: 509-248-8400
   Phone: 509-952-7751

2. H.D. Supply (Mueller)
   645 Lockheed Street
   Pasco, WA 99301
   Phone: 509-547-2410

B. Water Service Materials - Romac

1. H.D. Fowler Co.
   1100 River Road
   Yakima, WA 98902
   Phone: 509-248-8400

C. Service Meters – Badger Meter

1. General Pacific, Inc.
   P.O. Box 70
   22414 NE Townsend Way
   Fairview, OR 97024
   Phone: 503-907-2900

D. Chlorination Equipment

2. Spokane Instruments
   Route 1, Box 149
   Chatteroy, WA 99003
   Phone: 509-292-8560
   Contact: Gene Meridith

E. Chlorine Gas

1. Jones Chemical
   P.O. Box 412641
   Tacoma, WA 98422
   Phone: 253-274-0104

F. Water Main Tapping

1. Spear Taps, Inc.
   309 NE 159th Street
   Seattle, WA 98155
   Phone: 206-363-8053

G. Electrical

1. Hoydar Buck
   210 West Ordhard
   Selah, WA 98942
   Phone: 509-697-8800

H. Pumps

1. Akland Pump & Irrigation Co.
   3701 Fruitvale Boulevard
   Yakima, WA 98902
   Phone: 509-452-7867

2. HN Electric (Electric motors and equipment)
   4224 East B Street
   Pasco, WA 99301
   Phone: 1-800-795-3537
   Phone: 509-547-1691

I. Pressure Reducing Valves

1. GC Systems
   13107 NE 20th, #6
   Bellevue, WA 98005
   Phone: 206-882-2198

2. Kent NW Sales
   555 116th Avenue NE, Suite 218
   Bellevue, WA 98004
   Phone: 206-232-3911

J. Telemetry System

1. Conley Engineering, Inc.
   205 North 40th Avenue, Suite 201
   Yakima, WA 98902
   Phone: 509-965-9872

K. Pump, Motor Oil, and Bearing Grease

1. Wondrack Distributing, Inc.
   North Front & East First
   Yakima, WA 98901
   Phone: 509-453-3147

2. R.E. Powell Distributing Co.
   311 West I Street
   Yakima, WA 98902
   Phone: 509-453-3191

L. Bearing Grease

1. AutoZone
   495 North Wenas Road
   Selah, WA 98942
   Phone: 509-698-4600

6.6 COMPREHENSIVE MONITORING PLAN

The City of Selah monitors its system's water quality in accordance with the requirements of WAC 246-290-300, 246-290-310, and 246-290-320, which define the minimum monitoring requirements, maximum contaminant levels (MCLs) and maximum residual disinfectant levels (MRDLs), and follow-up action requirements for public water systems. The following summarizes the requirements as they pertain to the City of Selah:

6.6.1 Monitoring Requirements, Location, and Frequency

Bacteriological Analysis: Bacteriological analysis is conducted in accordance with the procedures and locations specified in Selah's Coliform Monitoring Plan, a copy of which is provided in CHAPTER 10 of this Plan. The minimum number of bacteriological samples required per month within the distribution system is based upon the population served and is shown in part in Table 6-1 below:

TABLE 6-1 MINIMUM MONTHLY COLIFORM SAMPLING REQUIREMENTS

Permanent Population Served	Minimum Number of Samples per Month
1 - 1,000	1
1,001 - 2,500	2
2,501 - 3,300	3
3,301 - 4,100	4
4,101 - 4,900	5
4,901 - 5,800	6
5,801 - 6,700	7
6,701 - 7,600	8
7,601 - 8,500	9
8,501 - 12,900	10 (Selah's current requirement)

Disinfection Byproducts (DBPs): Samples are to be collected from two locations within the distribution system identified in the City's *Stage 2 DBP Monitoring Plan*. The City is required to begin routine Stage 2 monitoring starting with the year following October 1, 2013. For Stage 2 monitoring, two dual sample sets of TTHM and HAA5 samples are required at each of two locations annually. These locations must have the highest averages of total trihalomethanes (TTHMs) and haloacetic acids (HAA5).

Inorganic Chemical and Physical Analyses: Generally, a minimum of one sample from each source well is required per compliance period as a result of the IOC waivers. However, one sample from Well No. 8 is required every three years. The samples shall be collected from a point representative of the source, after treatment, and prior to entry into the distribution system.

Radionuclides: Radionuclide samples from each source are required once every three years. The samples shall be collected from a point representative of the source, after treatment, and prior to entry into the distribution system.

Volatile Organic Chemicals (VOCs): VOC samples shall be taken at each source once every 3 months for the first 12 months of operation, or as directed by the Department of Health. If no VOCs are detected in the first 12 months from a ground water source, only one annual sample will be required for the first three years of sampling, per 40 CFR 141.24. If no VOCs are detected during the first three years of testing, future monitoring shall be at least once every compliance period. The Department of Health may grant waivers for monitoring requirements. The samples shall be collected from a point representative of the source, after treatment, and prior to entry into the distribution system.

Synthetic Organic Chemicals (SOCs): SOC samples shall be taken at each source once every 3 months for the first 12 months of operation, or as directed by the Department of Health. If no SOCs are detected in the first 12 months from a ground water source, only one annual sample will be required for the first three years of sampling, per 40 CFR 141.24. If no SOCs are detected during the first three years of testing, future monitoring shall be at least once every compliance period. The Department of Health may grant waivers for monitoring requirements. The samples shall be collected from a point representative of the source, after treatment, and prior to entry into the distribution system.

Lead and Copper: A minimum of 30 samples at targeted sample tap locations throughout the distribution system are required every three years for lead and copper monitoring.

Other Substances: No other substances are required to be monitored at this time. Monitoring of other substances in the future will be as required by the Department of Health.

6.6.2 Testing Laboratories

Samples which have been collected must be transported and analyzed in accordance with Department of Health requirements. The analyses must be done by a state public health laboratory or a state certified private laboratory.

The City of Selah routinely delivers bacteriological samples to Cascade Analytical, Inc. on the same day they are taken. Sample bottles are obtained from the laboratory.

Samples for other required tests, e.g., Inorganic Chemical and Physical Analysis, are shipped to Cascade Analytical, Inc., of Union Gap, WA on the same day they are taken. As with the bacteriological samples, sample bottles are obtained from the laboratory.

6.6.3 Violation Procedures

The City of Selah is responsible for complying with the standards of water quality identified in WAC 246-290-310. If any substance exceeds its maximum contaminant level (MCL) and/or maximum residual disinfectant levels (MRDLs), the City shall take follow-up action as outlined under WAC 246-290-320.

Maximum Contaminant Levels (MCLs) and Maximum Residual Disinfectant Levels (MRDLs)

Bacteriological – If any coliform bacteria are present in any sample, follow-up action as described under WAC 246-290-320(2) shall be taken in accordance with the City's Coliform Monitoring Plan and the Groundwater Rule (GWR) requirements.

Disinfection Byproducts (DBPs) and Residuals – MCLs and MRDLs for disinfection byproducts and residuals are as shown in Table 6-3.

TABLE 6-2 DISINFECTION BYPRODUCTS AND RESIDUALS

DISINFECTION BYPRODUCT	MCL (mg/l)
Total Trihalomethanes (TTHMs)	0.080
Haloacetic acids (HAA5)	0.060
Bromate	0.010
Chlorite	1.0
DISINFECTION RESIDUAL	**MRDL (mg/l)**
Chlorine	4.0 (as $C1_2$)
Chloramines	4.0 (as $C1_2$)
Chlorine Dioxide	0.8 (as $C1O_2$)

Inorganic Chemical and Physical (IOC) – MCLs for inorganic chemical and physical properties are as shown in Table 6-3.

