CITY OF OKANOGAN

OKANOGAN COUNTY **WASHINGTON**

WATER SYSTEM PLAN

G&O #24801
DECEMBER 2025

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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CHAPTER 1

DESCRIPTION OF THE WATER SYSTEM

This chapter presents information on ownership and management of the water system, system background data, an inventory of existing system components, water rights, related planning documents, existing and future service areas and characteristics, and service area agreements and policies.

OWNERSHIP AND MANAGEMENT

The City of Okanogan, which is governed by a Mayor and City Council, owns, operates, and manages the City's water system. The Washington State Department of Health water system identification number for the water system is 63200M. An updated Water Facility Inventory (WFI) form is provided in Appendix A and a copy of the City's operating permit is provided in Appendix G. Contact information for the City is shown in Table 1-1. City staff involved in the management of the water system and their certifications are shown in Table 1-2.

TABLE 1-1

City Contact Information

Contact	Address	Phone No.
Shawn Davisson Public Works Director	120 3rd Avenue North P.O. Box 752 Okanogan, WA 98840	(509) 422-3600

TABLE 1-2

Operator Certifications

Operator	Title	Certifications(1)
Barry Featherly	Water System Manager	WDM2, WTPO 1, CCS

(1) WDM2 = Water Distribution Manager 2; WTPO1 = Water Treatment Plant Operator 1; CCS = Cross-connection Control Specialist.

HISTORY AND BACKGROUND

The City of Okanogan, as shown in Figure 1-1, is located in north-central Washington on the banks of the Okanogan River, which forms the western boundary of the Colville Indian Reservation. The City sits on a narrow river plain with steeply rising side slopes. Okanogan began as a trading post established by Frank J. Cummings in 1886, located near the mouth of Salmon Creek. As settlement near the post grew, it became the first

City in the Okanogan Valley, known then as Alma, a name that is still borne by Alma Park. The Okanogan River and area springs were the earliest water sources used by City residents.

As the City grew, the City changed its name to Pogue in 1905, to honor one of the area's earliest orchardists. In 1907 the City was incorporated with a name change, due to the difficulty in pronouncing Pogue; the City changed its name to Okanogan, taken from the Salish Indian language meaning "rendezvous." At the same time, the City first started to use Salmon Creek Springs as a municipal supply source, and a rudimentary concrete distribution system was developed. In 1914, after a countywide election, the City was awarded the county seat of government of the largest geographic county in the State of Washington. The City continued to use Salmon Creek Springs as the sole municipal supply until the late 1920s when the Park Well was developed. This well was located near Alma Park and received its supply from shallow groundwater fed by the Okanogan River. In 1939, Well No. 1 was drilled to provide additional source capacity. Major source, storage, and distribution system improvements continue to the present day.

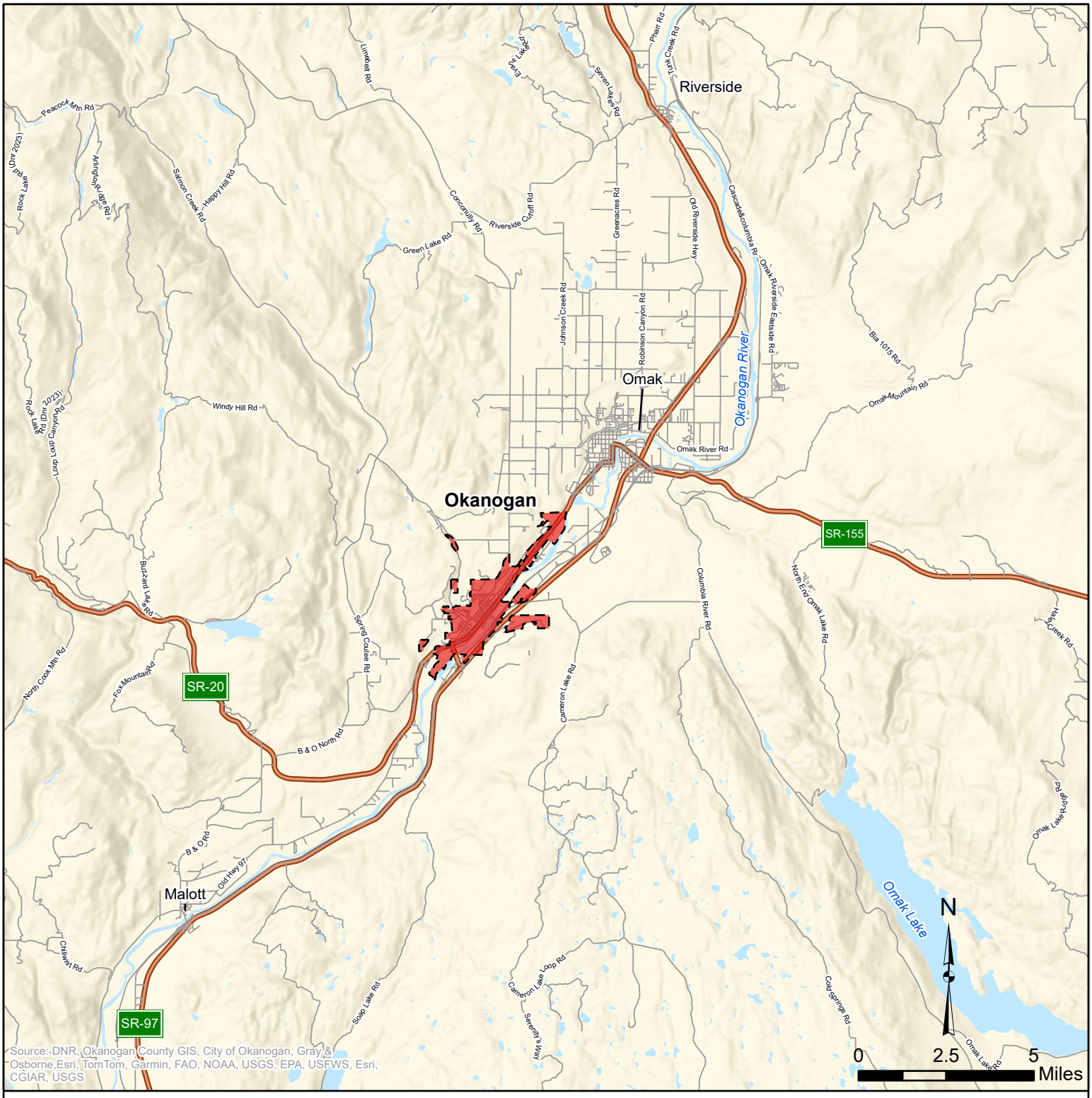
EXISTING FACILITIES

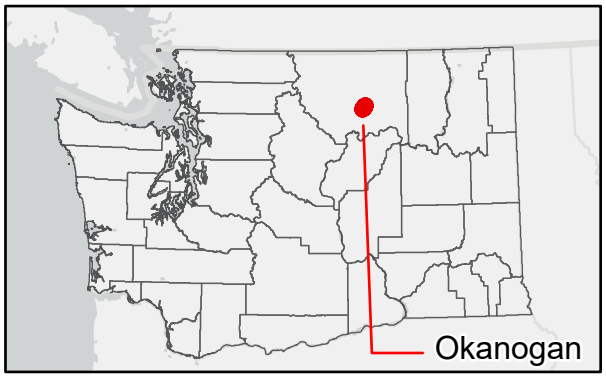
Okanogan's water system consists of five groundwater wells, one surface water source, six reservoirs, two booster pump stations, a transfer station, and approximately 22 miles of transmission and distribution piping. An inventory of major system components is presented herein. The City's water system has two open and one closed pressure zone. Photographs of the City's existing well house, reservoirs, booster stations, and transfer station are presented in Chapter 6.

A summary of the physical components of the City's water system is presented in Tables 1-3 through 1-6. A map of the water system is shown in Figure 1-2.

SOURCE OF SUPPLY

The City's domestic water is currently supplied from four of its five groundwater wells, which are shown in Figure 1-3.





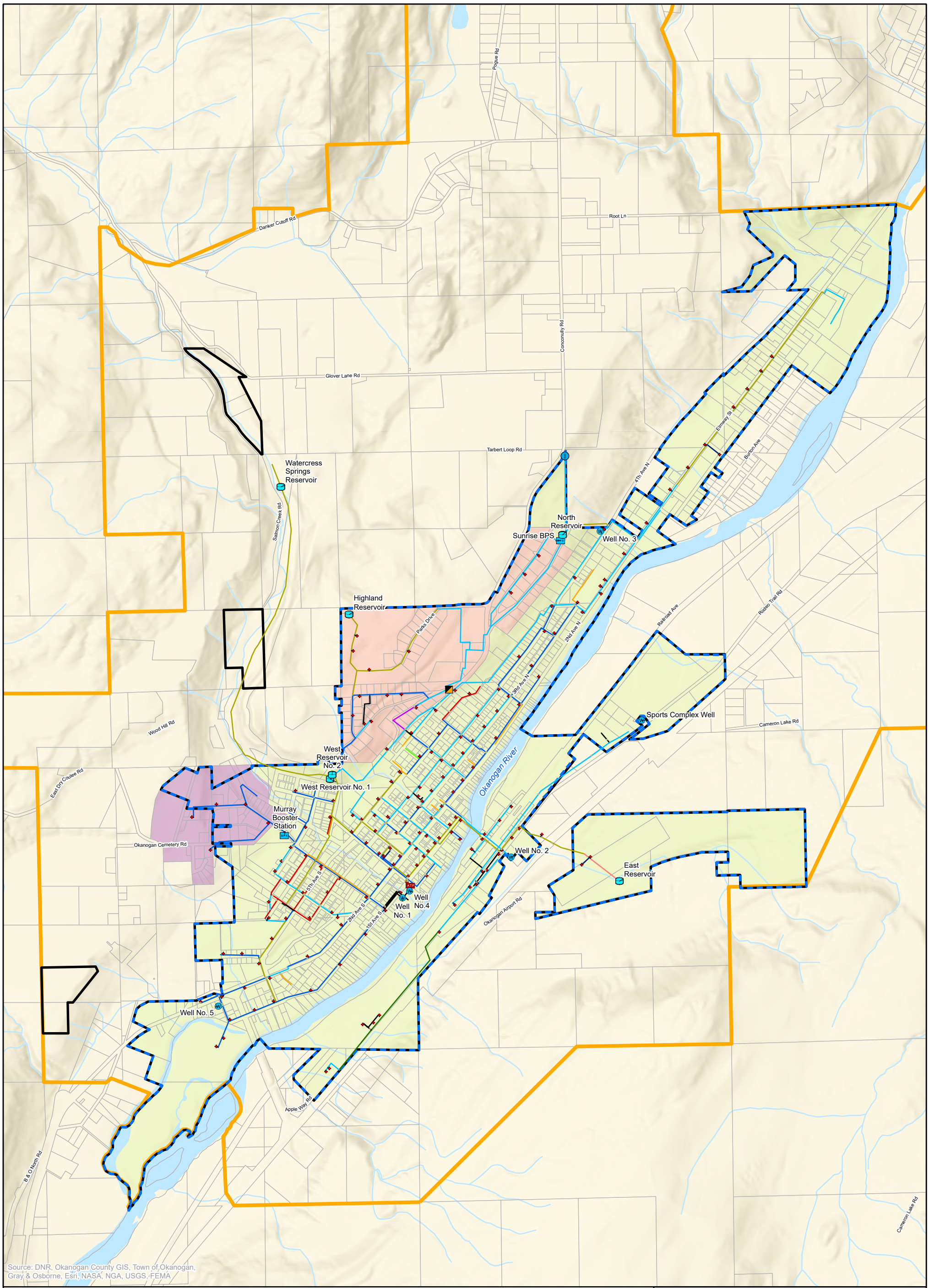
CITY OF OKANOGAN

WATER SYSTEM PLAN

FIGURE 1-1

VICINITY MAP

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Water System

- Hydrant
- Valve
- Well
- Intertie
- Pump Station
- Pressure Reducing Valve
- Reservoir
- Arsenic Treatment Facility Plant

Water Main (Diameter)

- Unknown
- 1"
- 2"
- 2.5"
- 4"
- 4.25"
- 6"
- 8"
- 10"
- 12"
- 16"

Pressure Zone

- Murray Pressure Zone
- Highland Pressure Zone
- Main Pressure Zone

Reference

- Retail/Future Service Area
- UGA/Service Area
- City Limits
- Parcel
- Surface Water

N

0 625 1,250 2,500 Feet

CITY OF OKANOGAN

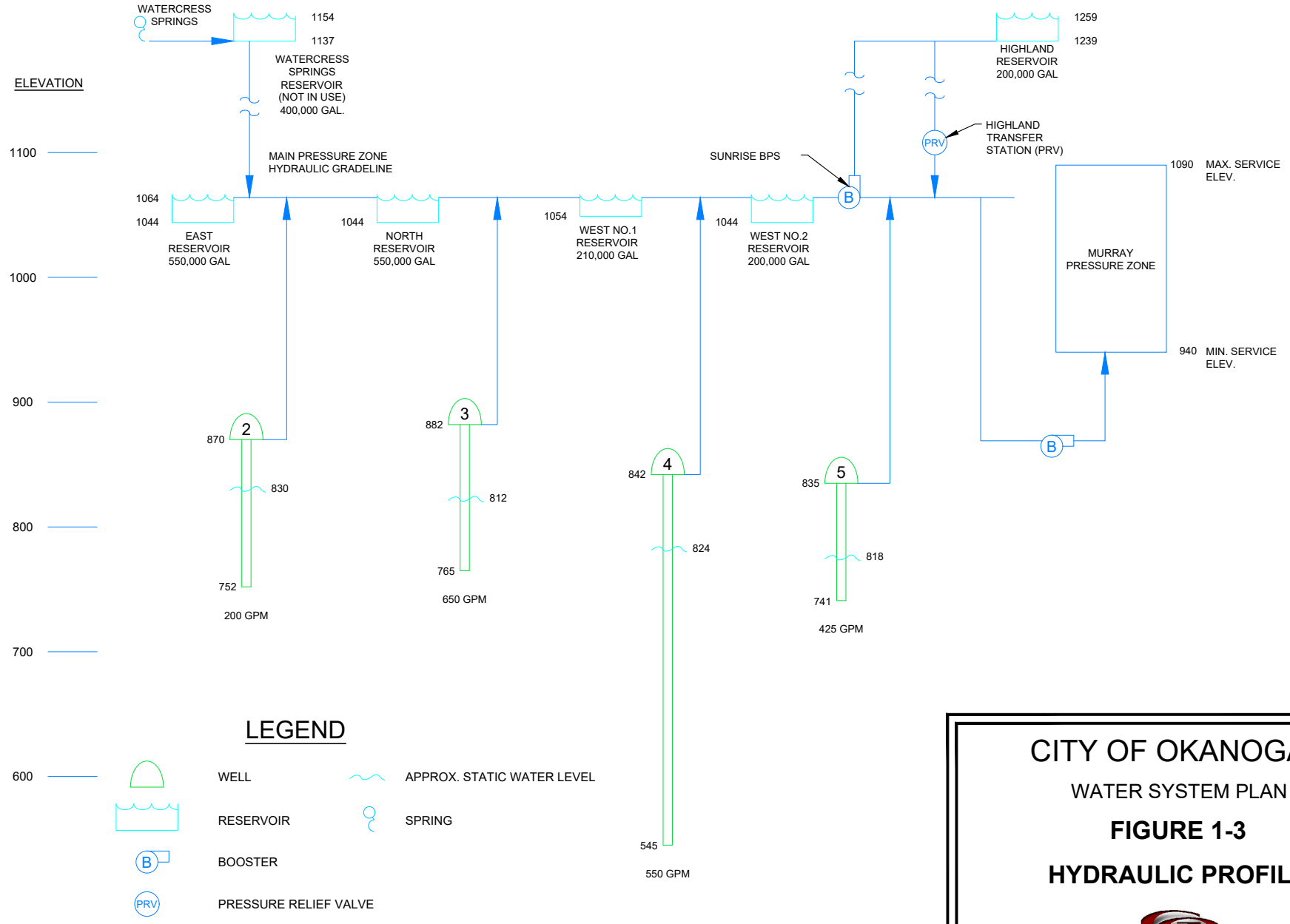
WATER SYSTEM PLAN

FIGURE 1-2

EXISTING SYSTEM

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M:\Okanogan\24801 - Water System Plan\Figures\FIG 1-3.dwg, 11/21/2024 1:43 PM, CHRISTIAN WEISHAAR



CITY OF OKANOGAN

WATER SYSTEM PLAN

FIGURE 1-3

HYDRAULIC PROFILE

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TABLE 1-3

Existing Water System: Source

Parameter	Well 1	Well 2	Well 3	Well 4	Salmon Creek Springs	Well 5
DOH Source No./ID	S01 49G013	S02 49G014	S03 49G015	S04 49G016	S05	S06 49G053
DOE Well Tag No.	-	ABR535	AGJ158	AGJ157	AGJ159	AGJ156
DOH Status/Usage	Inactive/ Emergency	Active/ Permanent	Active/ Seasonal	Active/ Seasonal	Inactive/ Permanent	Active/ Permanent
Year Drilled/Redrilled	1939	1947/2000	1963	1976/2001	1908	1987
Total Depth	90 ft.	117 ft.	117 ft.	297 ft.	N/A	94 ft.
Ground Surface	840 ft. msl	870 ft. msl	882 ft. msl	842 ft. msl	1,170 ft. msl	835 ft. msl
Static Water Level	-	40 ft. bgs	70 ft. bgs	18 ft. bgs	-	17 ft. bgs
Casing Description	8" set @ 47'	12" diam. from 0' to 117'	12" diameter 0' to 117' Perf casing 80' to 117'	12" diameter 0' to 259' well screen 248' to 278'	-	18" diam. From 0' to 39'; 18" screen from 39' to 69'; 13" diam. From 69' to 94'
Pump type	Removed	Submersible	Submersible	Submersible	N/A	Submersible Turbine
Motor size	N/A	25 hp	60 hp	75 hp	N/A	50 hp
Emergency Power	No	No	No	Trailer-mounted	N/A	Trailer-mounted
Estimated Flow, gpm	N/A	200	650	550	Gravity Flow	350
Physical Address	601 1st Avenue South	100 Van Duyn Street	1537 4th Avenue North	51 Tyee Street	Salmon Creek Road	149 Ione Street

Well 1, drilled in 1939, is located at 601 1st Avenue South in Alma Park near the City swimming pool. The well is located on the east side of 1st Avenue, between Tyee and Conconully Streets, approximately 150 feet south of Salmon Creek. The use of this well was discontinued in 1985 and the majority of its water rights transferred to Well 5 when well production decreased to less than 50 gpm. The pump was removed from the well and the well casing was sealed with a steel plate.