TABLE 6-3 INORGANIC CHEMICAL MCLS	
Chemical or Physical Characteristics	MCL (mg/l)
Primary Substances	
Antimony (Sb)	0.006
Arsenic (As)	0.010
Asbestos	7 million fibers/liter
Barium (Ba)	2.0
Beryllium (Be)	0.004
Cadmium (Cd)	0.005
Chromium (Cr)	0.1
Copper (Cu)*	1.3
Cyanide (HCN)	0.2
Fluoride (F)	4.0
Lead (Pb)*	0.015
Mercury (Hg)	0.0020
Nickel (Ni)	0.10
Nitrate (as N)	10.0
Nitrite (as N)	1.0
Selenium (Se)	0.05
Sodium (Na)*	20
Thallium (Tl)	0.002
Secondary Substances	
Chloride (Cl)	250.0
Fluoride (F)	2.0
Iron (Fe)	0.3
Manganese (Mn)	0.05
Silver (Ag)	0.1
Sulfate (SO_4)	250.0
Zinc (Zn)	5.0
Color	15 Color Units
Specific Conductivity	700 umhos/cm
Total Dissolved Solids (TDS)	500
* No DOH established MCL. Represents EPA established "action levels" for lead and copper and recommended level for sodium.	

Radionuclides – MCLs for Radionuclides are as shown in Table 6-4.

TABLE 6-4 RADIONUCLIDE MCLS	
RADIONUCLIDE	MCL
Combined Radium-226 and Radium-228	5 pCi/l
Gross alpha particle activity (excluding uranium and radon)	15 pCi/l
Beta particle and photon radioactivity	4 mrem/year
Uranium	30 µg/l

Volatile Organic Chemicals (VOCs) – MCLs for VOCs are as shown in Table 6-5.

TABLE 6-5 VOLATILE ORGANIC CHEMICAL MCLS	
VOLATILE ORGANIC CHEMICAL	MCL (mg/l)
Benzene	0.005
Carbon Tetrachloride	0.005
para-Dichlorobenzene	0.075
Trichloroethylene	0.005
Vinyl Chloride	0.002
1,1,1-Trichloroethane	0.2
1,1-Dichloroethylene	0.007
1,2 Dichloroethane	0.005
cis-1,2-Dichloroethylene	0.07
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1
Trans-1,2-Dichloroethylene	0.1
Xylenes	10
1,2-Dichloropropane	0.005
Dichloromethane	0.005
1,1,2-Trichloroethane	0.005
1,2,4-Trichlorobenzene	0.07

Synthetic Organic Chemicals (SOCs) – MCLs for SOCs are as shown in Table 6-6.

TABLE 6-6 SYNTHETIC ORGANIC CHEMICAL MCLS	
SYNTHETIC ORGANIC CHEMICAL	MCL (mg/l)
Alachlor	0.002
Atrazine	0.003
Carbofuran	0.04
Chlordane	0.002
EDB	0
DBCP	0.0002
Heptachlor	0.0004
Heptachlor Epoxide	0.0002
Lindane	0.0002
Methoxychlor	0.04
Toxaphene	0.0003
PCBs	0.0005
Pentachlorophenol	0.001
2,4-D	0.07
2,4,5-TP	0.05
PAHs (Benzo(a)pyrene)	0.0002
Dalapon	0.2
Di(ethylhexyl)-Adipate	0.4
Di(ethylhexyl)-Phthalate	0.006
Dinoseb	0.007
Diquat	0.1
Endothall	0.1
Endrin	0.002
Glyphosate	0.7
Hexachlorobenzene	0.001
Hexachlorocyclo-Pentadiene	0.05
Oxymal	0.2
Picloram	0.5
Simazine	0.004
2,3,7,8-TCDD (Dioxin)	0

6.6.4 Follow-up Action

1. General:

   a. If water quality exceeds any MCL or MRDL listed in WAC 246-290-310, the purveyor shall notify the Department and take follow-up action as described in this section.
   b. When a primary MCL violation occurs, the purveyor shall:

      i. Notify the Department within 48 hours in accordance with WAC 246-290-480;
      ii. Notify the public according to the procedures outlined under WAC 246-290-71001;
      iii. Determine the cause of the contamination; and
      iv. Take corrective action as required by the Department.

   c. When a secondary MCL violation occurs, the purveyor shall notify the Department and take corrective action as directed by the Department.

2. Bacteriological:

   a. When coliform bacteria are present in any sample and the sample is not invalidated under e. of this subsection, the purveyor shall ensure the following actions are taken:

      i. The sample is analyzed for fecal coliform or E. coli. When a sample with a coliform presence is not analyzed for E. coli or fecal coliforms, the sample shall be considered as having a fecal coliform presence for MCL compliance purposes;
      ii. Repeat samples are collected in accordance with b. of this subsection;
      iii. Collect triggered source samples in accordance with c. of this subsection and have them tested for E. coli.
      iv. The Department is notified in accordance with WAC 246-290-480; and
      v. The cause of the coliform presence is determined and corrected.

   b. Repeat samples: The purveyor shall collect and submit for analysis a set of repeat samples for every sample in which the presence of coliforms is detected in accordance with the following:

      i. A set of three (3) repeat coliform samples is required for Group A systems collecting more than one routine coliform sample each month and shall be collected at the following locations:

         (1) At the site of the previous sample with a coliform presence.
         (2) Within five active services upstream of the site of the sample with a coliform presence.
         (3) Within five active services downstream of the site of the sample with a coliform presence.

      ii. For Group A systems, all samples in a set of repeat samples shall be collected on the same day and submitted for analysis within 24 hours after notification by the laboratory of a coliform presence. If the purveyor can demonstrate to the satisfaction of the Department that logistical problems beyond the purveyor's control make analysis of the samples in the repeat sample set impractical because the time between sample collection and analysis will exceed 30 hours, then the purveyor shall collect the required set of repeat samples as directed by the Department.

      iii. When repeat samples have coliform presence, the purveyor shall:

         (1) Contact the Department and collect a minimum of one additional set of repeat samples as directed by the Department; or
         (2) Collect one additional set of repeat samples for each sample where coliform presence was detected.

      iv. If a sample with a coliform presence was collected from the first two or last two active services, the purveyor shall monitor as directed by the Department.

      v. The purveyor may change a previously submitted routine sample to a sample in a set of repeat samples when the purveyor:

         (1) Collects the sample within five adjacent service connections of the location from which the initial sample with a coliform presence was collected;
         (2) Collects the sample after the initial sample with a coliform presence was submitted for analysis;
         (3) Collects the sample on the same day as other samples in the set of repeat samples, except under b. ii. of this subsection; and
         (4) Requests and receives approval from the Department of the change.

      vi. The Department may waive the requirement to collect sets of repeat samples under this subsection during a month when a non-acute coliform MCL violation is determined for the system.

   c. Triggered Source Sampling: In accordance with the Groundwater Rule (GWR) requirements, triggered source samples must be collected and tested for E. coli when coliform bacteria are

present in any routine distribution sample. Triggered source sampling shall be conducted as follows:

i. Triggered source samples must be collected within 24 hours of notification of the total coliform positive result.
ii. Each source that was in operation at the time the routine sample was collected must be tested prior to treatment.
iii. If one of the triggered source samples is E. coli positive, corrective action shall be taken as directed by the DOH, or five additional source samples must be taken within 24 hours.
iv. If any of the five additional source samples is E. coli positive, one or more of the following corrective actions may need to be taken, as directed by the DOH:

(1) Provide an alternate source of water.
(2) Eliminate the source of contamination.
(3) Provide 4-log treatment.

v. Customers must be notified within 24 hours of receiving an E. coli positive triggered source sample.