Well 2, originally drilled in 1947 and re-drilled in 2000, is located in East Okanogan on City-owned property at the northeast quadrant of the intersection of Oak and Van Duyn Streets. Well 2 supplies the City's main pressure zone.

Well 3, drilled in 1963, is located on the west edge of 4th Avenue, north of Hinde Street, at the base of the hill and below the North Reservoir. Well 3 supplies the City's main pressure zone.

Well 4, originally drilled in 1976 and redrilled in 2001, is located on City-owned property at the intersection of 1st Avenue and Tyee Street, immediately adjacent to Salmon Creek. This well, equipped with a flow control valve, pitless adapter with a below-ground discharge, and trailer-mounted backup generator, pumps to the City's arsenic treatment facility within the City's main pressure zone.

Well 5, drilled in 1987, is located at the intersection of Ione Street and 2nd Avenue. The well, equipped with a flow control valve (vault installation), pitless adapter with below-ground discharge, and trailer-mounted backup generator, supplies the City's main pressure zone.

The Alma Park Well was constructed in the 1920s to augment supply from the Salmon Creek Springs. The well was located on the western bank of the Okanogan River near Alma Park. The hand-dug well was approximately 3 feet in diameter and 30 feet deep and was equipped with two pumps (300 and 225 gallons per minute (gpm)). The well was pumped into a cistern beneath the City sidewalk from which the water was pumped. This well has not been used since the 1970s and water rights associated with this well were transferred to Well 1 through the Washington State Department of Ecology (DOE).

Salmon Creek Springs is the City's original water supply but is not currently being used as a domestic water source since the springs were determined to be Groundwater under the Direct Influence of Surface Water (GWI) in 2003. These springs are located one-mile northwest of the City and adjacent to Salmon Creek on 18 acres of property owned by the City. The springs are also known as Watercress Springs and Shull Springs. The property is approximately 2,300 feet in length and averages about 400 feet in width. The property was annexed to allow the City policing powers to control the property.

STORAGE

Okanogan has six reservoirs, five of which are in service, and the characteristics of which are summarized in Table 1-4. The City's current total nominal water storage capacity is 1,648,000 gallons, consisting of the volumes from the East, North, West 1, West 2, and the Highland Reservoir. The East, North, and two West Reservoirs are all on the same hydraulic grade line as indicated in Figure 1-3. The Highland Reservoir, located in a higher pressure zone, is supplied by the Sunrise booster pump station. The City's Watercress Springs Reservoir is currently out of service.

The East Reservoir, with a nominal capacity of approximately 512,000 gallons, is located on the east side of the airport on City-owned property. The reservoir is connected to the City water system by a 16-inch and 12-inch water main. The 16-inch main extends across the full width of the airport to reduce head loss through this level section of the pipeline profile. This reservoir is equipped with a telemetry altitude valve designed to automatically close to prevent reservoir overflows. The piping at the reservoir also includes a check valve in the altitude valve bypass line. The function of the check valve is to operate in parallel with the altitude valve, thereby permitting a higher rate of water withdrawal from the reservoir. On the reservoir filling cycle, the check valve is closed, and all of the water is forced to pass through the controlling altitude valve.

The East Reservoir is a reinforced concrete circular dome-roofed structure partially buried in the hillside with the site enclosed by fencing. This structure is painted orange and white in conformance with Federal Aviation Administration (FAA) requirements for airports. The reservoir is approximately 66 feet in diameter, with a water depth of 20 feet. It was constructed in 1976, under a combination of the Farmers Home Administration (FMHA) and the State Department of Social & Health Services (DSHS) loan and grant programs.

The North Reservoir, with a nominal capacity of approximately 512,000 gallons, is partially buried in the hillside west of the City, just above Well 3. The reservoir is connected to the City's water system with a 12-inch water main. A combination overflow and drain line extends down the hill, parallel to the water main, and discharges into the Okanogan River. This reservoir is equipped with an altitude valve designated to automatically close to prevent reservoir overflows.

The North Reservoir is a concrete circular reservoir with a domed roof constructed in 1977, the year following the construction of the East Reservoir. The structure is approximately 66 feet in diameter and has a maximum water depth of 20 feet. Financing for reservoir construction included assistance from FMHA and DSHS.

The West Reservoirs are located adjacent to each other, west of the City center on a high bluff. The West 2 Reservoir was reconstructed in 2005 and has a nominal capacity of approximately 207,000 gallons. It is a partially buried cylindrical concrete reservoir, with a height of 20 feet. The West 1 Reservoir is believed to have been constructed in the

1950s. The West 1 Reservoir has a capacity of 210,000 gallons and is rectangular, with a trapezoidal cross-section providing a minimal 10 feet of stored water depth. The overflow elevations for the West Reservoirs are approximately 1,064 feet above sea level.

The West Reservoirs overflow line discharges to a small pond to the north of the reservoirs for normal flows. The reservoirs also have an overflow to Salmon Creek for auxiliary overflows.

The Highland Reservoir was constructed in 2005 and is of similar dimensions and geometry to the West 2 Reservoir, with a nominal capacity of 207,000 gallons. This reservoir is an above-ground cylindrical concrete reservoir with a height of 20 feet.

The Watercress Springs Reservoir has not been in use since 2003. It is a 400,000-gallon reservoir designed to store water conveyed from Salmon Creek Springs. The reservoir is located approximately 1,000 feet downstream from the springs, east of the Salmon Creek County Road and east of Salmon Creek, on City-owned property. The reservoir and 12inch steel transmission main were built in 1954.

The Watercress Springs Reservoir is a mostly buried, 66-foot diameter reinforced concrete reservoir with a flat roof and a hopper bottom, varying in depth from 13 to 17 feet. The overflow elevation of the reservoir is approximately 1,154 feet.

TABLE 1-4

Existing Water System: Storage

Parameter	East	North	West 1[(1)]	West 2	Highland	Watercress Springs
Year Constructed	1976	1977	1950	2005	2005	1954
Status	Active	Active	Active	Active	Active	Not in Use
Type of Construction	Concrete	Concrete	Concrete	Concrete	Concrete	Concrete
Nominal Storage Capacity, gal	512,000	512,000	210,000	207,000	207,000	400,000
Diameter, ft	66	66	54 x 54	42	42	66
Height, ft	20	20	10	20	20	17
Base Elevation, ft msl	1,044	1,044	1,054	1,044	1,239	1,137
Overflow Elevation, ft msl	1,064	1,064	1,064	1,064	1,259	1,154
Altitude Valve	Yes	Yes	No	No	No	No
Pressure Zone	Main	Main	Main	Main	Highland	N/A
Physical Address	30 Okanogan Landfill Road	1422 Sunrise Heights	96 Crestview Drive	96 Crestview Drive	927 Parks Drive	Salmon Creek Road

(1) West Reservoir 1 has sloping walls giving this reservoir a trapezoidal cross-section; reservoir height is approximate.

BOOSTER PUMPING STATIONS

The City operates two booster pumping stations, one serving the Highland pressure zone and the other serving a small closed pressure zone on Murray Steet. The characteristics of these booster pumping stations are summarized in Table 1-5.

The original Highland Drive booster pump station was constructed in 1976 at the intersection of Highland Drive and 6th Avenue. In 2005 this booster station was converted to a transfer station and the new Sunrise booster pump station was constructed adjacent to the North Reservoir. This booster station serves the Highland Reservoir and Highlands pressure zone. The total nominal capacities of the Sunrise and Murray Street booster pump stations are 700 gpm and 380 gpm, respectively.

TABLE 1-5

Existing Water System: Booster Pumping Stations

Parameter	Sunrise	Murray Street
Pressure Zone	Highland	Murray
Year Installed	2005	2025, 2018
Hydraulic Grade Line	1,254	1,170
Number of Pumps	2	2
Motor Horsepower (hp)	30	7.5, 7.5
Motor Manufacturer	Franklin Electric	Hitachi, SME USA
Rated Capacity(1) (gpm)	350	190(2)
Voltage	480	230, 230
Phase	3	3, 3
Pump Manufacturer	Simflo	Grundfos, Berkeley
Pump Series	SSJ7C	UHM
Fuse Amperage (amps)	45	24, 24
Physical Address	1409 Sunrise Heights	873 Murray Street

(1) Rated capacity per pump.

(2) The rated capacity of the 7.5-horsepower pump motor is unknown. City public works personnel note that the 7.5-horsepower pump motor performs similarly to the 5-horsepower pump motor.

TRANSFER STATION

The City has a transfer station located at 530 Highland Drive to automatically convey water from the Highland pressure zone (at a higher hydraulic grade line) to the main pressure zone via a four-inch pressure relief valve. This valve is located in a vault near the intersection of Highland Drive and 6th Avenue. This transfer station allows the storage volume of the Highland Reservoir to serve as a backup supply to the main pressure zone should pressures drop in the main pressure zone during a high water demand event.

TRANSMISSION AND DISTRIBUTION

The City has approximately 22 miles of transmission and distribution system piping, consisting primarily of asbestos cement, cast iron, PVC, steel and ductile iron. All new and replacement piping consists of primarily PVC and ductile iron. A summary of the City's piping infrastructure is summarized in Table 1-6.

TABLE 1-6

Existing Water System: Distribution System

Diameter (inches)	PVC (feet)	Steel (feet)	Asbestos-Cement (feet)	Galvanized Iron (feet)	Cast Iron (feet)	Ductile Iron (feet)	HDPE (feet)	Unknown (feet)	Total Length (feet)	Percent of Total
1	0	0	0	0	0	0	0	545	545	0.5%
2	0	0	0	701	0	0	0	3,026	3,727	3.2%
2.5	0	1,086	0	465	0	0	0	0	1,551	1.3%
4	6	0	1,641	0	2,842	0	0	848	5,337	4.5%
6	496	0	12,367	0	9,343	4,348	0	17,610	44,164	37.3%
8	4,074	0	22,001	0	5,876	679	0	830	33,459	28.3%
10	5,275	0	121	0	0	0	0	0	5,396	4.6%
12	6,771	8,721	5,237	0	0	2,389	241	0	23,359	19.8%
16	0	0	0	0	0	715	0	0	715	0.6%
Total	**16,621**	**9,807**	**41,367**	**1,166**	**18,061**	**8,131**	**241**	**22,859**	**118,252**	**100%**

TELEMETRY

The City's water system has an automated telemetry system that was installed in 2001 and 2002. The system controller is located at the Public Works office and the remote sites are installed at Well 2, 3, 4, and 5; all five active reservoirs; and at the Highland Drive transfer station.

The telemetry system indicates reservoir levels, provides high and low-level alarms and level recording, automatic well starting and stopping, transfer station flow control, and data recording of the status of the various system components.

TREATMENT

The City does not currently chlorinate for disinfection unless there is a failed bacteriological test. When a failed test occurs, the City typically chlorinates the reservoirs in the area nearest the failed test sample location prior to performing additional testing.

In January 2001, the Environmental Protection Agency (EPA) tightened the standard for maximum contamination level (MCL) for arsenic from 50 ppb (parts per billion) to 10 ppb. Groundwater from Well 4 was found to contain approximately 19 ppb of arsenic.

The City's arsenic treatment facility, constructed in 2009, currently serves Well 4 to reduce arsenic levels below the MCL.

WATER RIGHTS

The City currently has municipal water rights issued by the Washington State Department of Ecology for an instantaneous withdrawal of 2,520 gpm and 1,629.3 acre-feet annually. Excluding the Salmon Creek Springs right which is currently out of service, the instantaneous withdrawal rate is reduced to 2,220 gpm. Although the City is not currently using water from Salmon Creek Springs, it does not intend to abandon this water right. The City's water rights are summarized in tabular format in Chapter 3. Additional water rights information is contained in Appendix M. A brief description of each water right is provided herein.

Ground Water Certificate (GWC) No. 5327: 650 gpm, 700 ac-ft per year, Well 3. The annual portion withdrawn under this water right certificate and GWC 265-C (relinquished), GWC 266-D, GWC 369-A, GWC 3410-A, and SWC 592 (relinquished) is not to exceed 700 ac-ft/yr. The instantaneous quantity, 650 gpm, was issued as additive.

GWC No. 266-D: 100 gpm, 29 ac-ft annually, Well 1. This certificate was initially withdrawn from a 30 ft deep, dug well located in Alma Park. The rights were transferred to be withdrawn from Well 1, located approximately 50 ft west of the Alma Park Well. The period of use is restricted to April 1 through October 31 each year as the use was originally for only park and swimming pool uses. The instantaneous quantity, 100 gpm, is additive. The annual quantity, 29 ac-ft/yr is non-additive (see GWC 5327).

GWC No. 369-A: 350 gpm, 200 ac-ft annually, Well 5. The instantaneous quantity, 350 gpm, is additive. The annual quantity, 200 ac-ft/yr is non-additive (see GWC 5327). This certificate initially authorized the City to withdraw 500 gpm, 200 ac-ft annually for municipal supply. However, on 8/23/1988, in a decision by the Department of Ecology, the withdrawal rate was reduced to 350 gpm as a condition of transferring this right from Well 1 to Well 3. Although the City did not appeal Ecology's decision, there remains a question as to whether this reduction was justified considering that this is a municipal water right.

GWC No. 3410-A: 200 gpm, 320 ac-ft annually, Well 2. This certificate was issued supplemental to certificates SWC 592 (relinquished), GWC 265 (relinquished), GWC 266-D, and GWC 369; consequently, the annual quantity is non-additive. The instantaneous quantity, 200 gpm, is additive.

CG-4-23854C: 550 gpm, 400 ac-ft per year, Well 4. Both quantities are additive. The City filed for and received temporary authorization to transfer 300 gpm of these rights to Well 5 for one year, from August 7, 2006, to August 1, 2007, while the City completed its arsenic treatment plant project for Well 4.

GWC No. G4-29193: 300 gpm, 400 ac-ft annually, Well 5. The annual quantity of this water right issued non-additive to certificates GWC 266-D, GWC 369-D, GWC 3410-A, GWC 5327-A, and G4-23854C and Water Right Claim No. 000052 (should a right be confirmed following adjudication). No water is allowed to be withdrawn under this authorization when the Okanogan River is below the minimum flows identified in the authorization. The instantaneous quantity was reduced from 650 gpm to 300 gpm when GWC No. 369-A was transferred to Well 5.

GWC No. G4-3838-A: 50 gpm, 39 ac-ft, Well 3. This certificate is being transferred from the Progressive Flats Water Association (PFWA) wells to the City's Well 3. Both instantaneous and annual rights are additive.

WATER RIGHT CLAIMS

Surface Water Right (SWR) Claim 000052: This source is commonly referred to as "Salmon Creek Springs," "Watercress Springs," or simply "Shull Springs." On February 24, 1970, the City filed a water rights claim for this source, listing the date of first of use to be 1908, in the amounts of 300 gpm and 484 ac-ft per year. It has been reported that the spring flow currently varies from 175 gpm to 300 gpm. The water rights consist of certificates and claims and are summarized in Table 4-6. Copies of the City's water rights are presented in Appendix M.

PROGRESSIVE FLATS WATER RIGHTS

On January 27, 2006, the Progressive Flats Water Association (PFWA) filed applications for change CG4-GWC3838-A and CG4-30573P to add the Okanogan Well 3 as a point of withdrawal for the PFWA water rights. The PFWA has wells that have been phased out of use now that they use water wholesaled by the City via the pipeline and booster station constructed in the late 2000s. The water table at the Progressive Flats well sites had been dropping and the PFWA wells had begun to have low production rates in addition to hazardous uranium content.

DICKSON WATER RIGHT

The City also holds irrigation rights for two shallow wells and the Okanogan River for a system that is not currently connected to the City's municipal water system. This water right is based on an older water right held by Mr. Warren Dickson.

The original water right held by Mr. Dickson was a 390 gpm and 156 acre-foot/year surface water right diverted from the Okanogan River for irrigation purposes from April 1 to August 15. The right has been determined to be a tribal reserved right by the Pollution Control Hearings Board (PCHB). The decision was prompted by the issuance of a water rights permit by DOE in 1979 as requested by Mr. Dickson. In 1993, the DOE issued a superseding certificate following the PCHB decision, with the provision that if the tribal reserved right is upheld through adjudication, the certificate will be

relinquished. However, if the tribal reserved right is not upheld, the certificate shall provide the holder with an interruptible right to the same quantity subject to minimum Okanogan River flows.

In 1998, the City entered into an agreement with Mr. Dickson to acquire a parcel and its associated water right on the Colville Nation east of the Okanogan River and within City limits. The agreement transferred to the City the ownership of the parcel and a portion of the water right appurtenant to the land – specifically, 24/40ths of the original water right.

Based on the 1998 agreement and subsequent review by the Tribal Water Committee in 2000, the City is entitled to 0.544 cfs (or 245 gpm) and 85 acre-feet, subject to minimum Okanogan River flows. The City has relinquished the Dickson water right in exchange for a permit from the Colville Tribe for 0.544 cfs and 85 acre-feet. This water has historically been diverted from two shallow wells on the City property and also directly from the Okanogan River. None of these facilities are currently connected to the City's potable water system. The tribal Water Committee has restricted the use of water under this water right to on-site use only. The City currently operates and maintains the facilities for irrigation of a sports field at a shared cost with the owners of the remainder of the original property.

IRRIGATION SUPPLY

The City is partially served by the Alta Vista Irrigation District and the Okanogan Irrigation District. Approximately 290 parcels (less than 10 percent of the area within the City limits) of the City are served by irrigation water. The Okanogan Irrigation District serves approximately 51 parcels and the Alta Vista Irrigation District serves approximately 239 parcels. A schematic of those connections served within the City limits is shown on Figure 1-4. The City does not operate or maintain these facilities.

PLANNING AND POLICIES

The following sections describe the City's current water system planning efforts and water service policies.

RELATED PLANNING DOCUMENTS

The following planning documents were used in the preparation of this Plan:

2009 *Okanogan Watershed Plan*, Okanogan Conservation District
2016 *City of Okanogan Water System Plan*, Gray & Osborne, Inc
2020 *Watershed Plan Addendum – Okanogan River Basin (WRIA 49)*, Aspect Consulting
2021 *Okanogan County Comprehensive Plan*, Okanogan County Board of County Commissioners

WATERSHED PLANNING

The City of Okanogan is located in the Water Resource Inventory Area (WRIA) 49. The 2009 *Okanogan Watershed Plan*, created "recommendations and strategic actions that address water quantity, water quality, instream flows, habitat, and multi-purpose water storage" within WRIA 49. *Watershed Plan Addendum – Okanogan River Basin (WRIA 49)* to the 2009 *Okanogan Watershed Plan* was approved on October 1, 2020. The plan addendum was prepared "to demonstrate that the County and Watershed Resource Inventory Area (WRIA) 49 stakeholders have evaluated and developed streamflow restoration strategies to offset potential exempt-well development impacts in the area over the required 20-year planning horizon (through 2038)."

SERVICE AREA

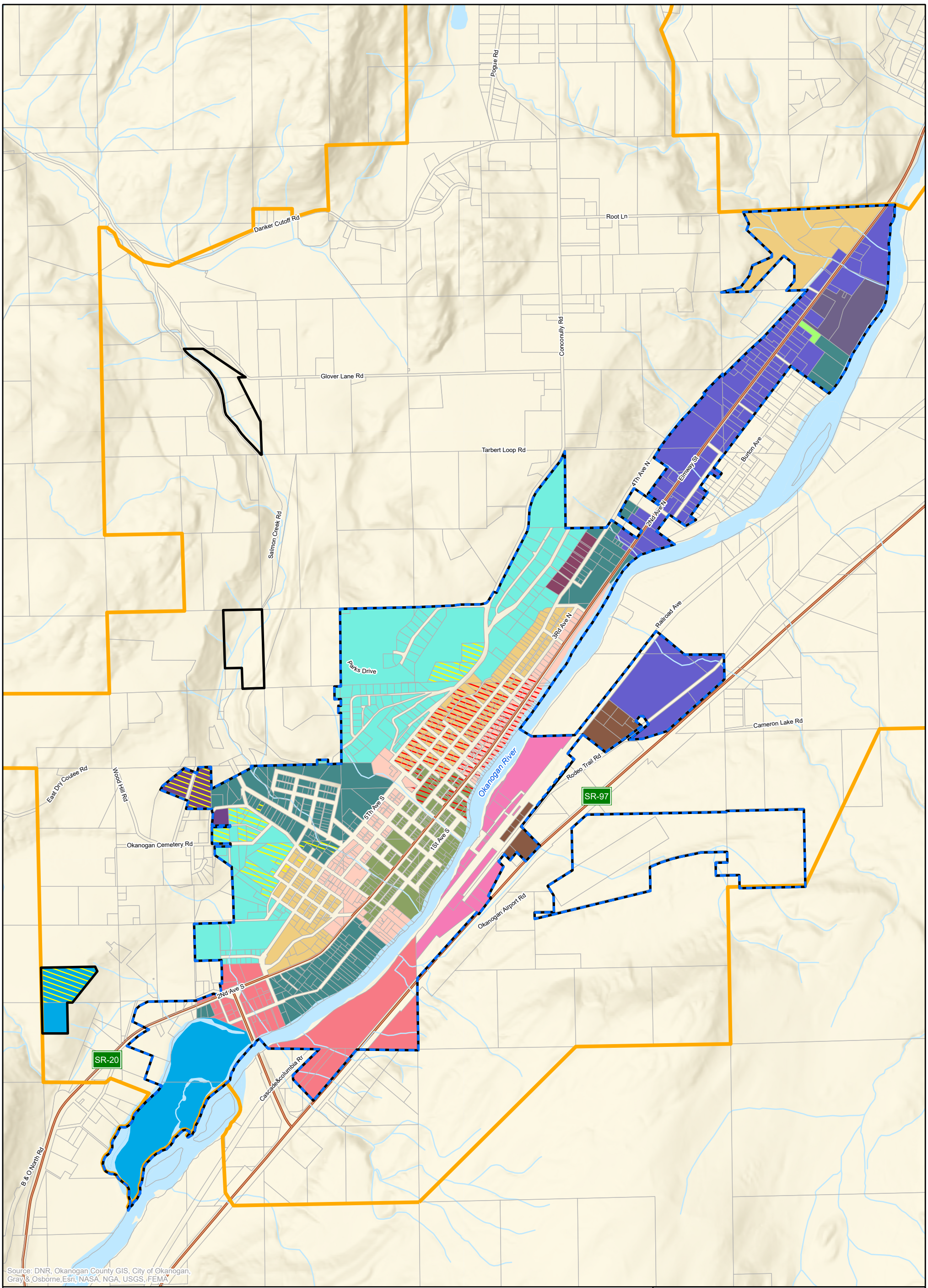
The City's retail service area, service area, and future service area are shown on Figure 1-2. The City's water rights place of use is defined as the area contained within the service area in accordance with WAC 246-290-107. The City's retail and future service areas are coincident with the City limits.

The City wholesales water to the Progressive Flats Water Association (PFWA). On November 14, 2006, the City signed an agreement with the PFWA for the delivery of water for domestic use for the Progressive Flats service area in exchange for the temporary transfer of all of the Progressive Flats water rights to the City. The City's service area, which encompasses the Urban Growth Area (UGA) and PFWA boundaries, is also shown on Figure 1-4. The portion of the City east of the river is located within the Colville Indian Reservation.

DUTY TO SERVE

Per RCW 43.20.260, the City has a duty to serve within its retail service area if a potential user approaches the City with a request for connection and the following threshold factors apply:

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



Zoning

- C1 - Commercial One District, Central Retail Commercial
- C2 - Commercial Two District, Service Commercial
- C3 - Commercial Three District, Tourist Commerical
- CONS - Conervacy District, Public
- I1 - Industrial One District, Light Industrial
- I2 - Industrial Two District, Heavy Industrial
- PD1 - Riverwalk
- PD2 - Riverwalk Estates
- R1 - Residential One District, Single Family Exclusive
- R2 - Residential Two District, Medium Density Residential
- R2-D - Residential Two Duplex District, Single Family/Duplex
- R3 - Residential Three District, Mixed Residential/Agricultural
- R4 - Residential Four District, High Density Residential
- RR - Rural Residential District, Low Density Residential
- Alta Vista Irrigation
- Okanogan Irrigation

Reference

- Highway
- Retail/Future Service Area
- UGA/Service Area
- City Limits
- Surface Water
- Parcel

N

0 625 1,250 2,500 Feet

CITY OF OKANOGAN

WATER SYSTEM PLAN

FIGURE 1-4

ZONING

Gray & Osborne, Inc.
CONSULTING ENGINEERS

The Mayor and staff determine whether the request meets the above criteria, and make recommendations to the Planning Commission and the City Council. City Council has final approval authority.

INTERTIES, INTERLOCAL AGREEMENTS AND WHOLESALE CUSTOMERS

According to the Department of Health, the City has nine neighboring water purveyors:

- City of Omak (Group A Water System ID 63750)
- Progressive Flats Water Association (Group A Water System ID 69650)
- Okanogan County Fair (Group A Water System ID 34314)
- Our Lady of Valley Catholic Church (Group A Water System ID 41522)
- Don's Mobile Home Court (Group B Water System ID 47840)
- Okanogan Maintenance Facility (Group B Water System ID HD011)
- Deering Water System (Group B Water System ID 00823)
- Hidden City Mobile Home (Group B Water System ID 32623)

SERVICE AREA POLICIES

Service area policies are addressed in the City's Municipal Code and ordinances. Anyone desiring water service can apply at City Hall. The person requesting service is responsible for all costs of installation, City review, and inspection. Table 1-7 summarizes the City's key service area policies.

TABLE 1-7

Service Area Policies

Policy Name	Policy Summary	Current City Policy Reference
Wholesaling of Water	Wholesaling or wheeling permitted.	Not covered(1)
Annexations	Annexation is required to obtain water service.	Resolution N. 2006-19
Design Performance Standards	Defines the minimum standards for the construction of domestic water facilities.	Appendix O
Mandatory Connection	Connection to the water system within corporate limits is mandatory.	Not Covered
Plat Review Fees	The developer is responsible for all plat review fees.	Okanogan Municipal Code (OMC) Title 17
Latecomer Agreements	Agreements allowing cost reimbursement when "latecomers" hook up.	Case-by-case approval
Oversizing	City provides funds for upsizing developer extensions for future growth.	Case-by-case approval
Cross-Connection Control Program	Policy establishing the requirements for cross-connection prevention devices.	OMC 13.10
System Extension	Policy regarding service extensions.	OMC 13.04

TABLE 1-7 – (continued)

Service Area Policies

Policy Name	Policy Summary	Current City Policy Reference
Design and Performance Policy	Policy establishing design and construction standards in accordance with the City's standards for all connections and extensions.	OMC 13.04 and OMC 17.28
Connection Responsibility Policy	Policy stating whether connection responsibility shall be completed by the water system or by a hired professional at the expense of the applicant.	OMC 13.04.440
Connection Fee Policy	An established connection fee is required to be paid in full before connection to the system.	Ordinance 1098
Meter Policy	A policy stating whether or not an individual service meter is required.	OMC 13.04.310

(1) The City's written policy is to not serve outside its corporate limits unless certain conditions are met. For these conditions see Resolution No. 2006-19 (Appendix T). The City does not expect to begin doing so within the 10-year planning period.

CHAPTER 2

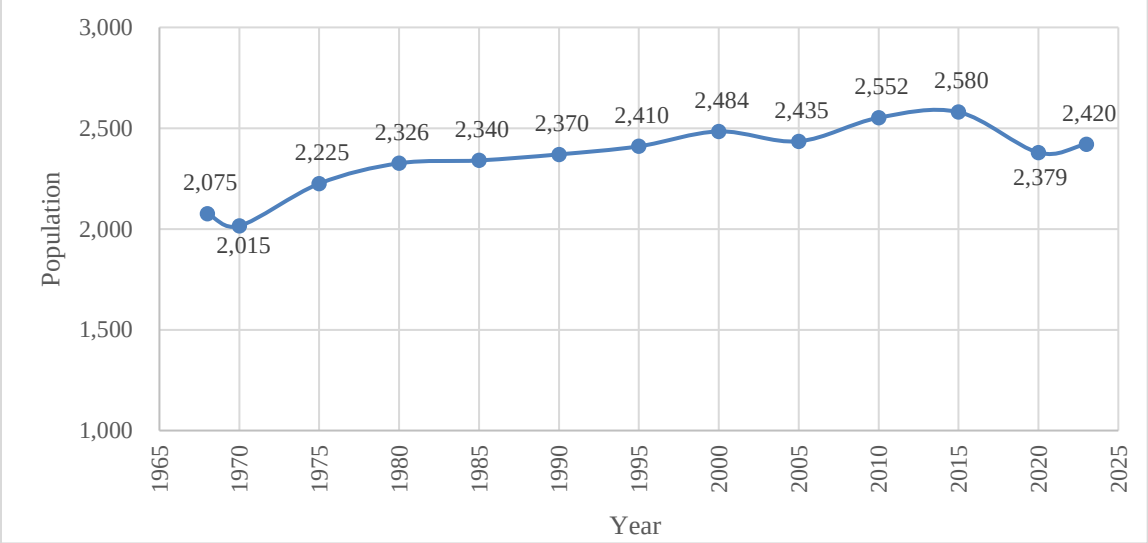
BASIC PLANNING DATA

This chapter presents the basic planning data used to project the City of Okanogan's future water demands. These water demand projections will be used to evaluate the adequacy of the City's existing water system and to determine the need for capital improvements. Information presented in this chapter includes historical population trends and water demands, population growth projections based on the 2021 *Okanogan County Comprehensive Plan*, and water demand projections for the 20-year planning period.

HISTORICAL DATA

HISTORICAL POPULATION

Population in Okanogan has remained generally flat over the past 20 years with a slight decrease since 2015 as shown in Figure 2-1.



(1) Source: U.S. Census and the Washington State Office of Financial Management.
(2) Note that the population served by the Progressive Flats Water Association is not included on this figure.

FIGURE 2-1

Historical Population

From 2019 to 2020, population data from the Washington State Office of Financial Management (OFM) reports an approximate 10 percent reduction in population in the City. Since 2020 was a census year and the beginning of the COVID-19 pandemic, it is assumed there may have been inaccurate population counting and/or difficulty receiving census survey data back from residents. Following the year 2020, population data from OFM indicates steady growth in Okanogan.

SERVICE CONNECTIONS

Table 2-1 lists the number of connections in each of the City's main customer categories for 2023.

TABLE 2-1

2023 Customer Accounts

Customer Classification	Number of Connections(1)	Percent of Total
Residential – Single Family(2)	745	70.4%
Residential – Multi-Family	46	4.3%
Schools	14	1.3%
Commercial	202	19.1%
Rural(3)	29	2.7%
City	22	2.1%
Total Connections	**1,058**	**100%**

(1) Approximate – count may vary during the year.
(2) Includes 4 properties that share a meter with other properties.
(3) Includes Progressive Flats Water Association (PFWA) metered connection.

HISTORICAL WATER USE

Water production data is collected from source meters by the City's telemetry system. Several years ago the City started replacing individual customer meters with radio-read meters. All meters in the City are now radio-read and meters are read and recorded monthly.

Average Day Demand (ADD)

Table 2-2 summarizes water production data for 2019 through 2023. Annual production, or demand, is commonly reduced to a daily value and is referred to as the Average Daily Demand (ADD). The ADD is useful in determining the adequacy of the City's annual withdrawal quantity of water rights. The 2019-2023 average ADD will be used for analysis in this Plan.

TABLE 2-2

2019-2023 Average Daily Demand (ADD)

Year	Service Area Population	Total Annual Production (gal)	Annual Prod. (ac-ft)	ADD (gpd)	Per Capita Production (gpcd)
2019	2,640	180,957,000	555	496,000	188
2020	2,379	201,552,000	618	551,000	231
2021	2,395	201,514,000	618	553,000	231
2022	2,415	189,604,000	582	520,000	215
2023	2,420	199,163,000	611	546,000	225
5-Year Average		**194,558,000**	**597**	**534,000**	**218**

Maximum Day Demand (MDD)

The maximum amount of water pumped from the City's wells in a 24-hour period is defined as the maximum day demand (MDD). MDD values are important in determining whether the water system source capacity and instantaneous water rights are sufficient to meet current and future production demands. MDD values presented in Table 2-3 are based on well meter readings collected by the City for 2019 through 2023.