d. Monitoring frequency following a coliform presence: Group A systems having one or more coliform presence samples that were not invalidated during the previous month shall collect and submit for analysis the minimum number of routine samples shown in Table 6-1.

i. The Department may waive the monitoring frequency requirement when one or more samples with a coliform presence were collected during the previous month, if the purveyor proves to the satisfaction of the Department:

(1) The cause of the sample with a coliform presence; and
(2) The problem is corrected before the end of the next month the system provides water to the public.

ii. If the Department waives this monitoring frequency requirement:

(1) The purveyor shall collect and submit at least the minimum number of samples required when no samples with a coliform presence were collected during the previous month; and
(2) The Department shall make available a written description explaining:

(a) The specific cause of the coliform presence; and
(b) Action taken by the purveyor to correct the cause of coliform presence.

e. Invalid samples.

i. The Department shall consider coliform samples with no coliform presence detected invalid when:

(1) A certified laboratory determines that the sample results show:

(a) Multiple tube technique cultures are turbid without appropriate gas production;
(b) Presence-absence technique cultures are turbid in the absence of an acid reaction;
(c) There are confluent growth patterns or growth of TNTC (too numerous to count) colonies without a surface sheen using a membrane filter analytic technique;
(d) There is excess debris in the sample; or
(e) That improper sample collection and analysis occurred.

ii. The Department may also invalidate a coliform sample when:

(1) The Department determines a nondistribution system problem occurred as indicated by:

(a) All samples in the set of repeat samples collected at the same location as the original coliform presence sample also have coliform presence; and

(b) All other samples in the set of repeat samples are free of coliform.

(2) The Department determines a coliform presence result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, when the Department invalidates a sample:

(a) The purveyor shall collect a set of repeat samples following the sample invalidation in accordance with 2.b. above; and
(b) The Department's rationale for invalidating the sample shall be documented in writing and made available to the public. The documentation shall state the specific cause of the coliform presence and what action the purveyor has taken or will take.

iii. When a coliform sample is determined invalid, the purveyor shall collect and submit for analysis:

(1) An additional coliform sample from the same location as each invalid sample within 24 hours of notification of the invalid sample; or
(2) If determined that invalid sample resulted from circumstances not reflective of distribution system water quality, collect a set of samples as outlined in section b. i. of this subsection; and
(3) Additional coliform samples as directed by the Department.

iv. When the Department or laboratory invalidates a sample, the sample shall not count towards the purveyor's minimum coliform monitoring requirements.

3. Inorganic Chemical and Physical (IOC): When an initial analysis of any substance exceeds the MCL, the purveyor shall take the following action:

a. For nitrate, immediately take one additional sample from the same sampling point. If the average of the two samples exceeds the MCL, a violation is confirmed, or
b. For all other inorganic chemical and physical substances, within 30 days take three additional samples from the same sample point. If the average of all four samples exceeds the MCL, a violation is confirmed.

4. Inorganic Turbidity: When the turbidity exceeds the maximum allowable limit identified under WAC 246-290-310 for longer than one hour monitored continuously, the purveyor shall report to the Department within 48 hours. When the results of a manual turbidity analysis exceeds maximum allowable limit, another sample shall be collected within one hour. When the repeat sample confirms the maximum allowable limit has been exceeded, the purveyor shall notify the Department.

5. Volatile Organic Chemicals (VOCs): The purveyor shall be responsible for the following follow-up actions:

a. After the purveyor's receipt of the first VOC analysis results from the laboratory, the purveyor shall provide notice to persons served by the system as described under WAC 246-290-71001.
b. When a List 1 VOC is verified at a concentration above the detection limit, the purveyor shall, at a minimum:

i. Sample the source once every three months for at least three years; and
ii. Make analysis results available to consumers within three months of receipt from the laboratory as described under WAC 246-290-71006.

c. When a List 1 VOC is verified at a concentration greater than an MCL, and the level will not cause the running annual average to exceed the MCL, the purveyor shall repeat sample the source as soon as possible. If a concentration greater than an MCL is confirmed, the purveyor shall:

i. Notify the Department within seven days of receipt of the repeat sample analysis results;
ii. Provide consumer information in accordance with WAC 246-290-71006;

iii. Submit documentation to the Department describing the water system's strategy for gathering and analyzing additional data, and identify plans for keeping the public informed; and
iv. Sample the source a minimum of once every three months for at least three years.

d. When the running annual average of a List 1 VOC is greater than an MCL, or one sample analysis result causes the annual average to exceed an MCL, the purveyor shall:

i. Notify the Department within seven days of receipt of analysis results;
ii. Notify the public as described under WAC 246-920-71006, including mandatory health effects language;
iii. Submit an action plan to the Department for approval addressing follow-up activities, including corrective action. The purveyor shall submit the action plan within four months of receipt of Department notice that the annual average exceeds the MCL. The purveyor's action plan shall, at a minimum, contain:

(1) Tabulation of VOC sample analysis results, including the location where VOCs were detected;
(2) Description of monitoring plans for system sources;
(3) Strategy for informing the public of monitoring results and investigations; and
(4) Description of short and long-term plans to minimize exposure and/or eliminate the source of contamination.

iv. Implement the action plan within one year of the Department's approval. The Department may require the purveyor's earlier compliance, if necessary, to eliminate an immediate health threat, or may require a revision of the action plan based upon additional sample results. The Department may extend the purveyor's period of compliance when the Department determines:

(1) Substantial construction is required; and
(2) The purveyor has taken all appropriate measures to protect the health of consumers served by the public water system.

If the Department grants the purveyor an extension, the purveyor shall issue a notice identifying the MCL exceeded and the amount by which the repeat sample analysis results exceeded the MCL. The purveyor shall include the notice in all bills mailed to affected customers until the Department determines that the purveyor complies with the MCL.

v. Sample the source a minimum of once every three months for at least three years.

e. When a List 2 or List 3 VOC is verified at a concentration above the detection limit, the purveyor shall:

i. Submit the sample analysis results to the Department within seven days of receipt from the laboratory; and
ii. Sample the source a minimum of once every three months for one year, and then annually thereafter during the three-month period when the highest previous measurement occurred.

f. If the Department determines that a List 2 or List 3 VOC is verified at a level greater than a state advisory level (SAL), the Department shall notify the purveyor in writing. The purveyor shall repeat sample the source as soon as possible after initial Department notice that an SAL has been exceeded. The purveyor shall submit the analysis results to the Department within seven days of receipt from the laboratory. If any repeat sample confirms that an SAL has been exceeded, the purveyor shall:

i. Provide consumer information in accordance with WAC 246-290-71006;
ii. Sample the source a minimum of once every three months for at least three years; and
iii. Submit documentation to the Department listing VOC analysis results, describing the water system's strategy for gathering and analyzing additional data, and identifying plans for keeping the public informed. The purveyor shall submit this information to the Department

within six months of the date of the first notice from the Department that an SAL has been exceeded.

g. The Department may reduce the purveyor's monitoring requirement for a source detecting a List 1 VOC if, after three years of quarterly monitoring, all analysis results are less than the MCL. The purveyor's reduced monitoring frequency shall be no less than one sample per year.
h. The Department may reduce the purveyor's monitoring requirement for a source detecting a List 2 or List 3 VOC if the source has been monitored annually for at least three years, and all analysis results are less than the SAL.
i. In establishing SAL's for List 2 and List 3 VOCs, the Department shall use the most recent edition of the Department document titled "Procedures and References for Determination of State Advisory Levels for Drinking Water Contaminants" which has been approved by the State Board of Health. Copies are available from the Department upon request.
j. When List 1, List 2 (exclusive of TTHMs), or List 3 VOCs are verified in well fields, the purveyor shall repeat sample individual wells within the well field.
k. When the sum of all trihalomethanes detected exceeds 0.100 mg/L, the purveyor shall sample within three months for total trihalomethanes as required under WAC 246-290-300(5).
l. The Department may collect samples from a water system or may require that specified quality assurance techniques be used to collect samples.

6. For any additional substance exceeded, follow-up action shall be determined by the Department when the MCL violation occurs.

Public Notification

1. Responsibility: The purveyor of a Group A water system shall notify the water system users and the Department for any of the following conditions:

   a. Exceedances of maximum contaminant levels (MCLs) or maximum residual disinfectant levels (MRDLs);
   b. Violation of treatment techniques;
   c. Monitoring and testing procedure violations;
   d. Failure to comply with the schedule of a variance or exemption;
   e. Operation under a variance or exemption;
   f. Occurrence of a waterborne disease outbreak or other waterborne emergency;
   g. Exceedance of the secondary maximum contaminant level for fluoride; and
   h. Availability of unregulated contaminant monitoring results.

   These conditions are grouped into three categories, and require public notification in English and in Spanish within different time periods as described below:

   a. Tier 1 Conditions require public notification within 24 hours. Such conditions include:

      i. Violation of the MCL for total coliform, when fecal coliform or E. coli are present in the water distribution system, or failure to test for fecal coliform or E. coli when any repeat sample tests positive for coliform;
      ii. An E. coli positive groundwater source sample;
      iii. Violation of the MCL for nitrate, nitrite, or total nitrate and nitrite; or when a confirmation sample is not taken within 24 hours of the system's receipt of the first sample showing exceedance of the nitrate or nitrite MCL;
      iv. Violation of the turbidity MCL of 5 NTU, where the primary agency determines after consultation that a Tier 1 notice is required or where consultation does not occur in 24 hours after the system learns of violation;
      v. Violation of the treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit, where the primary agency determines after consultation that a Tier 1 notice is required or where consultation does not take place in 24 hours after the system learns of violation;
      vi. Occurrence of a waterborne disease outbreak, as defined in 40 CFR 141.2, or other waterborne emergency; and

vii. Other violations or situations with significant potential to have serious adverse effects on human health as a result of short term exposure, as determined by the primary agency, either in its regulations or on a case-by-case basis.

b. Tier 2 conditions require public notification within 30 days. Such conditions include:

i. All violations of the MCL, MRDL, and treatment technique requirements except where Tier 1 notice is required;
ii. Violations of the monitoring requirements where the primary agency determines that a Tier 2 public notice is required, taking into account potential health impacts and persistence of the violation; and
iii. Failure to comply with the terms and conditions of any variance or exemption in place.

c. Tier 3 conditions require public notification within one year. Such conditions include:

i. Monitoring violations, except where Tier 1 notice is required or the primary agency determines that the violation requires a Tier 2 notice;
ii. Failure to comply with an established testing procedure, except where Tier 1 notice is required or the primary agency determines that the violation requires a Tier 2 notice;
iii. Operation under variance granted under §1415 or exemption granted under §1416 of the Safe Drinking Water Act;
iv. Availability of unregulated contaminant monitoring results; and
v. Exceedance of the secondary maximum contaminant level for fluoride.

2. Content: Notices in English and in Spanish shall provide:

a. A clear, concise, and simple explanation of the violation;
b. Discussion of any potential adverse health effects and any segment of the population which may be at higher risk;
c. Mandatory health effects information in accordance with subsection (4) of this section;
d. A list of steps the purveyor has taken or is planning to take to remedy the situation;
e. A list of steps the consumer should take including advice on seeking an alternative water supply if necessary; and
f. The purveyor's name and phone number.

The purveyor may provide additional information to further explain the situation.

3. Distribution:

a. Public notice of a Tier 1 condition shall occur within 24 hours after learning of the condition by placing notices on the front door of every system user. The public notice shall be written in both English and in Spanish.
b. Public notice of a Tier 2 condition shall occur within 30 days after learning of the condition and shall be provided in both English and in Spanish.
c. Public notice of a Tier 3 condition shall occur within 1 year after learning of the condition and shall be provided in both English and in Spanish.
d. The purveyor of a COMMUNITY water system shall give a copy of the most recent public notice for all outstanding violations to all new billing units or new hookups before or at the time water service begins.
e. The purveyor shall provide the Department with a copy of the public notification at the time the purveyor notifies the public.

4. Mandatory Language:

a. The purveyor shall provide specific health effects language in English and Spanish in the notice when a violation involves:

i. A primary VOC MCL;
ii. A secondary fluoride MCL;
iii. An acute coliform MCL;

iv. A non-acute coliform MCL;
v. Granting or continuation of exemption or variance; or
vi. Failure to comply with a variance or exemption schedule.

b. Required specific language is contained in the Department guideline titled "Health Effects Language for Drinking Water Public Notification."

5. VOC Notification Procedure:

a. Availability of results: After receipt of the first analysis results, the purveyor of a COMMUNITY or NTNC water system shall notify persons served by the system of the availability of results and shall supply the name and telephone number of a contact person.

i. The purveyor shall initiate notification within three months of the purveyor's receipt of the first VOC analysis results. This notification is only required one time.
ii. Notification shall occur by:

(1) Inclusion in the first set of water bills issued after receipt of the results;
(2) Newspaper notice which shall run at least one day each month for three consecutive months;
(3) Direct mail;
(4) Posting if NTNC system; or
(5) Any other method approved by the Department.

iii. Within three months of receipt of analysis results, purveyors selling water to other public water systems shall provide copies of the analysis results to the purchasing system.
iv. Within 30 days of receipt of analysis results, purveyors purchasing water shall make results available to their customers. The purveyor's notification shall occur by the method outlined under (a)(i) of this subsection.

b. Consumer information:

i. The purveyor shall provide consumer information within 21 days of receipt of confirmation sample results when:

(1) A List 1 VOC is confirmed at a concentration greater than an MCL, and the level will not cause the running annual average to exceed the MCL; or
(2) The Department determines a List 2 or List 3 VOC is confirmed at a level greater than an SAL.

ii. Consumer information shall include:

(1) Name and level of VOC detected;
(2) Location where the VOC was detected;
(3) Any health effects the VOC could cause at its present concentration;
(4) Plans for follow-up activities; and
(5) Phone number to call for further information.

iii. Consumer information shall be distributed by any of the following methods:

(1) Notice placed in the major newspaper in the affected area;
(2) Direct mail to customers;
(3) Posting if NTNC system; or
(4) Any other method approved by the Department.

6. Fluoride Notification Procedure: When a secondary MCL violation occurs, the purveyor of a community water system shall send notice to:

a. The Department annually;
b. Water system users annually; and

c. New billing units added while the violation exists.

7. When circumstances dictate the purveyor give a broader or more immediate notice to protect public health, the Department may require the purveyor's notification by whatever means necessary.

8. When the State Board of Health grants a public water system a waiver, the purveyor shall notify customers and new billing units or new hookups before water service begins. The purveyor shall provide a notice annually and send a copy to the Department.

9. The Department may give notice to the water system users as required by this section on behalf of the water purveyor. However, the purveyor remains responsible for ensuring the Department's requirements are met.