The data show that while the ADD and MDD have both varied since 2019, the MDD/ADD ratio has remained reasonably constant. Consequently, the 2019-2023 average MDD/ADD ratio will be used for projecting the MDD beyond 2023. The 2019-2023 average MDD/ADD ratio of 2.4 (rounded) is slightly higher than the MDD/ADD ratio from the 2016 *Water System Plan* of 2.2.

Peak Hour Demand (PHD)

The maximum amount of water produced in a one-hour period during a maximum day is the peak hour demand (PHD). PHD is an important parameter in determining the amount of reservoir storage needed to make up the difference between the peak hour consumption and the system's pumping capacity. In the absence of actual field data, DOH provides a means to estimate PHD using Equation 3-1 from its 2019 *Water System Design Manual* (*WSDM*).

$$PHD = \frac{ERU_{MDD}}{1440}(C * N + F) + 18$$

PHD = Peak Hourly Demand (gpm)
ERU_{MDD} = MDD per ERU (gpd), see "Equivalent Residential Units" section (below)
C = Coefficient associated with ranges of ERUs, see DOH *WSDM* Table 3-1
N = Number of ERUs based on MDD
F = Factor associated with ranges of ERUs, see DOH *WSDM* Table 3-1

Table 2-3 summarizes ADD, MDD, and PHD (estimated using DOH *WSDM* Equation 3-1) for 2019 through 2023.

TABLE 2-3

2019-2023 Peaking Factors

Year	ADD[(1)] (gpd)	MDD[(2)] (gpd)	MDD/ ADD	PHD[(3)] (gpm)
2019	496,000	1,190,000	2.40	1,427
2020	551,000	1,343,000	2.44	1,608
2021	553,000	1,328,000	2.40	1,590
2022	520,000	1,294,000	2.49	1,550
2023	546,000	1,217,000	2.23	1,459
Average	**534,000**	**1,275,000**	**2.40**	**1,527**

(1) From the City's well meter logs. See also Table 2-2.
(2) From the City's well meter logs.
(3) Calculated as 1.73 using DOH WSDM Equation 3-1. See the discussion above.

Maximum Monthly Demand

The monthly distribution of demands is shown in Figure 2-2. Typical of most eastern Washington communities, lawn and garden irrigation cause the City's summer demands to be significantly higher than winter demands.

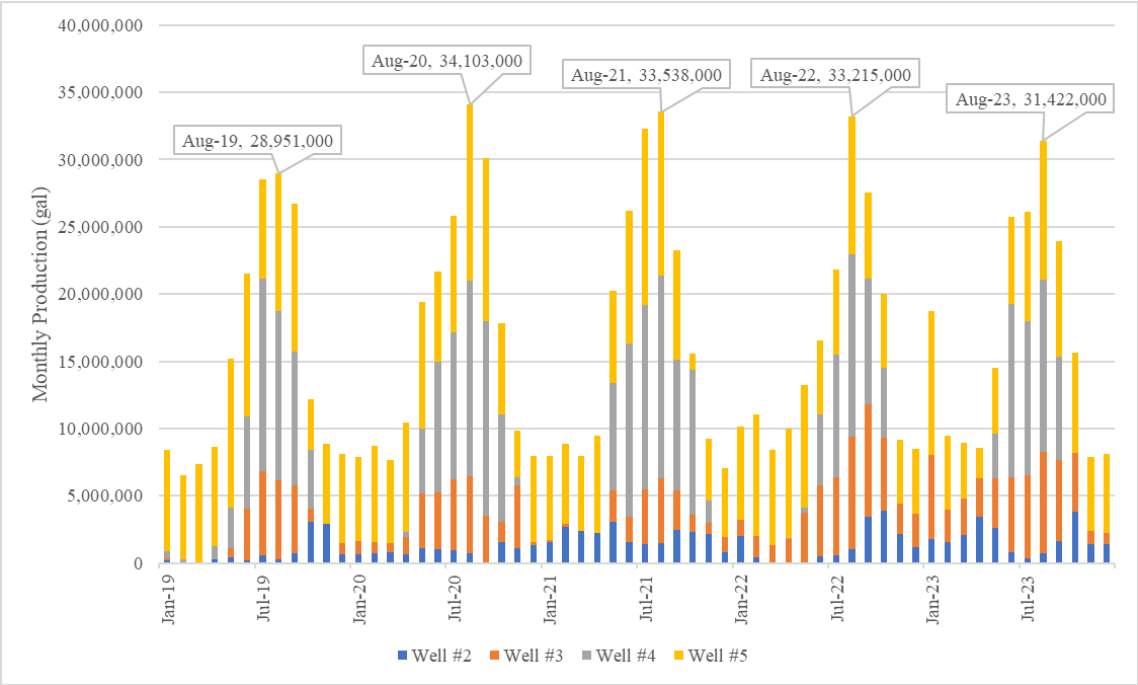


FIGURE 2-2

2019 – 2023 Monthly Distribution of Water Demands

The graph shows a sharp increase in maximum monthly production between 2019 and 2020 and a slight decrease between 2021 and 2023. The 5-year average maximum monthly production is approximately 32 MG.

Consumption History

Table 2-4 summarizes the annual water consumption broken out into the City's various customer classifications.

TABLE 2-4

2019-2023 Consumption by Customer Class

Customer Class	2019 (MG)	2020 (MG)	2021 (MG)	2022 (MG)	2023 (MG)
Residential – Single-Family	71.1	77.2	79.6	66.5	69.3
Residential – Multi-Family	17.2	19.1	18.1	23.6	19.9
Schools	27.8	30.7	33.1	25.8	23.2
Commercial	29.7	29.9	31.8	27.3	28.5
Rural(1)	5.8	6.4	5.7	6.0	6.0
City	15.5	17.1	17.6	16.6	21.3
Totals (rounded)	**167**	**180**	**186**	**166**	**168**

(1) Rural Customer Class includes Progressive Flats Water Association consumption.

Distribution System Leakage

Distribution System Leakage (DSL) is defined as the difference between total water produced and authorized consumption. DSL includes any water loss due to leaks or unauthorized uses such as illegal service connections. DSL also includes accounting errors, inaccurate source and customer meters, and storage tank overflows. Water leaving the system for un-metered usage such as flushing of mains and fire flows, if accounted for, is counted as an authorized use of Water.

Section 8 of WAC 246-290, as revised to incorporate the 2003 Municipal Water Law, requires municipal water suppliers with 500 or more connections to meet a state DSL standard of no more than 10 percent as averaged over the previous three years. DSL must be reported as a volume and as a percentage of total production. The City's DSL for 2019 through 2023 is summarized in Table 2-5.

TABLE 2-5

2019-2023 Distribution System Leakage (DSL)

Year	Annual Production(1) (gal)	Annual Consumption(1) (gal)	DSL(2) (gal)	DSL(3) (%)	3-Year Average (%)
2019	180,957,000	167,098,000	13,859,000	8%	N/A
2020	201,552,000	180,447,000	21,105,000	10%	N/A
2021	201,514,000	185,842,000	15,672,000	8%	9%
2022	189,604,000	165,767,000	23,837,000	13%	10%
2023	199,163,000	168,199,000	30,964,000	16%	12%

(1) Annual Production and Consumption from the City's records. See Tables 2-2 and 2-4.
(2) DSL = (Annual Production) – (Annual Consumption).
(3) Percent of Total Production = (DSL) ÷ (Annual Production).

Table 2-5 shows that the City's 3-year average DSL has exceeded the State's maximum value of 10 percent in 2023. Consequently, the City is required to prepare a water loss control action plan as required under WAC 246-290-820(4).

Equivalent Residential Units

Equivalent residential units (ERUs) are a way to express water use by non-residential customers as an equivalent number of residential customers. ERUs are calculated by dividing the total volume of water utilized in the single-family customer class by the total number of single-family connections. This number defines the average residential water use. The volume of water used by the other customer classes can then be divided by the average residential use to determine the equivalent residential units utilized by the other customer classes. Table 2-6 summarizes consumption and ERUs for each customer classification in 2023. From the table, the average daily consumption per single-family customer (ERU_{ADD}) for 2023 is 255 gpd/ERU (69.3 MG/yr divided by 365 days/yr divided by 745 single-family residential connections, rounded). This is consistent with the 2016 *Water System Plan* and represents a slight decrease in consumption per ERU. The 2010-2014 average ERU_{ADD} was 270 gpd/ERU, as reported in the City's 2016 *Water System Plan*.

TABLE 2-6

2023 Equivalent Residential Units

Classification	Annual Metered Consumption(1) (MG)	Number of Connections(2)	ERUs(3)	ERUs/ Connection	Percent of Total ERUs
Residential – Single-Family	69.3	745	745	1.0	35%
Residential – Multi-Family	19.9	46	214	4.6	10%
Schools	23.2	14	250	17.8	12%
Commercial	28.5	202	306	1.5	14%
Rural(4)	6.0	29	64	2.2	3%
City	21.3	22	229	10.4	11%
DSL(5)	31.0	N/A	333	N/A	16%
Total	**199.2**	**1,058**	**2,141**	**37.6**	**100%**

(1) From City records.
(2) From Table 2-1.
(3) Annual metered consumption 4 365 days/yr 4 255 gpd/ERU.
(4) Includes PFWA.
(5) From Table 2-5.

As used in DOH's *WSDM* Equation 3-1 (see "Peak Hour Demand" section above), the City's 2023 ERU_{MDD} is defined as the max day consumption per single-family home. Daily consumption data is unavailable, so 2023 ERU_{MDD} is estimated as 2023 ERU_{ADD} multiplied by the system's 2023 MDD/ADD ratio. The City's 2023 estimated ERU_{MDD} is 570 gpd/ERU (rounded) (255 gpd/ERU × 2.23).

LARGEST WATER USERS

Peak consumption patterns by large water users should be reviewed because an increase or decrease in consumption by a large water user could significantly change the overall demands of the system. It s also important for the hydraulic model to identify areas in the City's water service area that could be locations of high water demand. Table 2-7 summarizes the City's largest water users in 2023.

TABLE 2-7

2023 Largest Water Users

Customer/ Classification	2023 Usage (gallons)	Percent of Total Consumption(1)
Okanogan School Baseball Field 1	7,305,000	4.3%
Okanogan School Ag Bldg/Football Field	5,372,000	3.2%
Okanogan School Kitchen/Northfield	5,150,000	3.1%
Progressive Flats Water Association	4,213,000	2.5%
Okanogan Gardens	3,548,000	2.1%
Country Boys	3,487,000	2.1%
Okanogan School Baseball Field 2	3,333,000	2.0%
Clean Image Carwash	2,693,000	1.6%
MEB2, LLC (Ice Company)	2,591,000	1.5%
Okanogan County Jail	2,478,000	1.5%
Dendarii, LLC	2,420,000	1.4%
WAFLA (soccer field)	2,250,000	1.3%

(1) Total consumption for 2023 = 168,199,000 gallons, see Table 2-4.

The list indicates that the majority of the City's largest customers are the public schools, the Progressive Flats Water Association, and apartment complexes, the latter two of which are associated with larger numbers of residential households.

PROJECTED LAND USE, FUTURE POPULATION, AND WATER DEMANDS

The following section provides population and water use projections based on the historical data presented in previous sections of this chapter and on the population growth projections provided in the 2021 *Okanogan County Comprehensive Plan*.

LAND USE AND ZONING

The City's current zoning map is presented in Figure 1-4. Designations outside the City's corporate limits are consistent with Okanogan County's zoning designations. At this time, the City does not anticipate changes in zoning designations within its Urban Growth Area.

PROJECTED POPULATION

The 2021 *Okanogan County Comprehensive Plan* has elected to adopt a medium growth target of: 0.48 percent between 2020 and 2025, 0.30 percent between 2026 and 2030, 0.23 percent between 2031 and 2035, and 0.13 percent between 2036 and 2040. For planning purposes, the most conservative population growth rate of 0.48 percent will be used to estimate the City's population growth for the 20-year planning period.

PROJECTED ADD, MDD, AND PHD

Because the majority of water demand is residential, the projected ADD for the 20-year planning period is assumed to increase proportionally to the population growth rate determined using the 2021 *Okanogan County Comprehensive Plan*. Table 2-8 summarizes the ADD, MDD, and PHD projections for the next 20 years.

TABLE 2-8

Projected ADD, MDD, and PHD

Year	Service Area Pop.[1]	ERU[2]	ADD[3] (gpd)	ADD (af/yr)[4]	MDD[5] (gpd)	MDD (gpm)	PHD[6] (gpm)
2023	2,420	2,141	546,000	612	1,217,000	845	1,462
2024	2,432	2,150	549,000	615	1,318,000	915	1,583
2025	2,443	2,158	551,000	617	1,323,000	919	1,589
2026	2,455	2,167	553,000	619	1,328,000	922	1,595
2027	2,467	2,176	555,000	622	1,332,000	925	1,600
2028	2,479	2,185	558,000	625	1,340,000	931	1,610
2029	2,491	2,194	560,000	627	1,344,000	933	1,615
2030	2,502	2,203	562,000	629	1,349,000	937	1,621
2031	2,515	2,212	564,000	632	1,354,000	940	1,627
2032	2,527	2,221	567,000	635	1,361,000	945	1,635
2033	2,539	2,230	569,000	637	1,366,000	949	1,641
2034	2,551	2,239	571,000	640	1,371,000	952	1,647
2035	2,563	2,248	574,000	643	1,378,000	957	1,656
2036	2,575	2,257	576,000	645	1,383,000	960	1,662
2037	2,588	2,266	578,000	647	1,388,000	964	1,668
2038	2,600	2,276	581,000	651	1,395,000	969	1,676

TABLE 2-8 – (continued)

Projected ADD, MDD, and PHD

Year	Service Area Pop.[1]	ERU[2]	ADD[3] (gpd)	ADD (af/yr)[4]	MDD[5] (gpd)	MDD (gpm)	PHD[6] (gpm)
2039	2,613	2,285	583,000	653	1,400,000	972	1,682
2040	2,625	2,294	586,000	656	1,407,000	977	1,690
2041	2,638	2,304	588,000	659	1,412,000	981	1,696
2042	2,651	2,313	590,000	661	1,416,000	983	1,701
2043	2,663	2,323	593,000	664	1,424,000	989	1,711
2044	2,676	2,332	595,000	666	1,428,000	992	1,716

(1) Population assumed to increase at a rate consistent with the 2021 *Okanogan County Comprehensive Plan*, i.e., 0.48 percent. See the discussion above.
(2) ERUs are projected to increase at a rate of 0.48 percent per year.
(3) Based on 255 gpd/ERU. See Table 2-2.
(4) af = acre-foot
(5) MDD/ADD = 2.4. See Table 2-3.
(6) PHD/MDD = 1.73. See Table 2-3.

CHAPTER 3

SYSTEM ANALYSIS

This chapter determines the ability of the City of Okanogan's existing water system to meet current and future water quality and quantity requirements. The major sections of this chapter are:

- System Design Standards
- Water Quality
- Facility Analysis
- Water System Physical Capacity Analysis
- System Deficiencies
- Asset Management

SYSTEM DESIGN STANDARDS

Water systems are regulated by federal, state, and local design and construction standards. Standards that affect Okanogan's water system are summarized in the sections below.

GENERAL FACILITY STANDARDS

WAC 246-290 is the primary drinking water regulation used by DOH to assess capacity, water quality, and compliance with drinking water standards. The 2020 *Water System Design Manual* (*WSDM*) serves as guidance for the preparation of plans and specifications for Group A public water systems in compliance with WAC 246-290. The *WSDM* also references the following codes and guidelines.

- International Building Code
- Uniform Plumbing Code
- American Water Works Association (AWWA) Standards
- American Society of Civil Engineers (ASCE) Standards
- American Public Works Association (APWA) Standards
- Recommended Standards for Water Works (RSWW), Ten State Standards
- Local codes

Table 3-1 lists the suggested *WSDM* guidance and the City's policies with regard to each standard for general facility requirements.