6.7 EMERGENCY RESPONSE PROGRAM

Selah's Emergency Response Program is a plan addressing the City's response to and operation of the water system during unplanned emergency events. The Emergency Response Program consists of the following elements:

- System Information
- Chain of Command
- Emergency Events
- Severity of Emergencies
- Emergency Notification
- Water Quality Sampling
- Response Actions for Specific Events
- Alternative Water Sources
- Returning to Normal Operations

6.7.1 System Information

The following is current information pertinent to the Selah Water System:

System Name:	City of Selah Water System
System Identification Number:	774006
System Address:	115 West Naches Avenue; Selah, WA 98942
System Phone Number:	(509) 829-5151
City Mayor:	John Gawlik
Public Works Director/Water System Manager:	Joe Henne/Ty Jones
System Consulting Engineer:	Huibregtse, Louman Associates, Inc. 2803 River Road Yakima, WA 98902 (509) 966-7000 Justin Bellamy, PE
System Service Population:	7,718 (2013 WFI)
System Service Connections:	3,087 (DOH calculated from 2013 WFI)
Emergency Plan Responsible Party:	Joe Henne (509) 698-7365

6.7.2 Chain of Command

When an emergency occurs, there can be confusion, lack of coordination, and poor communication. Timely and effective response can minimize the effects of an emergency. Often, the initial response sets the tone for how the entire emergency is handled.

Having a chain of command that defines clear lines of authority and responsibilities for system personnel during an emergency speeds up response time and helps eliminate confusion. Water system personnel need to know who to report the emergency to, who manages the emergency, who makes decisions, and what their own responsibilities are.

The first step in any emergency is to notify the person at the top of the chain of command - the person responsible for managing the emergency and making key decisions. This lead person will assess the situation and initiate a series of response actions based on the type and severity of emergency. In addition to an individual having the lead responsibility, other key duties that should be assigned to system personnel include the following:

- Handling incoming phone calls and administrative support.
- Providing information to the public and the media.
- Contacting and providing information to system customers.
- Assessing the water system's facilities, condition, and ability to operate.
- Organizing and completing system repairs.

Table 6-7 shows the Selah Water System's emergency chain of command and responsibilities of individuals during water system emergencies:

TABLE 6-7 EMERGENCY CHAIN-OF-COMMAND AND RESPONSIBILITIES

Name / Title	Responsibilities	Contact Numbers
John Gawlik Mayor	Lead for providing information to the public and the media.	Phone: 698-7328
David Kelly City Administrator	Coordinates responses and actions of the PWD and of the WSM, and assists the Mayor as requested.	Phone: 698-7328 Cell: 594-2584
Joe Henne Public Works Director (PWD)	Overall management and decision-making for the water system. Lead for managing the emergency, providing information to regulatory agencies.	Phone: 698-7365 Cell: 728-3498
Ty Jones Public Works Supervisor Water System Manager (WSM)	Operation of the water system, performing inspections, maintenance and sampling, relaying critical information, and assessing facilities, and providing recommendations to the Public Works Director.	Phone: 698-7365 Cell: 728-1296
Diane Turner Public Works Secretary	Administrative functions including receiving phone calls and keeping a log of events.	Phone: 698-7365
Bruce Forenpohar Public Works Utility Worker Lead	Perform duties, functions, and activities as directed by the Water System Manager.	Phone: 697-7584 Cell: 961-3268
Warren Peters Public Works Utility Worker III	Perform duties, functions, and activities as directed by the Water System Manager.	Cell: 945-4933
Don Ayres Public Works Utility Worker III	Perform duties, functions, and activities as directed by the Water System Manager.	Phone: 949-0266 Cell: 728-6037

6.7.3 Emergency Events

Emergencies happen for a variety of reasons including:

- Natural disasters including high winds, excessive snowfall and ice storms, floods, drought, well contamination, landslides and earthquakes, and volcanic eruptions.
- Accidents.
- Deliberate acts of vandalism or terrorism.
- System neglect, poor operation, or deferred maintenance.

6.7.4 Severity of Emergencies

Emergencies usually have a wide range of severity. Defining categories of severity can significantly aid in determining appropriate response actions. Knowing the severity of the emergency and being able to communicate it to others will help system personnel keep their response balanced and effective.

Making a decision on severity should be collaborative among system personnel, but is ultimately made by the person in charge of the emergency. The person in charge may also choose to coordinate with external parties, especially if partnerships have been formed in advance of the event. The information for making the decision will accumulate over time, and may result in the level of severity being changed.

An assessment of severity, once determined, must be communicated immediately to all those dealing with the emergency. Make sure staff have cell phones, pagers, and/or radios when they are in the field. Remember to have an alternate method of communicating if cell phones and pagers won't work.

The following is a four-level emergency severity classification system for the Selah Water System.

A. Level 1 - Routine Emergencies

Routine emergencies are normally resolved within 24 hours, and with minimal outside assistance. The Selah Water System considers the following to be Level 1 emergencies:

- Short power outages.
- Minor mechanical problems in pumphouses and booster stations.
- Distribution line breaks.
- Other minor situations where it is not likely that public health will be jeopardized.

B. Level 2 - Minor Emergencies

Minor emergencies are those where the water system experiences minor disruption in supply, or has indications of possible contamination. In these types of emergencies, public health may be jeopardized, the system may need to coordinate with DOH, and the City may consider issuing a health advisory to customers. It is important for water system personnel to be on alert and to initiate a quick response. Minor emergencies can usually be resolved within 72 hours. The Selah Water System considers the following to be Level 2 emergencies:

- Disruption of supply such as a transmission line break, pump failure with a potential for backflow, and loss of pressure.
- Storage is not adequate to handle disruption in supply.
- An initial positive coliform or E. coli sample test result.
- An initial primary chemical sample test result above the DOH standard.
- A disruption in chlorine feed to the water supply.
- A minor act of vandalism.

C. Level 3 - Significant Emergencies

The system experiences a significant mechanical or contamination problem where disruption in supply is inevitable, and issuance of a health advisory is necessary to protect public health. Significant emergencies should be reported to DOH as soon as possible to determine the best available means to protect the health of the system users. Resolution of the emergency may require the aid and assistance of outside entities, and may take longer than 72 hours to resolve. The Selah Water System considers the following to be Level 3 emergencies:

- A verified sample test result above a DOH standard requiring immediate consideration of a health advisory notice to customers.
- A loss or failure of a major water system component resulting in a water shortage or requiring system shutdown.
- An act of vandalism or terrorist threat such as intrusion or damage to a major water system component.

D. Level 4 - Catastrophic Disasters/Major Emergencies

The water system experiences major damage or contamination from a natural disaster, an accident, or an act of terrorism. Such incidents usually require immediate notification of local law enforcement and local emergency management services. Immediate issuance of health advisories and declaration of water supply emergencies are critical to protect public health. These events often take several days or weeks to resolve before the system returns to normal operation. The Selah Water System considers the following to be Level 4 emergencies:

- An earthquake or landslide that shuts down the system or impacts sources, lines, etc.
- An act of terrorism possibly contaminating the water system with biological or chemical agents.
- A significant chemical spill in close proximity to one of the system's sources.
- A storm that significantly damages system facilities.

6.7.5 Emergency Notification

During most emergencies, it will be necessary to quickly notify a variety of parties. Preparation for such notification has the following three essential components:

- Assigning responsibility to oversee and carry out the notifications.
- Assembling comprehensive call-up lists with names and contact numbers.
- Writing out procedures for quickly disseminating information to appropriate parties.

Valuable response time can be lost without readily available notification information or the means to deliver it. Having well-formed partnerships will help during these times.

In addition to phone, email, and media (radio, television, newspaper) for notification, the water system may consider forming partnerships with local community groups to assist in delivering information to customers when needed.

Call-up lists should be comprehensive, including local law enforcement, Yakima County Emergency Management, Yakima County Health District, DOH Drinking Water, WDOE, county and neighboring city officials, service and repair providers, and water testing laboratories. A list of priority customers, such as nursing homes, medical clinics, and schools should also be maintained for immediate notification. Provided in Table 6-8, Table 6-9, Table 6-10, and Table 6-11 are notification lists to be used during emergency situations.

Notification templates are available at:

http://water.epa.gov/lawsregs/rulesregs/sdwa/publicnotification/compliancehelp_templates.cfm

TABLE 6-8 LOCAL NOTIFICATION LIST	
Entity	Contact Numbers
Selah Public Works (Water) Department	daytime phone: 698-7365 24-hour phone: 698-7365
Selah Police Department	daytime phone: 698-7347 24-hour phone: 911
Yakima County Sheriff's Office	daytime phone: 574-2500 24-hour phone: 574-2500
Yakima County Office of Emergency Management	daytime phone: 574-1900 24-hour phone: 574-2500
Yakima Health District	daytime phone: 575-4040 24-hour phone: 575-4040
Yakima County Public Works Department	daytime phone: 574-2300 24-hour phone: 574-2300
City of Yakima Water Department	daytime phone: 575-6154 24-hour phone: 575-6154
Water Testing Laboratory: Cascade Analytical, Inc.	daytime phone: 452-7707
Newspaper: Yakima Herald Republic	daytime phone: 248-1251
Radio Stations: KIT - 1280 AM	daytime phone: 972-5481
Television Stations: KAPP KNDO KIMA	daytime phone: 453-0351 daytime phone: 225-2300 daytime phone: 575-0029

TABLE 6-9 STATE NOTIFICATION LIST	
Entity	Contact Numbers
Department of Health (DOH), Eastern Region	daytime phone: (509) 329-2100 24-hour phone: 1-877-481-4901
Washington Department of Ecology (WDOE)	daytime phone: 575-2490 24-hour phone: 575-2490
DOH Drinking Water After-Hours Emergency Hotline	1-877-481-4901

TABLE 6-10 SERVICE / REPAIR NOTIFICATION LIST	
Entity	Contact Numbers
Electrical: Hoydar Buck	 daytime phone: 697-8800
Pumps: Akland HN Electric	 daytime phone: 452-7867 daytime phone: (800) 795-3537 547-1691
Telemetry System: Technical Systems, Inc. (service) Crown Control (supplies)	 daytime phone: (206) 775-5696 daytime phone: (206) 775-7309
Water System Materials: H.D. Fowler Co. Pacific Waterworks Western Utilities	 daytime phone: 952-7751 daytime phone: (800) 422-0057 daytime phone: (509) 535-1396
Chlorination System: Spokane Instruments	 daytime phone: (509) 292-8560

TABLE 6-11 SENSITIVE USERS NOTIFICATION LIST	
Entity	Contact Numbers
Schools: Selah School District Yakima Valley School	 daytime phone: 697-0706 voice mail: 697-0700 daytime phone: 697-1245
Medical / Dental Facilities: Selah Family Medicine Selah Medical Center Selah Clinic Selah Family Dentistry Terry Savage, DDS Jennifer King, DDS Richard Washut, DDS Selah Physical Therapy	 daytime phone: 697-5511 daytime phone: 697-8008 daytime phone: 697-4827 daytime phone: 697-4744 daytime phone: 697-7206 daytime phone: 697-4821 daytime phone: 697-4666 daytime phone: 607-9109
Nursing Homes: Riverview Manor Selah Convalescent	 daytime phone: 697-3333 daytime phone: 697-8503
Red Cross:	daytime phone: 457-1690

Notification procedures describe who is responsible for conducting notifications, who assists in the notifications, how to make notifications to specific parties, and what methods are used to complete the notifications. Notification procedures include how to issue a health advisory in the event the water supply is unsafe for drinking or use.

Other procedures include:

- Notifying water system personnel who are on-call and/or off-duty.
- Notifying customers, priority customers, and industrial users.
- Alerting local law enforcement, local emergency management, local health officials, drinking water officials, and water testing laboratories when appropriate.
- Contacting service and repair contractors.

- Contacting neighboring water systems for assistance, if necessary.
- Arranging for alternative water supplies.

Table 6-12 through Table 6-16 provide notification procedures for the Selah Water System.

TABLE 6-12 CUSTOMER NOTIFICATION PROCEDURES	
Responsibility:	The Public Works Director (PWD) should consult with the Mayor, the City Administrator, and the Water System Manager (WSM) as part of the decision-making process, whether to notify customers regarding a potential water shortage, water contamination, or other situation that results in water use restrictions. Once the decision is made to notify customers, procedures for notification should be initiated.
Procedures:	The PWD confers with the WSM to verify problems. The Mayor, the City Administrator, and the PWD develop the message to be delivered to the customers and to the media. PWD consults with Department of Health regarding the problem and response alternatives. WSM continues to investigate problem and make repairs/take action as necessary. Notice to customers will be distributed by: Water System staff placing water notices on customers' doors and on signs posted on travel routes throughout the City. PWD contacts media requesting issuance of notice and information on the problem. Administrative support person will provide a pre-scripted message to phone callers and log in each phone call. WSM continuously updates the Mayor, the City Administrator, and the PWD on the current condition of the problem. Once the problem is resolved: Water System staff re-notify customers through signs on doors. PWD notifies media regarding problem resolution.

TABLE 6-13 LAW ENFORCEMENT, EMERGENCY MANAGEMENT, COUNTY HEALTH, DOH, AND WDOE NOTIFICATION PROCEDURES	
Responsibility:	The Public Works Director (PWD) is responsible for notifying law enforcement, emergency management, county health, DOH, and WDOE.
Procedures:	PWD consults with the Mayor and the City Administrator regarding if and when to notify law enforcement, emergency management, county health, DOH, and WDOE. PWD consults with DOH regarding the problem and response alternatives. PWD informs law enforcement, emergency management, county health, and WDOE, and requests assistance as appropriate.

TABLE 6-14 SERVICE AND REPAIR CONTRACTOR NOTIFICATION PROCEDURES	
Responsibility:	The Water System Manager (WSM) is responsible for contacting service and repair contractors.
Procedures:	WSM determines what repairs and/or services are needed to return the water system to normal operation. WSM contacts service and repair contractors, and monitors the progress of the work. WSM informs the Public Works Director of the progress of the repairs and the time estimate for returning the system to normal operation.

TABLE 6-15 NEIGHBORING WATER SYSTEM NOTIFICATION PROCEDURES	
Responsibility:	The Public Works Director (PWD) is responsible for contacting neighboring water systems.
Procedures:	PWD consults with the Mayor and with the City Administrator regarding if and when a neighboring water system will be contacted, and what assistance will be requested. PWD contacts neighboring water system and requests appropriate assistance.

TABLE 6-16 HEALTH ADVISORY ISSUANCE NOTIFICATION PROCEDURES	
Responsibility:	The Public Works Director (PWD) is responsible for issuing a health advisory.
Procedures:	PWD consults with DOH regarding problem and response procedures.

6.7.6 Water Quality Sampling

Many types of emergencies can jeopardize the quality of water and potentially sicken those using the water. Because the most important goal for any water system is to protect human health, the system must know how to act quickly and make decisions on whether to issue a health advisory.

Contamination of drinking water, whether intentional or unintentional, comes in many forms, and are classified in the following four general categories:

- Bacteriological organisms.
- Inorganic substances such as metals or cyanide.
- Organic substances such as pesticides or volatile compounds.
- Radionuclides.

The Selah Water System monitors its system's water quality in accordance with DOH requirements. Selah's regular water testing program was described earlier in this Chapter.

If there is reason to believe that the water has been contaminated, the Public Works Director should consult with DOH and consider issuing a health advisory as soon as possible - often before conducting water quality sampling.

If Selah determines that water quality sampling and testing should be conducted, the City should immediately contact the laboratory that will be performing the analysis to obtain appropriate sampling bottles, and sampling and chain-of-custody procedures. Selah typically uses Cascade Analytical for its water quality analysis.