TABLE 3-1

General Facility Requirements

Standards	Department of Health Water System Design Manual	City of Okanogan Standards
Average Day and Maximum Day Demand	Average Day Demand (ADD) should be determined from metered water use data. Maximum Day Demand should be determined based on daily meter data if available. Maximum Day Demand (MDD) is estimated at approximately two times ADD if metered data is not available.	ADD = Metered production MDD = 2.40 * ADD based on City data.
Peak Hour Demand	Peak hour demand (PHD) is determined using the following equation: $PHD = \frac{ERU_{MDD}}{1440}(C * N + F) + 18$ where ERU_{MDD} is in gpd/ERU, and C and F are coefficients based on N, the number of ERUs. See Eq. 3-1, DOH *WSDM*.	PHD = 1.73 * MDD based on Eq. 3-1, *WSDM*.
Source Capacity	Capacity must be sufficient to meet MDD and replenish fire suppression storage within 72 hours.	Same as *WSDM*.
Storage Requirements	The sum of: • Operational Storage (OS) • Equalizing Storage (ES) • Standby Storage (SB)* • Fire Suppression Storage (FSS) • Dead Storage (DS) *Standby storage and fire suppression storage may be nested if permitted by the local fire authority	Same as *WSDM*. Refer to storage analysis later in this chapter for further details.
Minimum System Pressure	The system should be designed to maintain a minimum of 30 psi in the distribution system under peak hour demand and 20 psi under fire flow conditions during MDD.	Same as *WSDM*.
Fire Flow Rate and Duration	The minimum fire flow shall be determined by the local fire authority or WAC 246-293 for systems within a critical water supply service area (CWSSA).	Fire flow requirements are based on the local Fire Department standards which follow the International Fire Code (IFC).
Minimum Pipe Size	The diameter of a transmission line shall be determined by hydraulic analysis. The minimum size distribution system line shall not be less than 6 inches in diameter unless a hydraulic analysis justifies another size.	Same as *WSDM*.
Water Quality Standards	The primary drinking water regulation utilized by Health to assess capacity, water quality, and overall compliance with drinking water standards.	WAC 246-290
Valve and Hydrant Spacing	Sufficient valving should be placed to keep a minimum of customers out of service when water is turned off for maintenance, repair, replacement, or addition. As a general rule, isolation valves on distribution mains should be provided at least every 800 feet unless the grid geometry or low housing density justifies greater spacing. Fire hydrants on laterals should be provided with their own auxiliary gate valve.	Valve and hydrant standards are outlined in the City's Developer Standards.

TABLE 3-1 – (continued)

General Facility Requirements

Standard	Department of Health Water System Design Manual	City of Okanogan Standards
Reliability Recommendations	• Two or more sources of supply • Sources capable of supplying MDD within a 20-hour period • Sources capable of replenishing fire suppression storage over 72 hours while concurrently supplying MDD • Sources meet ADD with the largest source out of service • In-place, auto-transfer backup power for pump stations, unless pump stations have two independent public power sources, and/or the system maintains adequate gravity standby storage • Standby storage equivalent to MDD, with a minimum of 200 gpd/ERU • Low and high-level storage alarms • Looping of distribution mains when feasible • Pipeline velocities not > 8 fps at PHD	Same as WSDM.

CONSTRUCTION STANDARDS

The City has prepared a set of standards for developers and the City to follow when constructing water system components. These standards are discussed in Chapter 7 and provided in Appendix O so they can be approved by DOH as part of this Plan. Such approval is one of the requirements that will allow the City to construct distribution mains and distribution-related projects without the requirement to submit project reports (WAC 246-290-110) and construction documents (WAC 246-290-020) to DOH.

FIRE FLOW DEMANDS AND MINIMUM PRESSURE

The City's fire flow delivery requirements for large structures identified by the Fire Chief as having specific fire flow needs are not addressed in this Plan. Consistent with WAC 246-290-230, the City requires a minimum pressure of 30 psi under PHD conditions with operating and equalizing storage depleted, and 20 psi during concurrent fire flow and MDD conditions with fire suppression storage depleted.

WATER QUALITY

Group A public community water systems must comply with the drinking water standards of the federal Safe Drinking Water Act and its amendments. DOH has adopted these federal standards under WAC 246-290. To enable Group A water systems to comply with the regulations, DOH issues each system a Water Quality Monitoring

Schedule (WQMS) listing that system's reporting requirements. The City's current WQMS is provided in Appendix B.

The City does not provide disinfection and has had eleven unsatisfactory test results within the last five years. Exceedances consist of high levels of arsenic, manganese, and total dissolved solids from sources 3 and 4. Total coliform exceedances have been recorded in the distribution system. The City is in compliance with all other state and federal water quality requirements, and recent sample results for disinfection byproducts, nitrates, nitrites, soil fumigants, pesticides, and radionuclides have all been well below the respective EPA maximum contaminant limits (MCLs). No trends have been observed showing an increase in these contaminants. The City's Coliform Monitoring Plan is provided in Appendix C and recent water quality sample results are provided in Appendix D. Its most recent Consumer Confidence Report is provided in Appendix E. The City has been testing for lead and copper in accordance with the City's Water Quality Monitoring Schedule. The last sample for lead and copper was July 2023 and the next sample is due in July 2026.

FACILITY ANALYSIS

This Section presents an evaluation of the City's water system source, storage, transmission, distribution, and telemetry facilities.

SOURCE

The City's water supply consists of four active wells, Well 2 (200 gpm), Well 3 (650 gpm, seasonal), Well 4 (550 gpm, seasonal), and Well 5 (350 gpm) providing a total pumping capacity of approximately 1,750 gpm (Well 1 and the Salmon Creek Springs sources are inactive and are not included in the following source analysis).

Source Capacity

WAC 246-290-222 (4) requires total source capacity to be sufficient to provide a reliable supply of water equal to or exceeding the MDD at all times. For the analysis in Table 3-2, Wells 2, 3, 4, and 5 are assumed to be running. Under these conditions, the City's wells can meet the MDD through the 10- and 20-year planning periods.

TABLE 3-2

Source Capacity Analysis

Year	Source Capacity (gpm)	MDD[(1)] (gpm)	Surplus (+/-) (gpm)
2023	1,750	845	905
2024	1,750	915	835
2034	1,750	952	798
2044	1,750	992	758

(1) From Table 2-8.

Source Reliability

Besides meeting the requirements of WAC 246-290-222 (4), the *WSDM* recommends that systems consider the following source criteria for emergency conditions:

1. Provide sufficient source capacity with all sources (permanent and seasonal) operating to meet the MDD and replenish fire suppression storage within 72 hours. The City's largest fire suppression storage requirement is 1,320,000 gallons (5,500 gpm for 4 hours).

2. Provide sufficient source (permanent and seasonal) capacity to meet the MDD in a pumping period of 20 hours or less.

3. With the largest source out of service, the remaining permanent and seasonal sources can provide a minimum of ADD for the water system.

4. In-place, auto-transfer backup power for the source of supply pump stations, unless pump stations have two independent public power sources, and/or the system maintains adequate gravity standby storage.

Table 3-3 summarizes the City's ability to meet the first three of these recommendations.

TABLE 3-3

Source Reliability Analysis

Condition	Q_{avail}[(1)] (gpm)	2023 Q_{req}[(2)] (gpm)	2024 Q_{req}[(2)] (gpm)	2034 Q_{req}[(2)] (gpm)	2044 Q_{req}[(2)] (gpm)
1. MDD + replenish FSS w/in 72 hours	1,750	1,151	1,221	1,258	1,297
2. MDD with 20 hours pumping	1,458	845	915	952	992
3. ADD without largest source	1,100	379	381	397	413

(1) Condition 1: Wells 2, 3, 4, and 5 operating (1,750 gpm capacity)
Condition 2: ($Q_{Well\ 2}$ + $Q_{Well\ 3}$ + $Q_{Well\ 4}$ + $Q_{Well\ 5}$) × (20 ÷ 24) = (1,750 gpm) × (20 ÷ 24) = 1,458 gpm
Condition 3: Wells 2, 4, and 5 operating (1,100 gpm capacity)

(2) Condition 1: Q_{req} = MDD (from Table 2-8) + (1,320,000 ÷ 72 ÷ 60).
Condition 2: Q_{req} = MDD.
Condition 3: Q_{req} = ADD (from Table 2-8) ÷ 1440.

Table 3-3 indicates that the City's active wells are expected to meet the MDD and replenish the reservoirs with the Fire Suppression Storage (FSS) within 72 hours, and to meet the MDD with 20 (rather than 24) hours of pumping. The City's wells are also expected to meet the ADD with the largest source out of service.

The City's wells are not equipped with auto-transfer backup power sources and do not have two independent public power sources. The City's storage facilities cannot supply adequate gravity standby storage, and cannot meet the fourth criterion. All wells have a reliable power supply as defined in the WSDM. Outage data from Okanogan County PUD indicates four power outages to Well 5 in the last three years, with durations of 13, 368, 19, and 25 minutes.

Groundwater Levels

Besides the pumping capacity of current groundwater sources, the trend of groundwater levels over time is also an important measure of the reliability and sustainability of the City's water resources. The groundwater levels are not currently monitored, but the City intends to install instrumentation and begin recording static water levels at their wells regularly.

Water Rights

Table 3-4 summarizes the adequacy of the City's water rights to serve its customers for the 10- and 20-year planning periods.

TABLE 3-4

Water Rights Adequacy

Year	Instantaneous Quantity (Q_i)			Annual Volume (Q_a)		
	MDD[(1)] (gpm)	Q_i[(2)] (gpm)	Surplus (gpm)	Annual Production[(1)] (af/yr)	Q_a[(2)] (af/yr)	Surplus (af/yr)
2023	845	2,220	1,375	612	1,629.3	1,018
2024	915		1,305	615		1,014
2034	952		1,268	640		990
2044	992		1,228	666		963

(1) From Table 2-8.

(2) Source: Certificates GWC No. 266-D, GWC No. 3410-A, GWC No. 5327, GWC No. G4-3838-A, GWC No. G4-30573-A, CG4-23854C, GWC No. 369-A, GWC No. G4-29193, and SWR No. 000052.

As indicated, the City's instantaneous water right is sufficient to accommodate the City's MDD and the City's annual water right is sufficient to accommodate the City's ADD through the 20-year planning period.

The City's water rights self-assessment form is provided in Chapter 4.

STORAGE

As described in Chapter 1, the City has five active reservoirs; East (512,000-gallon), North (512,000-gallon), West 1 (210,000-gallon), West 2 (207,000-gallon), and Highland (207,000-gallon). WAC 246-290 and the *WSDM* define the following storage volumes for reservoirs.

Operational Storage (OS). Operational storage is the volume at the top of the reservoir that is used to control the well pumps. The City uses the top two to three feet of its reservoirs for this purpose.

Equalizing Storage (ES). This storage component consists of the amount of storage needed to make up the difference between the PHD and the source capacity of the water system. The WSDM requires sufficient ES to make up this difference for 150 minutes, i.e.:

$$ES = (PHD - Q_S)(150\ min),$$

where Q_S = the sum of all well capacities (in gpm) in the zone supplying the reservoir. WAC 246-290-230 (5) requires a minimum pressure of 30 psi at the bottom of ES.

Standby Storage (SB). The purpose of standby storage is to provide a measure of reliability when sources fail, power outages occur, or another emergency places the burden of water supply solely on storage. With the approval of the local fire authority, WAC 246-290-235 allows fire suppression and standby storage to be combined, or "nested", with the larger of the two volumes being the minimum required.

Standby storage is calculated using the following equation:

$$SB = (N)(SB_i)(T_d)$$

SB = Required standby storage component (gallons)
N = Number of ERUs based on the ERU_{MDD} value
SB_i = Locally adopted unit standby volume (gallons/day/ERU)
T_d = Number of days selected to meet water system-determined standard of reliability; T_d = 1 for the City of Okanogan.

DOH recommends SB volume equal to MDD (T_d = 1 day) for the pressure zone(s) served, though an increase or reduction may be justified depending on the reliability and redundancy of the water system's source(s) of supply, power supply, and transmission main(s). A minimum SB volume of 200 gallons per ERU is recommended. It is recommended that standby storage be provided at no less than 20 psi at all service connections during PHD.

Fire Suppression Storage (FSS). Fire suppression storage is the amount of storage required to fight a fire. WAC 246-290-230 (6) requires a minimum pressure of 20 psi when the system is simultaneously providing MDD plus the required fire flow after FSS has been depleted. The required FSS is determined to be the amount of required fire flow multiplied by the fire flow duration. The City's fire flow requirement of 5,500 gpm for 4 hours results in a fire flow storage requirement of 5,500 gpm × 240 min = 1,320,000 gallons.

Dead Storage (DS). Dead Storage is the volume of stored water not available to all consumers at the minimum design pressure and is not included in a capacity analysis.

WAC 246-290-235(4) allows fire suppression storage and standby volumes to be combined or "nested," provided the local fire protection authority does not require them to be additive. A copy of correspondence confirming the City's Fire Chief allowing nesting is included in Appendix Q.

Storage Requirements

Tables 3-5 and 3-6 show the total water storage capacity within each open pressure zone. Approximate pressure zone boundaries are shown in Figure 1-2. The City's total available storage capacity within its five reservoirs is 1,648,000 gallons.

TABLE 3-5

Storage Volumes with Nesting – Main Pressure Zone

Year	Storage Component (gallons)						
	OS	ES	FSS	SB (1)	DS	Total	(+/-) (2)
2023	250,101	-	1,320,000	428,000	-	1,570,101	(129,053)
2024	250,101	-	1,320,000	429,736	-	1,570,101	(129,053)
2034	250,101	-	1,320,000	447,757	-	1,570,101	(129,053)
2044	250,101	-	1,320,000	466,453	-	1,570,101	(129,053)

(1) SB = 200 gpd × 1 day × ERUs (see Table 2-8).
(2) Combined storage in all reservoirs in the Main pressure zone is approximately 1,441,000 gallons.

Pressure at the highest service elevation (928 ft) within the Main pressure zone is 50 psi with all storage components depleted ((1044-928)/2.31 = 50 psi).

As shown in Table 3-5, even with nesting the City currently has inadequate reservoir capacity within the Main pressure zone. The City plans to construct a new 200,000-gallon reservoir to serve the Murray pressure zone that will allow water transfer to the Main pressure zone during a fire event. This will resolve storage capacity deficiencies in both the Main and Murray pressure zones.

TABLE 3-6

Storage Volumes with Nesting – Highland Pressure Zone

Parameter	Storage Component (gallons)						
	OS	ES	FSS(1)	SB(2)	DS	Total	(+/-)(3)
Full Build Out	20,729	-	180,000	112,000	-	200,729	6,561

(1) FSS = 1,500 gpm × 120 mins.
(2) SB = 200 gpd × 1 day × ERUs (see Table 2-8).
(3) Total storage capacity within the Highland pressure zone is approximately 207,000 gallons.

Pressure at the highest service elevation (1,169 feet) within the Highland pressure zone is 30 psi with all storage components depleted ((1239-1169)/2.31 = 30 psi).

As shown in Table 3-6, the Highland Reservoir has sufficient storage capacity to serve the Highland pressure zone at full buildout.

BOOSTER PUMPING STATIONS

The City currently operates two booster pumping stations serving the Murray and Highland pressure zones.

Sunrise Booster Pump Station

The Sunrise BPS pumps to an open system (Highland reservoir) within the Highland pressure zone. Based on WAC 246-290 and the *WSDM*, an open-system BPS must meet the following requirements:

1. The BPS must be designed to provide the MDD for the zone with all pumps in service.

2. It should be designed to meet the ADD with the largest pump out of service.

The Highland Reservoir was planned to serve approximately 160 acres with a residential density of 3.5 lots per acre, yielding approximately 560 residences. Water for the booster pump station is taken from the 12-inch feed line to the North reservoir.

From the discussion preceding Table 2-6, the average water use for a single-family residence is approximately 255 gpd or approximately 143,000 gpd for the projected 560 ERUs in this area. The total production requirement for the Sunrise BPS, assuming a distribution system leakage (DSL) percentage of 8 percent for a relatively new distribution system, would be approximately 154,000 gpd (143,000 * 1.08). The approximate ADD, MDD, and PHD for the Highland pressure zone are calculated as follows:

ADD (Highland Zone) = 154,000 gpd ÷ 1,440 gpm/gpd = 107 gpm
MDD (Highland Zone) = 2.4 * ADD = 2.4 * 107 gpm = 257 gpm
PHD (Highland Zone) = 1.73 * MDD = 1.73 * 257 = 444 gpm

The two 30-hp submersible pumps with pitless adapter units have a combined capacity of 700 gpm, which exceeds the MDD and PHD flows of 257 gpm and 444 gpm, respectively. The second criterion, providing ADD (107 gpm) with the largest pump out of service, is met with either one of the two 350 gpm booster pump station pumps running.

The Sunrise BPS is telemetry controlled but does not have an emergency generator or a manual transfer switch for a generator.

Murray Booster Pumping Station

The existing Murray BPS pumps to a closed system (Murry pressure zone). Based on WAC 246-290 and the *WSDM*, a closed BPS must meet the following requirements:

1. The BPS must be designed to provide MDD plus fire flow using fire pumps, domestic pumps, or a combination of the two, while maintaining a 20 psi residual pressure on both the suction and delivery sides of the BPS.

2. The BPS must be designed to provide the PHD at 30 psi. It should be designed to do so with the largest pump out of service.