Cascade Analytical, Inc.
1008 West Ahtanum Road
Union Gap, WA 98903
Phone: 452-7707

Bacteriological testing should be conducted in accordance with the City's current Coliform Monitoring Plan. A copy of that document is included in CHAPTER 10 of this Plan.

6.7.7 Response Actions for Specific Events

For any emergency, there are a series of general steps that a water system should take:

1. Confirm and analyze the type and severity of the emergency.
2. Take immediate action to save lives.
3. Take action to reduce injuries and system damage.
4. Prioritize and accomplish system repairs.
5. Return the system to normal operation.

Table 6-17 through Table 6-24 identify the assessment, response actions, notifications, and follow-up actions required for various emergency situations.

TABLE 6-17 RESPONSE ACTIONS FOR POWER OUTAGES

Assessment	The Selah Water System experiences an average of 2 outages per year that last 20 minutes to several hours. Of the system's sources, only Well No. 7 is equipped with an emergency electrical generator. Of the system's booster pump stations, only the Well No. 6 Booster Pump Station can operate with a City-owned electrical generator. Historically, power outages have been of short duration such that reservoir storage has been able to supply the City with water until power is restored.
Immediate Actions	1. Assess whether the outage is likely to last more than 2 hours. If no, be on alert for changing conditions and monitor reservoir levels. If yes, complete the following: a. Ensure the standby generator at Well No. 7 is running. b. Operate the Well No. 6 Booster Pump Station using a City-owned portable generator. c. Implement water shortage response actions to inform customers to cut back on water usage until power is restored.
Notifications	1. Pacific Power (power company) - Let them know that a public water system is experiencing an outage. 2. Implement water shortage response actions to inform customers to cut back on water usage until power is restored.
Follow-Up Actions	1. Turn off and disconnect standby generator at Well No. 7 and the portable generator at the Well No. 6 Booster Pump Station. 2. Return system to general power supply. 3. Inspect reservoirs and pumping facilities to ensure proper operation and to assess any damages.

TABLE 6-18 RESPONSE ACTIONS FOR WATER MAIN BREAK	
Assessment	Visually determine the physical nature of the problem.
Immediate Actions	Visually assess the problem. Return to the area if the water needs to be turned off to effect repairs.
Notifications	Notify customers prior to shutting off water.
Follow-Up Actions	Check with all customers to ensure water has been returned to normal service. Take water samples for bacteriological testing.

TABLE 6-19 RESPONSE ACTIONS FOR MICROBIAL CONTAMINATION	
Assessment	Collect repeat samples to confirm contamination. If confirmed, determine the reason for the cause or source and the locations of the contamination.
Immediate Actions	Inform the Public Works Director, who will review the assessment with the appropriate personnel. Immediately take corrective actions.
Notifications	Contact DOH to discuss public notification, follow-up requirements, and additional steps to resolve the problem. Acute maximum containment levels (MCL) violations require public notification within 24 hours, and a boil water order will almost always be issued.
Follow-Up Actions	If contamination was accidental due to construction or a repair procedure, then those procedures need to be reviewed. If the cause was intentional, then new or existing safeguards need to be implemented or reviewed.

TABLE 6-20 RESPONSE ACTIONS FOR CHEMICAL CONTAMINATION	
Assessment	Collect repeat samples to confirm contamination. If confirmed, determine the cause or source and the location(s) of the contamination.
Immediate Actions	Inform the Public Works Director, who will review the assessment with the appropriate personnel. Immediately take corrective action.
Notifications	Contact DOH to discuss public notification, follow-up requirements, and steps to resolve the problem. Maximum containment levels (MCL) violations require public notification within 24 hours.
Follow-Up Actions	Follow-up actions for chemical contamination monitoring and sampling frequency will be conducted under the procedures listed in WAC 246-290-320 and the Code of Federal Regulation 141.24. If contamination was accidental due to construction or a repair procedure, then those procedures need to be reviewed. If the cause was intentional, then new or existing safeguards need to be implemented or reviewed.

TABLE 6-21 RESPONSE ACTIONS FOR EARTHQUAKE	
Assessment	Visually determine the nature and extent of damage to the water system.
Immediate Actions	Inform the Mayor, the City Administrator, the Public Works Director, and the Water System Manager of the nature and extent of damage/disruption to the water system.
Notifications	Notify affected customers.
Follow-Up Actions	Provide customers with estimated length of service disruption.

TABLE 6-22 RESPONSE ACTIONS FOR HAZARDOUS MATERIAL SPILL	
Assessment	Assess the nature and extent of the spill.
Immediate Actions	Contact local agencies including DOH, WDOE, Selah Police, Yakima County Sheriff, and Yakima County Office of Emergency Management.
Notifications	Notify affected customers.
Follow-Up Actions	Provide customers with estimated length of service disruption.

TABLE 6-23 RESPONSE ACTIONS FOR ELECTRONIC EQUIPMENT FAILURE	
Assessment	Assess the nature and extent of the failure.
Immediate Actions	Contact certified electrician.
Notifications	Notify all affected customers.
Follow-Up Actions	Provide customers with estimated length of service disruption.

TABLE 6-24 RESPONSE ACTIONS FOR VANDALISM OR TERRORIST ATTACK	
Assessment	Assess the nature and extent of the situation/condition.
Immediate Actions	Contact Selah Police Department.
Notifications	Notify any and all affected customers.
Follow-Up Actions	Repair all known problems.

6.7.8 Alternative Water Sources

Water contamination or disruption of supply may require that the water system obtain water from another source to meet basic community needs, and water systems should plan ahead to provide safe water during an emergency. It is important to evaluate potential alternative water supplies ahead of time to ensure the water is safe and the supply is available.

Table 6-25 provides information regarding alternative water sources.

TABLE 6-25 ALTERNATIVE WATER SOURCES				
Alternative Source	Name	Phone	Availability	Safe for Drinking?
City of Yakima in conjunction with tanker trucks	City of Yakima Dave Brown	575-6204	yes	yes
Bottled Water	Central Vending	248-1212	yes	yes
	Crystal Springs Water Co.	225-7822	yes	yes
	Culligan Water Conditioning	452-6601	yes	yes
	Independent Water Service	457-3631	yes	yes

6.7.9 Returning to Normal Operations

As the emergency passes, the system must prepare to return to normal operation. This may be a very simple or very complex process, depending on the type and severity of the emergency. Returning to normal operation may simply mean the system restores power and the portable generator is disconnected, or it could mean the system has to be repeatedly disinfected to obtain the proper number of satisfactory coliform tests necessary to lift a health advisory.

Many factors may need to be considered before a water system is returned to normal operation. Examples include:

- Has the system been repaired to the point that it can meet demand?
- Has the system manager made a safety and operational inspection of all system components?
- Has the system been properly flushed, disinfected, and pressure tested?
- Has the water been adequately tested in accordance with sampling regulations?
- Does the water meet drinking water standards?
- Is there adequate staff to operate and manage the system?
- Do federal, state, and local agencies support returning the system to normal operation?
- Have the proper public messages and notifications been developed?

Table 6-26 presents a guide of actions and activities for returning the system to normal operation.

TABLE 6-26 ACTIONS FOR RETURNING THE SYSTEM TO NORMAL OPERATION	
Action / Activity	Description
Inspect, flush, and disinfect the system	Water System Manager (WSM) and support staff inspect all system facilities and verify that the system has been flushed and disinfected and that all water quality tests have been done.
Verification of water quality	WSM and Public Works Director (PWD) verify water quality sampling results.
Coordinate with DOH	PWD coordinates with DOH regarding system condition and water quality results.
Notify customers	PWD meets with WSM and communications lead to write and distribute notice to customers.

6.8 CROSS-CONNECTION CONTROL PROGRAM

In 1998, Selah developed a cross-connection control program intended to protect the City's water distribution system from the possibility of contamination due to existing or potential cross-connections. Selah's cross-connection program includes the following elements:

1. Adoption of a written ordinance authorizing the establishment and implementation of a cross-connection control program (City Ordinance No. 1137, enacted 1994, now exists as Chapter 9.02.046 – Cross-Connection Control, within the City of Selah Municipal Code);
2. Written procedures for implementing the cross-connection control program;
3. Identification of a staff position delegated for organization and implementation of the cross-connection control program, and the qualifications required of personnel working in the cross-connection control program;
4. Detailed procedures for conducting surveys of new and existing facilities to identify all existing and potential cross-connections;
5. A list of approved backflow assemblies;
6. A procedure to ensure all required backflow assemblies are tested upon installation, after a repair or relocation, and on a routine basis as established by State regulation;
7. A record system which includes a list identifying the location of all required cross-connection control devices, the type of device, the testing schedule, the performance results, a description of repairs and/or repair recommendations, and the tester's name and certification number; and
8. A description of the process which will provide cross-connection control information to existing and future users.

A copy of Selah's *Cross-Connection and Backflow Policy and Procedures* is included within CHAPTER 10 of this Plan. A copy of Selah's *2012 Cross Connection Summary Report* is included within CHAPTER 10 of this Plan.

6.9 CUSTOMER COMPLAINT RESPONSE PROGRAM

The City of Selah maintains a Water System Customer Complaint Response Program. The program is designed to formally receive, track, and record complaints received regarding the City's water system. Water system complaints typically include taste, cloudy and/or discolored, odor, low or excessive pressure, and leaky or broken service connections or water mains. 66 complaints have been received by the City during the reporting period between 2007 and 2012, as shown in Table 6-27.

TABLE 6-27 SELAH WATER SYSTEM COMPLAINTS 2007-2012

Year	Taste	Cloudy and/or Discolored	Odor	Low/High Pressure	Leaky/Broken Service Connections	Other
2007	0	3	1	5	2	1
2008	1	1	0	1	0	0
2009	1	1	0	1	0	0
2010	0	1	0	8	2	0
2011	0	4	0	5	1	2
2012	1	6	6	6	5	1
TOTALS	3	16	7	26	10	4

Complaints received by the City are routed to the Public Works Department, where the information is recorded onto a Water System Complaint Response Form. The complaint information and form are routed to the Public Works staff for investigation and to resolve the problem. Actions taken to resolve the problem are recorded on the form and kept on file by the Public Works Department. A copy of the Water System Complaint Response Form is included in CHAPTER 10 of this Plan.

6.10 RECORD KEEPING AND REPORTING

The City of Selah keeps and maintains records on its water system as shown in Table 6-28.

TABLE 6-28 SELAH WATER SYSTEM RECORDS

Record Type	Location of Records	Retained For:
Water Consumption (by user category)	City Hall	5 Years
Water Production (by well)	City Hall	10 Years
Well Water Level Measurements	City Hall	5 Years
Water Quality Testing Results	City Hall	5 Years*
Equipment Maintenance	City Hall	5 Years
Water System Complaints	City Hall	5 Years
Backflow Assembly Testing	City Hall	5 Years

* Does not include chemical analysis results, which shall be kept as long as the system is in operation.

Water quality monitoring results are reported to the Department of Health as required.

6.11 O&M IMPROVEMENTS

Improvements required for operation of the existing water system, including routine sanitary surveys by the DOH, planning document updates, and other miscellaneous operational improvements are discussed in CHAPTER 8 of this Plan. System operational costs associated with water quality testing and administrative tasks are included in the City's general water operational budget and have not been identified or estimated separately.

Recommended improvements necessary for maintenance of the existing system, such as meter replacement and calibration, hydrant replacement, well rehabilitation, reservoir cleaning and inspection, and other miscellaneous maintenance related improvements, are also discussed in detail in CHAPTER 8 of this Plan. CHAPTER 8 also includes a schedule for completion of both routine and individual O&M improvements, including their estimated costs.

CHAPTER 7 - DISTRIBUTION FACILITIES DESIGN AND CONSTRUCTION STANDARDS

7.1 PROJECT REVIEW PROCEDURES

The City of Selah requires that all water system improvements proposed by others (e.g., developers, industries, etc.) be designed and appropriate construction documents prepared by a professional engineer licensed to practice in the State of Washington. The City may require a project report prior to design and document preparation if the proposed work includes pumps, reservoirs, and/or other unique characteristics.

Project reports and/or construction plans and specifications for water distribution main improvements shall be submitted to the City for review. Review of said documents is undertaken by the City's Public Works Department, Fire District, and engineering consultant under the provisions of WAC 246-290-125(2). Comments and/or required changes are then forwarded to the proponent. Resubmittal of the revised documents, review and City approval are required before construction may proceed. Following completion of construction and acceptance by the City, a completed Department of Health (DOH) Construction Completion Report form shall be submitted to the City. Under the provisions of WAC 246-290-125(2) and waiver approval by Department of Health (DOH), the City will not submit project reports and construction documents to DOH for review and approval, but will maintain on file completed construction completion reports.

In addition to being reviewed and approved by the City Public Works Department, City Fire Department, and engineering consultant, project design reports and/or construction plans and documents for all projects with the exception of distribution-related projects, as defined in WAC 246-290-010, must be submitted to and approved by the Department of Health as specified in WAC 246-290-120 before construction may proceed. Required documents shall be submitted by the proponent to the following address:

Washington State Department of Health
Office of Drinking Water
Eastern Drinking Water Operations
16201 East Indiana Avenue, Suite #1500
Spokane Valley, WA 99216

7.2 POLICIES AND REQUIREMENTS FOR OUTSIDE PARTIES

Selah will provide water service to properties outside the City Limits, but within its service area in accordance with the service area policies of Chapter 9.15 of the City's Municipal Code. Customers outside the City Limits must execute an outside utility agreement and will be assessed water rates which are higher than those charged to customers within the City Limits. A copy of the City's Municipal Code is provided in CHAPTER 10 of this Plan.

As a prerequisite to obtaining domestic water service, Selah requires property owners to make a sanitary sewer connection, if available, within 200 feet or less of the nearest property corner. If sanitary sewer is not available within 200 feet, the property owner is required to sign a waiver prohibiting the property owner from opposing a future Local Improvement District (LID) for sewer service.

All costs associated with extending water mains to unimproved properties are the responsibility of the developer, including any required inspection fees by the City. Requirements to be met by developers when extending the City's water system are identified in the *Extension by Developers Policy* and the *City of Selah Design and Construction Standards and Specifications for Public Works Improvements*. Copies of these documents are provided in CHAPTER 10 of this plan. In addition, Selah has established through Ordinance 1450 a *Latecomer's Agreement* for extension of water mains. A copy of this ordinance is provided in CHAPTER 10 of this plan.

7.3 DESIGN STANDARDS AND CONSTRUCTION STANDARDS

All water system improvements must conform to Selah's most current design and construction standards, *City of Selah Design and Construction Standards and Specifications for Public Works Improvements*. A copy of the design and construction standards is provided in CHAPTER 10 of this Plan.

7.4 CONSTRUCTION CERTIFICATION AND FOLLOW-UP PROCEDURES

Selah confirms that water system extensions are constructed in accordance with City requirements through construction inspection by City Public Works staff and observation of pressure testing of new water lines by the developer. Construction inspection procedures are addressed in the *City of Selah Design and Construction Standards and Specifications for Public Works Improvements* and in the *Extension by Developers Policy* as provided in CHAPTER 10 of this Plan. The City may reject construction for which it has not had ample opportunity for inspection.