The Murry BPS runs continuously to keep up with water system demands within the closed system. The pressure zone includes a largely residential neighborhood of the City that currently has 51 single-family residential connections. Water for the booster pump station is taken from the 6-inch feed line from the Main pressure zone. The Murray pressure zone encompasses 80 acres with a residential density of 3.5 lots per acre, yielding approximately 280 residences. As previously discussed, the average water use for a single-family residence is approximately 255 gpd or approximately 71,400 gpd for the projected 280 ERUs in this area. The total production requirement for the BPS, assuming a distribution system leakage (DSL) percentage of 8 percent for a relatively new distribution system, would be approximately 77,100 gpd (71,400 * 1.08). The approximate ADD, MDD, and PHD for the Murray pressure zone are calculated as follows:

ADD (Murray Zone) = 77,100 gpd ÷ 1,440 gpm/gpd = 54 gpm
MDD (Murray Zone) = 2.4 * ADD = 2.4 * 54 gpm = 129 gpm
PHD (Murray Zone) = 1.73 * MDD = 1.73 * 129 = 222 gpm

The Murray BPS consists of one 5-hp and a 7.5-hp pump. As previously discussed, the flow rate for the 7.5-hp pump is unknown. The City has noted that the 7.5-hp pump performs similarly to the previously installed 5-horsepower pump, so it is assumed that the 7.5-hp pump has a flow rate of 190 gpm. Both pumps are submersible turbine pumps with pitless adapter units with telemetry located on the south side of Murray Street at the low point of the pressure zone.

The Murray BPS is insufficient to provide MDD and fire flow (129 gpm and 1,500 gpm, respectively) to the Murray pressure zone. The second criterion, providing PHD with the largest capacity booster pump out of service, cannot be met with the City's existing pumps. To address this deficiency, the City plans to construct a new 200,000-gallon reservoir serving the Highland pressure zone.

TRANSMISSION AND DISTRIBUTION

This section includes a discussion of the hydraulic model calibration, results, and recommended improvements resulting from the modeling.

Hydraulic Capacity Analysis – Modeling

The H_2ONet hydraulic model for the Okanogan water system was converted to Info Water Pro for this analysis. Fire flow testing was conducted on October 11, 2024 for calibration of the hydraulic model. All wells were turned off, and the transfer station did not open during the testing period. The flow test produced the following results:

- City Wastewater Treatment Plant (Main pressure zone) – Field fire flow testing in this area resulted in a residual pressure of 107 psi, corresponding to approximately 950 gpm fire flow capability. Static pressures in this area are approximately 108 psi. This test was not used in model calibration because the residual pressure was expected to be much lower according to tests from previous modeling efforts.

- Quality Inn (Main pressure zone) – Field fire flow testing in this area resulted in a residual pressure of 63 psi, corresponding to approximately 860 gpm fire flow capability. Static pressures in this area are approximately 85 psi.

- John Street (Main pressure zone) – Field fire flow testing in this area resulted in a residual pressure of 91 psi, corresponding to approximately 790 gpm fire flow capability. Static pressures in this area are approximately 108 psi.

- Parks Drive (Highland pressure zone) – Field fire flow testing in this area resulted in a residual pressure of 45 psi, corresponding to approximately 1,010 gpm fire flow capability. Static pressures in this area are approximately 45 psi.

- 5th Avenue (Main pressure zone) – Field fire flow testing in this area resulted in a residual pressure of 76 psi, corresponding to approximately 1,465 gpm fire flow capability. Static pressures in this area are approximately 86 psi.

- Murry Street (Murray pressure zone) – Field fire flow testing in this area resulted in a residual pressure of 30 psi, corresponding to approximately 530 gpm fire flow capability. Static pressures in this area are approximately 125 psi.

In general, the results of the computer hydraulic model of the City's water system matched the field-measured flows.

The City was hydraulically modeled with the following parameters:

- System-wide demands (excluding the largest users) are equally distributed between the model's 255 demand nodes.
- Largest users' demand applied proportionally to their 2023 consumption percentage (Table 2-7).
- 1,000 gpm fire flow requirement for residential areas.
- 1,500 gpm fire flow requirement for commercial and light industrial areas.
- Pipe velocities were limited to a maximum of 10 feet per second.
- Pipe roughness coefficients (Hazen-Williams C values) of 100 to 130 were used for balancing the model with actual field flow measurements at hydrants.
- For PHD, both operational and equalization storage are depleted; Wells 2, 3, 4, and 5 operating.
- For MDD, operational, equalization, and fire suppression storage depleted; Wells 2, 4, and 5 operating.

The City's fire flow delivery requirements for large structures identified by the Fire Chief as having specific fire flow needs are not addressed in this Plan. The hydraulic model flow capacities as identified at each particular node are an indication of the flow capacity available to the area via the pipes/proposed pipes serving the hydrants and not the specific flows withdrawn from the hydrants. See Figure 3-1 for a visual representation of the model results.

WATER SYSTEM PHYSICAL CAPACITY ANALYSIS

Worksheet 4-1 from the *WSDM* shows that the City has sufficient source, water rights, and storage capacity to meet its current needs. Of these components, the City's source capacity is the most limiting component. ERU capacities were calculated as follows:

- Source: Source capacity divided by MDD per ERU. See Tables 1-1, 2-3, and 2-6.

$$\frac{1{,}750\ gpm\ *\ 1{,}440\ \frac{min}{day}}{255\ \frac{gpd}{ERU}\ *\ 2.4\ [\frac{MDD}{ADD}]} = 4{,}118\ ERU$$

- Equalizing Storage: Utilizing Equation 4-6 of the WSDM to solve for ERUs based on Equalizing Storage, which equals total available storage above the 30 psi HGL minus OS, see Tables 3-13. Coefficients utilized in Equation 4-6 are referenced in Table 3-1 of the WSDM.

$$\frac{1}{1.6}\left[\left(\frac{1440\frac{min}{day}}{255\frac{gpd}{ERU}*2.4\frac{MDD}{ADD}}\right)*\left(\frac{1{,}441{,}048gal-0gal-250{,}101gal}{150min}+1{,}750gal-18\right)-225\right]=14{,}082\ ERU$$

- Standby Storage: Total storage, minus DS, OS, and ES, divided by 200 gal/ERU. FSS is not subtracted because the City nests FSS and SB. See Table 3-5.

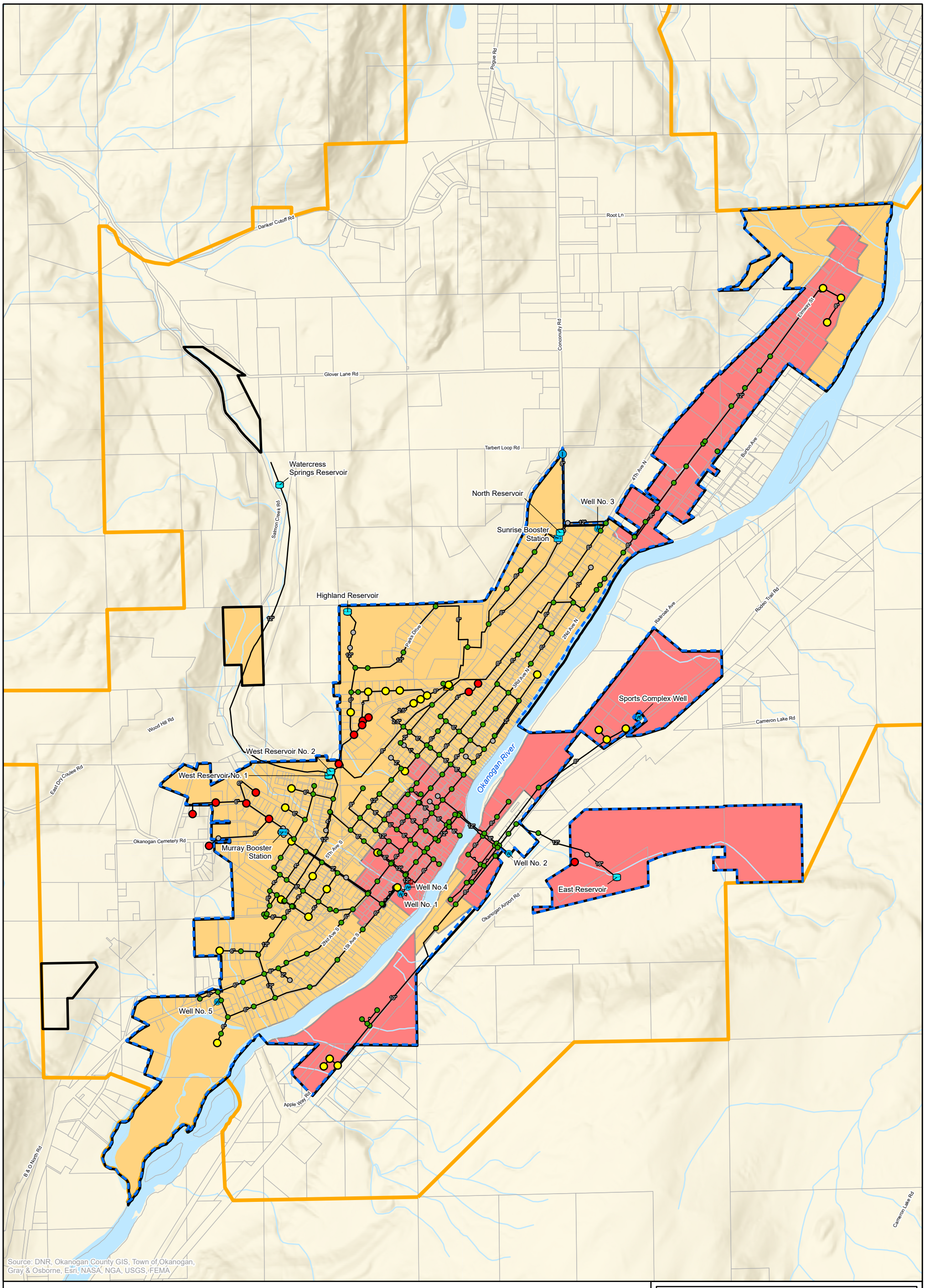
$$\frac{1{,}441{,}048\ gal-0\ gal-250{,}101\ gal-0\ gal}{200\ gal/ERU}=5{,}955\ ERU$$

- Water Rights Q_a: Water rights Q_a divided by ADD/ERU. See Tables 3-4 and 2-6.

$$\frac{1{,}629.3\ \frac{af}{yr}*325{,}851\frac{gal}{af}*\frac{1\ yr}{365\ days}}{255\ \frac{gpd}{ERU}}=5{,}704\ ERU$$

- Water Rights Q_i: Water rights Q_i divided by MDD/ERU. See Tables 3-4, 2-3 and 2-6.

$$\frac{2{,}220\ gpm*1{,}440\frac{min}{day}}{255\frac{gpd}{ERU}*2.4\left[\frac{MDD}{ADD}\right]}=5{,}224\ ERU$$



2024 MDD
- <1000 GPM
- 1000-1500 GPM
- >1500 GPM
- Not Modeled for Fire Flow

Fire Flow Requirement
- 1000 GPM
- 1500 GPM

Water System
- Well
- Intertie
- Pump Station
- Pressure Reducing Valve
- Reservoir
- Arsenic Treatment Facility Plant
- Water Main (Diameter)

Reference
- Retail/Future Service Area
- UGA/Service Area
- City Limits
- Parcel
- Surface Water

N

0 625 1,250 2,500 Feet

CITY OF OKANOGAN

WATER SYSTEM PLAN

FIGURE 3-1

2024 MDD AND FIRE FLOW

Gray & Osborne, Inc.
CONSULTING ENGINEERS

WORKSHEET 4-1

ERU Capacity Summary

Specific Single-Family Residential Connection Criteria *(Measured or estimated demands.)*			
Average Day Demand (ADD):	255	gpd/ERU	
Maximum Day Demand (MDD):	612	gpd/ERU	
Water System Connections Correlated to ERUs			
Service Classification	**Total MDD**	**Total Connections**	**ERU**
Residential			
Single-Family	455,940	745	745
Multifamily	130,968	46	214
Non-Residential			
Schools	153,000	14	250
Commercial	187,272	202	306
Rural(1)	39,168	29	64
City	140,148	22	229
DSL	**203,796**	**N/A**	**333**
Total Existing ERU (Residential + Non-Residential + DSL) =			**2,141**
Service Capacity as ERUs and Gallons Per Day			
Water Systems Component	**ERU Capacity for Each Component**	**GPD Capacity Per Component**	
Sources	4,118	2,520,000	
Treatment	Continuous	Continuous	
Equalizing Storage	14,082	1,190,947	
Standby Storage	5,955	1,190,947	
Transmission	Not Applicable	Not Applicable	
Water Rights			
Q_a	5,704	1,454,545	
Q_i	5,224	3,196,800	
Other	Not Applicable	Not Applicable	
Limiting Water System Service Capacity (ERU) =	**4,118**		
(Based on the limiting water system component shown above.)			

(1) Includes Progressive Flats Water Association (PFWA) metered connection.

SYSTEM DEFICIENCIES

Table 3-7 summarizes the deficiencies identified in this chapter. A schedule for the improvements planned within the next ten years is presented in Chapter 8. Preliminary cost estimates are also provided in Chapter 8.

TABLE 3-7

Summary of Deficiencies

Category	Deficiency
Source Protection	Protective covenants are needed for Wells 2, 3, and 5.
Telemetry	The City's telemetry will likely become outdated and require an upgrade within the next 20 years. Additionally, other projects may require expansion of the existing telemetry system.
Source	No redundant power source for Wells 2 and 3.
	No water level monitoring at City Wells 2, 3, 4, and 5.
	Old City wells 1 and 4 should be decommissioned.
Treatment	No sludge drying/dewatering facilities for the arsenic treatment plant.
Storage	Cleaning, inspection, and structural analysis of existing reservoirs are recommended to determine seismic code compliance, identify deficiencies, and recommend improvements.
	Insufficient storage capacity in the Main pressure zone under MDD and fire flow conditions.
	Insufficient site security at West reservoirs.
Distribution	Old AC, CI, and steel distribution piping need to be replaced.
	Upsize existing water mains throughout the City to meet minimum pressures under MDD and fire flow conditions.
	A new Murray Booster Pump Station is needed to serve the new Murray Reservoir.
	Extend Elmway water main to northern city limits to provide water service to area residents.
	Extend Rodeo Trail water main to provide service to the Central Valley Sports Complex.
	Construct Airport Booster Pump Station to address fire flow deficiencies near the airport.
	Construct North River Crossing to provide looping from East Okanogan to Northwest Okanogan.

ASSET MANAGEMENT PLAN

Asset management is defined by DOH as "… the practice of managing all utility assets to address the total cost of owning, operating, upgrading, and replacing them, while delivering the appropriate level of service." As part of this Water System Plan, the City has completed an Asset Management Plan. This Asset Management Plan includes an Asset Inventory, which summarizes the age, condition rating, replacement cost, and criticality of the City's major water system assets and relates these items to planned Capital Improvement Projects previously described in this chapter. This inventory is used to assess the adequacy of the City's Capital Improvement Program to maintain current levels of service over the long term.

Each asset is assigned a Consequence of Failure (CoF) and a Likelihood of Failure (LoF) on a scale of 1 to 5 in accordance with the rating system shown in Table 3-8. The Criticality of each asset is defined as the product of the CoF rating and the LoF rating, with the lowest possible Criticality being 1 (1 x 1 = 1) and the highest possible Criticality being 25 (5 x 5 = 25).

TABLE 3-8

Asset Failure Rating System

Rating	Consequence of Failure (CoF) or Likelihood of Failure (LoF)
1	Very Low
2	Low
3	Moderate
4	High
5	Very High

ASSET INVENTORY

The City's Asset Inventory is shown in Table 3-9. Assets in Table 3-9 include all major components of the City's water system and are sorted by asset type. Related capital improvement projects are further discussed in Chapter 8.

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TABLE 3-9

Water System Asset Inventory

No.	Asset	Asset Description	Asset Type	Asset Location	Year Installed	Age (years)	Expected Useful Life (years)	Remaining Useful Life (years)	Consequence of Failure (CoF)	Likelihood of Failure (LoF)	Criticality (CoF x LoF)	Related Capital Improvement Projects	Replacement Cost ($2024)	Annualized Replacement Cost ($2024)
1	Well 2 – Pump and Motor	25-hp submersible pump	Source	100 Ban Duyn Street	2000	24	60	36	5	3	15	SC1, SC2, OM2	$300,000	$5,000
2	Well 2 – Borehole, Casing, and Screen(s)	117-foot borehole, 12 In. Diam. From 0' to 117'	Source	100 Ban Duyn Street	1947	77	100	23	5	2	10	SC1	$163,800	$1,638
3	Well 3 – Pump and Motor	60-hp submersible pump	Source	1537 4th Avenue North	1963	61	60	0	5	3	15	SC1, SC2, OM2	$300,000	$5,000
4	Well 3 – Borehole, Casing, and Screen(s)	117-foot borehole, 12 In. Diam. from 0' to 117'	Source	1537 4th Avenue North	1963	61	100	39	5	2	10	SC1	$163,800	$1,638
5	Well 4 – Pump and Motor	75-hp submersible pump	Source	51 Tyee Street	2001	23	60	37	5	3	15	SC1, OM2	$300,000	$5,000
6	Well 4 – Borehole, Casing, and Screen(s)	12 In. Diam. From 0' to 259'	Source	51 Tyee Street	1976	48	100	52	5	2	10	SC1	$362,600	$3,626
7	Well 5 – Pump and Motor	50-hp submersible turbine pump	Source	149 Ione Street	1987	37	60	23	5	3	15	SC1, OM2	$300,000	$5,000
8	Well 5 – Borehole, Casing, and Screen(s)	18 In. Diam. from 0' to 39'; 18-inch screen from 39' to 69': 13 In. Diam. from 69' to 94'	Source	149 Ione Street	1987	37	100	63	5	2	10	SC1	$131,600	$1,316
9	Well 4 – Emergency Power	Trailer-mounted backup generator	Source	51 Tyee Street	2025 est.	0	50	50	2	2	4	N/A	$100,000	$2,000
10	Well 5 – Emergency Power	Trailer-mounted backup generator	Source	149 Ione Street	2025 est.	0	50	50	2	2	4	N/A	$100,000	$2,000
11	Murray Booster Pumps	Two 5-hp, 190 gpm pitless pumps	Source	Murray Street	1976	48	60	12	5	3	15	DS1	$600,000	$10,000
12	Sunrise Booster Pumps	Two 30-hp, 350 gpm submersible pumps with pitless adapter units	Source	Highland Drive	2005	19	60	41	5	3	15	N/A	$600,000	$10,000
13	East Reservoir	550,000-gallon concrete reservoir	Storage	30 Okanogan Landfill Road	1976	48	85	37	5	3	15	ST1, OM4	$1,650,000	$19,412
14	North Reservoir	550,000-gallon concrete reservoir	Storage	1422 Sunrise Heights	1977	47	85	38	5	3	15	ST1, OM4	$1,650,000	$19,412
15	West 1 Reservoir	210,000-gallon concrete reservoir	Storage	96 Crestview Drive	1950	74	85	11	5	3	15	ST1, ST3, OM4	$630,000	$7,412
16	West 2 Reservoir	200,000-gallon concrete reservoir	Storage	96 Crestview Drive	2005	19	85	66	5	3	15	ST1, ST3, OM4	$600,000	$7,059
17	Highland Reservoir	200,000-gallon concrete reservoir	Storage	927 Parks Drive	2005	19	85	66	5	3	15	ST1, OM4	$600,000	$7,059
18	Telemetry System	PLCs, Radios, Antennas, Computer	Telemetry	City of Okanogan			20		3	2	6	TL1	$250,000	$12,500
19	Distribution System	Appurtenances (hydrants, isolation valves, etc.)	Distribution	City of Okanogan	Varies	Varies	20	Varies	2	3	6	OM3	$8,500,000	$425,000
20	Distribution System – CI Piping	Cast Iron Pipe – approx. 18k linear feet	Distribution	City of Okanogan	Varies	Varies	80	Varies	2	5	10	DS17	$8,280,000	$103,500
21	Distribution System – AC Piping	Asbestos Cement Pipe – approx. 41k linear feet	Distribution	City of Okanogan	Varies	Varies	75	Varies	2	5	10	DS17	$18,860,000	$251,467
22	Distribution System – DI Piping	Ductile Iron Pipe – approx. 8k linear feet	Distribution	City of Okanogan	Varies	Varies	100	Varies	2	3	6	DS-Various	$3,680,000	$36,800
23	Distribution System – HDPE Piping	High-Density Polyethylene Pipe– approx. 200 linear feet	Distribution	City of Okanogan	Varies	Varies	75	Varies	2	2	4	DS-Various	$92,000	$1,227
24	Distribution System – PVC Piping	Polyvinyl Chloride Pipe – approx. 17k linear feet	Distribution	City of Okanogan	Varies	Varies	75	Varies	2	2	4	DS-Various	$7,820,000	$104,267
25	Distribution System – Steel Piping	Steel Pipe – approx. 10k linear feet	Distribution	City of Okanogan	Varies	Varies	75	Varies	2	5	10	DS17	$4,600,000	$61,333
26	Distribution System – GI	Galvanized Iron Pipe– approx. 1k linear feet.	Distribution	City of Okanogan	Varies	Varies	75	Varies	2	5	10	DS-Various	$460,000	$6,133
27	Customer Water Meters	Approximately 724 service meters	Distribution	City of Okanogan	Varies	Varies	20	Varies	1	2	2	DS18	$280,912	$14,046
Total													**$61,374,712**	**$1,128,843**

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CHAPTER 4

WATER USE EFFICIENCY REQUIREMENTS

BACKGROUND

In 2003, the Washington State Legislature passed Engrossed Second Substitute House Bill 1338, which has come to be known as the 2003 Municipal Water Law. Among other things, the new law required the Washington State Department of Health (DOH) to develop a rule that defines how municipalities are to demonstrate efficient use of their water supplies. In response, DOH developed the Water Use Efficiency (WUE) Rule, which became effective on January 22, 2007. DOH published revisions to the third and most recent edition of the *Water Use Efficiency Guidebook* (WUE Guidebook) in January 2017. Key elements of the rule and the City of Okanogan's progress in meeting the rule are summarized in Table 4-1.

TABLE 4-1

Summary of Water Use Efficiency Rule Requirements

Requirement	City of Okanogan Status
Install source meters	Completed
Begin collecting production and consumption data	Completed
Include WUE program in planning documents	In this Water System Plan
Set WUE goals through a public process	Completed
Submit first annual performance report	Completed
Meet distribution leakage standard	Over the allowable limit – water loss control action plan included in this Plan
Complete installation of all service meters	Completed

As noted, this table summarizes requirements for communities with 1,000 or more connections. The City had 1,058 service connections in 2023, the analysis in this chapter will be based on requirements for systems with more than 1,000 connections and less than 2,499 connections.

PRODUCTION AND SOURCE METERS

The City's water supply is provided by four wells, Wells 2, 3, 4, and 5. The Alma Park Well and the Salmon Creek Springs gravity flow water source are permanently inactive. Well 2 has a capacity of 200 gpm, Well 3 has a capacity of 650 gpm, Well 4 has a capacity of 550 gpm, and Well 5 has a capacity of 350 gpm. Each well is equipped with a turbine flow meter. Further description of the City's wells is provided in Chapter 1.

Monthly production from the City's wells for 2019 through 2023 is shown in Figure 2-2. Annual production data, including average day demands, maximum day demands, and peak hour demands are summarized in Table 2-3.

CONSUMPTION AND SERVICE METERS

Table 2-4 of the Plan summarizes the City's annual water consumption history for 2019 through 2023. The City's water consumption data were taken from City billing records produced by service meter readings. All of the City's residential and commercial customers are metered. Okanogan Municipal Code (13.04.320) requires meter installation prior to connection of any water service to the City's water system. The City operates, calibrates, and maintains service meters in accordance with manufacturers' recommendations, and has an ongoing program of replacing service meters on an as-needed basis.

INTERTIES

The City wholesales water to the Progressive Flats Water Association (PFWA). The Agreement between the City and the PFWA is contained in Appendix S.

WATER USE EFFICIENCY PROGRAM

Section 5.3 of the WUE Guidebook summarizes the items that are to be included in a WUE program. A discussion of each item is provided in this section.

CURRENT WATER USE EFFICIENCY PROGRAM

The City encourages efficient use of water through bill notations and its annual consumer confidence report. Additionally, the City makes DOH water conservation flyers available at City Hall. The City has adopted conservation rates that consist of a base rate and volume charge.

WUE GOALS

The WUE Rule requires a water system's elected governing body to establish WUE goals that are measurable and have a timeframe for implementation. The City's WUE goals were adopted by the City Council in a public forum (minutes are provided in Appendix U). The meeting was held in accordance with the requirements of WAC 246-290-830. The goals are:

- Supply Side Goal: Reduce and maintain distribution system leakage below 10 percent for the next ten years.

- Demand Side Goal: Reduce average residential water use, currently averaging 255 gpd/ERU (Chapter 2), to 250 gpd/ERU or less by 2034, and to 245 gpd/ERU or less by 2044.

WUE MEASURES

The WUE Rule requires all municipal water systems to implement and evaluate certain mandatory water use efficiency measures. The City is also required to identify additional demand (i.e., customer) side measures. The purpose of adopting a particular set of water use efficiency measures is to develop a strategy to meet the City's water use efficiency goals described above. The mandatory measures the City is required to address are summarized in Table 4-2.

TABLE 4-2

Mandatory Water Use Efficiency Measures

Mandatory Measures	Requirement	Status
Install source meters	Implementation	Completed
Install service and intertie meters	Implementation	Completed
Calibrate meters per industry standards	Implementation	As needed
Water loss control action plan if DSL>10 Percent	Implementation	Within this Plan
Educate customers about WUE once per year	Implementation	On-going every year
Water conservation rates	Evaluation	Completed

In addition to these mandatory measures, WAC 246-290-810(4)(d) requires systems with 1,000-2,499 connections to adopt five additional demand (i.e., customer) side water use efficiency measures. The WUE Guidebook provides that a qualified WUE measure that is implemented for different customer classes counts as multiple WUE measures. The City's customer classes are listed in Table 2-4. Table 4-3 summarizes the demand-side

water use efficiency measures the City currently has in place or plans to implement over the next ten years.

TABLE 4-3

Demand-Side Water Use Efficiency Measures

Demand Side Measures	Customer Classes Affected	Number of Measures(1)	Estimated Annual Water Savings(2)	Status	Cost
Notify customers of high meter reads	5	5	2 gpd/ERU	Ongoing	Minimal
Consumption history on water bill	5	5	3 gpd/ERU	Ongoing	Minimal
Total Measures (5 required)		**10**	5		

(1) Per the WUE Guidebook, if a qualified WUE measure is implemented for different customer classes, it counts as multiple WUE measures.

(2) Savings projected by the end of the 10-year planning period. Savings are expected to enable the City to meet its second goal.

In addition to complying with the mandatory measures outlined in Table 4-2, the City adopted the demand side measures listed in Table 4-3 for all of its customer classes at its public forum, which resulted in a total of 10 measures, 5 more than required.

WUE COST-EFFECTIVENESS

The City has determined that the cost of implementing these measures will be minimal and they will therefore be cost effective. The City believes these measures will enable it to meet its second WUE goal to reduce average annual consumption from an average of 255 gpd/ERU to 250 gpd/ERU within the next ten years and to 245 gpd/ERU within the next twenty years.

WUE EDUCATION

As indicated above, the City encourages water use efficiency by periodically including water conservation information in its monthly billings and its annual consumer confidence report. The City intends to continue these efforts to encourage the water savings required to meet the City's second water use efficiency goal.

EVALUATING WUE EFFECTIVENESS

The City plans to track the effectiveness of its WUE efforts by continuing to monitor DSL to determine whether its ongoing leak detection and repair efforts are enabling it to meet its first WUE goal to reduce and maintain DSL below 10 percent. It also plans to annually check its residential water use to see if its demand-side water use efficiency measures are helping it meet its second WUE goal to reduce residential consumption. The City's plan for collecting data to make these evaluations is summarized in Table 4-4.

TABLE 4-4

Water Use Data Collection Strategy

Data Type	Unit of Measure	Collection Frequency	Comments
Water Production	Gallons	Billing Period	Total by month and by year
Revenue Water	Gallons	Billing Period	Total sold by customer class for each billing period
Unmetered Consumption	Gallons	Billing Period	Authorized unbilled metered and estimated unbilled unmetered consumption
Authorized Consumption	Gallons	Billing Period	The sum of Revenue Water and Billed and Unbilled Metered Consumption
Water Losses	Gallons	Annual	The difference between monthly Water Production and Authorized Consumption
Distribution System Leakage (DSL)	Gallons	Annual	Total Production – Authorized Consumption
	Percent	Annual	(Total Production – Authorized Consumption) * 100 / Total Production
Apparent Losses	Gallons	Annual	Estimate unauthorized consumption, water theft, meter inaccuracies, and other non-leakage losses.
Leakage Eliminated	Gallons	Per Occurrence	When leaks are discovered and repaired, the leakage rate and duration are estimated and the resultant leakage volume for the billing period is estimated and recorded.

Table 4-5 shows how meeting the City's water use efficiency goals would affect its projected water demands. Water loss reduction and repairs are assumed to continue throughout the planning period as existing piping reaches the end of its useful life. Additionally, the City believes its reduction in water production will primarily be from reduced customer demands.

TABLE 4-5

Projected Water Demands with Water Savings(1)

Year	Population	ERUs	ADD (gpd)	Annual Prod. (af/yr)	MDD (gpd)	MDD (gpm)	PHD (gpm)
Without Savings (Table 2-8)							
2024	2,432	2,150	549,000	615	1,318,000	915	1,583
2034	2,551	2,239	571,000	640	1,371,000	952	1,647
2044	2,676	2,332	595,000	666	1,428,000	992	1,716
With Savings							
2024	2,432	2,150	549,000	615	1,318,000	915	1,583
2034	2,551	2,239	560,000	627	1,344,000	933	1,615
2044	2,676	2,332	584,000	654	1,402,000	974	1,684
Net Savings							
2024	2,432	2,150	N/A	N/A	N/A	N/A	N/A
2034	2,551	2,239	11,000	12	27,000	19	32
2044	2,676	2,332	11,000	12	26,000	18	31

(1) Savings attributable to reducing customer demands from 255 gpd/ERU to 250 gpd/ERU by 2034 and to 245 gpd/ERU by 2044.

DISTRIBUTION SYSTEM LEAKAGE

Current DOH rules require the calculation of the three-year average DSL to determine compliance with its maximum 10-percent DSL allowance. Table 2-5 indicates that the City's three-year average DSL is above 10 percent. Because the City's DSL is estimated to be higher than the DOH standard, the City must submit a Water Loss Control Action Plan (WLCAP) to document the City's plan for reducing DSL below the DOH limit. As indicated above, the City's first WUE goal is to maintain its DSL below 10 percent, after it successfully implements its WLCAP to reduce DSL below 10 percent.

WATER LOSS CONTROL ACTION PLAN

As discussed above and in Chapter 2, because the City's DSL is higher than the standard, the City must submit a Water Loss Control Action Plan, including the following elements:

1. Control Methods to Achieve Compliance with DSL Standards

To reduce its DSL to achieve compliance with DSL standards, the City plans to do the following:

- Begin efforts to find and repair leaks. This may involve performing leak detection testing of the distribution system to locate areas of additional leakage to strategically allocate repair funds.

- Identify additional water main locations requiring replacement or upsizing, including replacing AC, CI, or steel water mains that are likely sources of leakage. Refer to Chapters 3 and 8 for additional discussion of these efforts.

- Improve its tracking of authorized consumption, including hydrant flows, dust abatement water, and other unmetered and unbilled usages.

- Ensure that the source meters are recalibrated regularly to ensure accuracy.

2. An Implementation Schedule

The City will complete some of the measures noted above by the end of 2024. Additional measures will be completed as funding permits over the 10-year planning period. For the replacement of additional portions of the distribution system, the City will perform the most critical projects first, as funding allows. Refer to Chapter 8 for additional discussion of these efforts.

3. Budget for Implemented Measures

Calibration and/or replacement of source meters, improved tracking of unauthorized consumption, leak detection, and investigation and replacement of service meters can generally be covered by the City's Operation and Maintenance budget. Capital improvements associated with the replacement of additional water mains to reduce leakage will typically require outside funding packages. Chapters 8 and 9 provide further discussion of the financial impacts of capital improvements to reduce leakage.

4. Technical or economic concerns that may affect the system's ability to implement a program or comply with the standard including past efforts and investments to minimize leakage.

The City will replace deteriorated water system infrastructure as funding allows and as determined by the need for the project. Large capital projects will require rate increases, which will impact the affordability index for the City's residents.

5. **If the average distribution system leakage is greater than ten and less than 20 percent of total water produced and purchased, the water loss control action plan must assess data accuracy and data collection.**

   As discussed above, the City will ensure that its source meters are recalibrated regularly to ensure accuracy. The City will also investigate water consumption collection and recording procedures to ensure that data collection is accurate.

CONSERVATION RATE STRUCTURE

As discussed in Chapter 9, the City has a base rate plus a uniform block volume charge for its residential customers. See Appendix R for City water rates. A uniform block rate structure continues to charge users at the same rate regardless of consumption and therefore cannot be considered a conservation rate structure according to the WUE Guidebook. The City will consider changing water rates to an inclined block rate structure to promote water conservation.

WATER RECLAMATION

Okanogan's wastewater is conveyed by gravity pipeline to its wastewater treatment facility. Wastewater enters the treatment process at the headworks facility where fine screen captures and dewaters the larger solids. The wastewater then flows through the primary clarifier to the diversion box where the flow is routed to the rotating biological contactors (RBC). Wastewater is biologically treated in the RBC and sent through the secondary clarifiers where the biological solids are settled. Clarified effluent then gravity flows to the UV disinfection system and out to the Okanogan River. In 2008, the City evaluated the feasibility of converting the wastewater treatment plant to a Water Reclamation Facility but decided not to pursue water reclamation for the following reasons:

- Sufficient Water Supply. The City has sufficient source capacity and water rights for its water system beyond the 20-year planning period.

- Economic Feasibility. Construction of a pipeline to various areas in which reclaimed water will be utilized, in addition to the cost of upgrading the existing wastewater treatment plant to a water reclamation facility, does not make water reclamation economically viable. The City would also be required to demonstrate through an impairment analysis that diverting water from the current wastewater treatment plant's discharge point, which is ultimately the Okanogan River, back to town would not cause injury to downstream senior water right holders.

- Factors encouraging the use of reclaimed water. Although the cost of upgrading the existing wastewater treatment facility and constructing a reclaimed water conveyance system would be high, a future need to mitigate a water rights shortage may provide the impetus needed to begin the planning process. Water reuse may also be a viable future option if the aquifers tapped by the City's wells become less productive or contaminated. More restrictive wastewater discharge permit limits could also make water reclamation more attractive.

In summary, the City does not currently plan to convert its existing wastewater treatment facility to a water reclamation facility. However, future conditions may change and make such a conversion more attractive, so the City plans to periodically revisit this option.

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TABLE 4-6

Water Rights Self-Assessment (Existing, 10-Year, 20-Year)

Permit, Certificate, or Claim #	Name of Right Holder or Claimant	Priority Date	Source Name/Number	Additive or Non-Additive	Existing System Capacity Based on Water Right Limits		Water Right Requirement		Projected System Capacity Status (Excess or Deficiency)	
					Maximum Instantaneous Flow Rate(Qi)	Maximum Annual Volume (Qa)				
GWC No. 266-D(1)	City of Okanogan	1924	Well 1	Additive/Non-Additive	100	29				
GWC No. 3410-A(1)(3)	City of Okanogan	2-21-1948	Well 2	Additive/Non-Additive	200	320				
GWC No. 5327(1)	City of Okanogan	9-13-1963	Well 3	Additive	650	700				
GWC No. G4-3838-A	PFWA(6)	6-7-2006	Well 3	Additive	50	39				
GWC G4-30573P	PFWA(6)	1-22-1991	Well 3	Additive	20	6.3				
CG-4-23854C	City of Okanogan	12-24-1975	Well 4	Additive	550	400				
GWC No. 369-A(1)(2)	City of Okanogan	7-27-1946	Well 5	Additive/Non-Additive	350	200				
GWC No. G4-29193(4)	City of Okanogan	1-30-1987	Well 5	Additive/Non-Additive	300	400				
SWR 000052(4)	City of Okanogan	1908	Watercress Springs	Non-Additive/Additive	300	484				
Total					**2,220**	**1,629.3**	**Maximum Instantaneous Flow Rate (Qi)**	**Maximum Annual Volume (Qa)**	**Maximum Instantaneous Flow Rate (Qi)**	**Maximum Annual Volume (Qa)**
2024 (Existing)					2,220	1,629.3	915	615	1,305	1,014.3
2034 (10-year)					2,220	1,629.3	952	640	1,268	989.3
2044 (20-year)					2,220	1,629.3	992	666	1,228	963.3

Intertie Name/Identifier	Name of Purveyor Providing Water	Existing Limits on Intertie Water Use		Project Production/ Withdrawal with New Project Online		Current Intertie Supply Status (Excess/Deficiency)	
		Maximum Instantaneous Flow Rate(Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Pending Water Right Appl.	Name on Application	Priority Date	Source Name	Additive or Non-Additive	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) Certificate GWC-5327 was issued with the special provision that the annual quantity of withdrawal is non-additive to SW Certificate 592 and GW Certificates 265, 266, 369A, and 3410. The total withdrawal allowed under all of these certificates was limited to 700 ac-ft/yr. The City has since relinquished SW Certificate 592 and GW Certificate 265. Certificate 266-D is restricted to season use from April 1 to October 31.

(2) This right was originally held under Certificate 369-A for Well 1 and was transferred to Well No. 5 on 7/20/87. This certificate is included in the 700 ac-ft/yr cap identified in the 1963 Well 3 certificate.

(3) The Record of Examination on this water right states that at the time this certificate was issued, the City held SW Certificate 592 and GW Certificates 265,266, and 369A for a total of 1675 gpm and 1488 ac-ft/yr. the 320 ac-ft annual portion of this right was issued non-additive to these rights. SW Certificate 592 was subsequently relinquished.

(4) The annual quantity of Permit G4-29193P was issued non-additive to the City's Ground Water Certificates No. 266-D, 369-D, 3410-A, 5327-A, G4-23854C, and Water Right Claim No. S4-000052Cl should a right be confirmed following an adjudication. The instantaneous portion of the permit was also issued non-additive, subject to minimum Okanogan River flows and Certificate of Change 369-A. The City issued the Proof of Appropriation in 1988. The DOE wrote in a subsequent correspondence that a certificate for this well would be issued following a final DOE inspection.

(5) Water Rights Totals when the Okanogan River is below minimum flows.

(6) PFWA = Progressive Flats Water Association. PFWA transferred its water rights for two certificates to Well 3 because of radionuclide pollution and declining water levels.

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CHAPTER 5

WELLHEAD PROTECTION PROGRAM

OBJECTIVE

The City of Okanogan relies on Wells 2, 3, 4, and 5 to meet its water supply needs. To protect groundwater supplies, the Environmental Protection Agency (EPA) and the Washington Department of Health (DOH) require public water utilities to develop a wellhead protection program as a component of their water system plan. The purpose of a wellhead protection program is to provide water systems with a proactive program for preventing groundwater contamination. The minimum requirements for a wellhead protection plan are specified in WAC 246-290-135(3).

A successful wellhead protection program consists of a number of elements that must be developed before the plan can be fully implemented. These elements are described below and form the basis of the City's Wellhead Protection Program (WHPP).

- A Susceptibility Assessment that determines the susceptibility of each source of contamination.
- A Delineated Wellhead Protection Area (WPA) based on all reasonable available hydrogeologic information, inclusive of the Susceptibility Assessment.
- An Inventory of potential sources of contamination within each wellhead protection area.
- A Spill Response Plan containing documentation for coordination with local first responders.
- A Contingency Plan for providing alternate sources of drinking water in the event that contamination does occur and management recommendations to reduce the likelihood those potential contamination sources will pollute the drinking water supply.

SUSCEPTIBILITY ASSESSMENTS

Separate susceptibility assessments have been completed for the City's sources and have been previously provided to DOH. Susceptibility assessment ratings for each source are shown in Table 5-1.

TABLE 5-1

Susceptibility and Vulnerability Rating

Name of Source	Source Number	Susceptibility Rating[(1)]
Well 2	S02	High
Well 3	S03	High
Well 4	S04	Low
Well 5	S06	High

(1) Source: Washington State Source Water Assessment Program.

WELLHEAD PROTECTION AREA DELINEATIONS

The Calculated Fixed Radius Method was used to determine the wellhead protection area zones of contribution. Based on WAC 246-290-135, wellhead protection areas were estimated for six-month, 1-year, 5-year, and 10-year periods based on the 2019-2024 average production from each of the wells. Delineation calculations are shown in Table 5-2. The delineation of the City's zones of contribution is shown in Figure 5-1.

TABLE 5-2

Wellhead Protection Delineations

Well No.	DOH No.	Flow[(1)] (cf/yr)	Open Interval[(2)] (ft)	Porosity[(3)]	Calculated Fixed Radius (ft)			
					6-mo	1-yr	5-yr	10-yr
2	S02	2,167,647	20	0.22	280	396	885	1,252
3	S03	4,626,711	37	0.22	301	425	951	1,345
4	S04	7,465,053	14	0.22	621	878	1,964	2,778
5	S06	11,751,016	30	0.22	532	753	1,683	2,381

(1) From the City's telemetry data. Averages of 2019-2023 production.
(2) From well logs (Appendix I); intervals of open hole providing water.
(3) Per recommendation in DOH Publication 331-018.

SANITARY CONTROL AREAS

Source water protection is covered under WAC 246-290-135. Sections of this rule that pertain to Okanogan include a section on the sanitary control area (SCA) and a section on wellhead protection.

The SCA consists of the area within a 100-foot radius around each well that must be kept free from "construction, storage, disposal, or application of any source of contamination." The City owns all the property within the Well 4 SCA and is pursuing covenants to protect the SCAs of Wells 2, 3, and 5. The City's goal is to have protective covenants by 2025. The City's SCA boundaries for each of the wells are shown in Figure 5-2.

600' 300' 0 600' 1200'

SCALE: 1"=1200'

WELL NO. 5

WELL NO. 4

WELL NO. 3

WELL NO. 2

LEGEND

- CITY LIMITS
- URBAN GROWTH AREA
- PROGRESSIVE FLATS WATER ASSOCIATION BOUNDARY
- 6 MONTH WELLHEAD PROTECTION AREA
- 1 YEAR WELLHEAD PROTECTION AREA
- 5 YEAR WELLHEAD PROTECTION AREA
- 10 YEAR WELLHEAD PROTECTION AREA

CITY OF OKANOGAN

WATER SYSTEM PLAN

FIGURE 5-1

WELLHEAD PROTECTION MAP

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\Okanogan\24801 - Water System Plan\Figures\FIG 5-1.dwg, 11/21/2024 11:51 AM, FRANK PARKER

600' 300' 0 600' 1200'

SCALE: 1"=1200'

WELL NO. 5

WELL NO. 4

WELL NO. 3

WELL NO. 2

LEGEND

- CITY LIMITS
- URBAN GROWTH AREA
- PROGRESSIVE FLATS WATER ASSOCIATION BOUNDARY
- SANITARY CONTROL AREA

CITY OF OKANOGAN

WATER SYSTEM PLAN

FIGURE 5-2

SANITARY CONTROL AREA

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\Okanogan\24801 - Water System Plan\Figures\FIG 5-2.dwg, 11/21/2024 2:55 PM, CHRISTIAN WEISHAAR

POTENTIAL CONTAMINANT SOURCES

Within a wellhead protection zone, there are many diverse activities that can contaminate an aquifer and potentially prevent its use as a viable drinking water source. Activities and sources may include land use practices, industrial and commercial operations, underground storage tanks, hazardous materials storage and use, septic tanks, and dry wells. A discussion of these practices and their potential effects on groundwater, and the regulatory requirements that may apply are included in the sections that follow Table 5-3, the inventory of potential contaminant sites in or near Okanogan's wellhead protection zones. These sites are listed in Table 5-3.

TABLE 5-3

Inventory of Potential Contaminant Sources

No.	Site Name	Address	Type	Status
1	High Country Batteries	1622 2nd Avenue North	Energy Recovery	Active
2	Okanogan County PUD No. 1	1331 2nd Avenue North	Hazardous Waste Generator	Active
3	North Central Petroleum Inc.	Van Duyan	Emergency/Haz Chem Rpt Tier 2	Active
4	WA MIL National Guard Armory 080	Hwy 97 Cameron Lake Road	LUST Facility	Inactive
5	Okanogan MS & HS	244 5th Avenue South	Underground Injection Control	Active
6	Klimeks Creamery	82 East Pine	Underground Storage Tank	Active
7	Okanogan County Courthouse	149 4th Avenue North	Construction SW GP	Active
8	The Muffler Man	308 2nd Avenue North	Underground Storage Tank	Active
9	5th Avenue Erosivity Waiver	5th Avenue	Construction SW GP	Active
10	Ralph Weitman Okanogan Truck Tractor	3rd and Queen	Underground Storage Tank	Active
11	Kens Service	134 South 2nd	Underground Storage Tank	Active
12	William Wehmeyer	130 North 2nd	Underground Storage Tank	Active
13	Thrifty Auto Center	123 North 2nd	Underground Storage Tank	Active
14	Brewster Central Office 4040 B01	15 1st Street	Underground Storage Tank	Inactive
15	Okanogan Dry Cleaners	105 South Pine Street	Enforcement Final	Active
16	Okanogan WWTP	1610 1st Avenue South	Biosolids	Active
17	Pape Machinery	1 Patrol Street	Underground Injection Control	Active
18	Washington State Patrol	108 Patrol Street	Potentially Hazardous Runoff	Active
19	Okanogan Airport	Airport Road Uphill From Highway 97	Haz Treatment Storage Facility	Inactive
20	Chelan Fruit Cooperative	124 Van Duyn Street	Haz Waste Management Activity	Inactive
21	Okanogan Detachment	108 Patrol Street	Underground Injection Control	Active
22	Lift Station 1	North 2nd Avenue	Underground Storage Tank	Active
23	EDS Repair Service	670 South 2nd	Underground Storage Tank	Inactive
24	Okanogan Livestock Market	523 Van Duyn North Box 527	Underground Storage Tank	Inactive

TABLE 5-3 – (continued)

Inventory of Potential Contaminant Sources

No.	Site Name	Address	Type	Status
25	WA DA Okanogan 1	531 Van Duyn North	Hazardous Waste Generator	Inactive
26	MAGI Okanogan 2	-	Emergency/Haz Chem Rpt Tier 2	Active
27	Okanogan County Used Oil Collections	1234 2nd Avenue South, Ste A	Recycle	Active
28	Auto Servicio De Preparacion	1462 South 2nd Avenue	Revised Site Visit Program	Active
29	Okanogan POTW	1610 South 1st Avenue	Municipal NPDES IP	Active
30	Okanogan County Public Works Shop	28860 Highway 97	Hazardous Waste Generator	Inactive

The sites in Table 5-3 were identified in the available databases, including DOH's Source Water Assessment Program mapping and the State of Washington Hazardous Sites list.

INDUSTRIAL AND COMMERCIAL ACTIVITY

Industrial and commercial activities pose a potential threat to groundwater quality due to the use of hazardous materials. Examples of these activities may include gasoline service stations and auto repair shops (petroleum fuels, heavy metals), dry cleaners (dry cleaning solvents), printers and publishers (solvents, inks, and dyes), and metal plating shops (cyanides and heavy metals). Industrial and commercial activities may be regulated by the State for specific functions. However, there are no industrial or commercial regulations regarding potential groundwater contamination. Municipalities have the option of prohibiting or restricting industrial or commercial development within WPAs through the adoption of a local ordinance.

HAZARDOUS MATERIAL STORAGE

Hazardous material storage is a specific function of industrial and commercial businesses. At the Federal level, hazardous material storage, use, and discharge are regulated through the Resource Conservation and Recovery Act (RCRA), Code of Federal Regulations (CRF) Title 40, Parts 240 to 280. Areas where hazardous materials are handled are subject to RCRA regulations and are known as RCRA sites. RCRA sites are not necessarily contaminated, but since significant amounts of hazardous materials are handled there is the potential for contamination if a spill, leak, or discharge should occur. At the State level, these activities are regulated by Ecology's Dangerous Waste Regulations (WAC 173-303). The State maintains a database of dangerous waste generators that can be searched by county. However, generators of small quantities of dangerous waste (< 220 lbs/month) are not included in Ecology's database.

UNDERGROUND STORAGE TANKS

Underground storage tanks (USTs) and leaking underground storage tanks (LUSTs) are a significant threat to groundwater quality. Most petroleum products stored in USTs are less dense than water and when released into the vadose (unsaturated) zone can migrate to the water surface of an unconfined aquifer or in groundwater. Petroleum products and impurities tend to be mobile in aquifers with increasing mobility when organic matter in soils is low. The greatest amount of petroleum contaminant movement is in the lightest hydrocarbons (e.g., gasoline) with the greatest solubility in water. The most common causes of UST leaks are structural failure, corrosion, improper fittings, and improper installation.

Ecology regulates USTs under WAC 173-360. The regulation requires that owners and operators of nonexempt underground storage tanks comply with the following:

- Notification, reporting, and record keeping;

- Performance standards and operating closure requirements;
- Registration and licensing;
- Financial responsibility.

The WAC allows a number of exemptions including tanks whose capacity is 110 gallons or less, farm and residential tanks with less than 1,100 gallons, heating oil tanks with less than 1,100 gallons per premises, and septic tanks.

Owners and operators of all existing nonexempt USTs must have a permit from Ecology. A valid permit is a requirement for the delivery of regulated substances and must be updated annually. As a condition of the permit, the owner must have completed the following requirements:

- An assessment of the tank condition by a licensed tank service provider approved by Ecology.
- Replacement of leaking tanks and site cleanup.
- Installation of leak detection devices.
- Proof of insurance to compensate a third party in the event of bodily injury or property damage stemming from a leaking tank. One million dollars in insurance is required for petroleum marketing facilities.

In addition to the above requirements, all existing nonexempt USTs must provide cathodic and spill and overflow containment protection.

When USTs are taken out of service, Ecology regulations refer to this as "closure." Closed USTs must be emptied, cleaned, and either removed or filled with an inert substance such as sand. If the UST is left in place and filled with an inert substance, this is referred to as "closed in place."

Ecology maintains a database of all permitted nonexempt USTs in the State, as required by RCRA, Subtitle 1. The database provides the site name and address, tank identification number, date of installation, size, tank status, and the substance stored on the site. An additional database maintained by Ecology contains information about known LUSTs and corrected LUSTs. Both databases are updated twice a year.

SEPTIC SYSTEMS

Contaminants associated with septic tank effluent include pathogenic organisms, toxic substances, and various nitrogen compounds including ammonia and nitrate that are highly soluble in water. Most septic tank drain fields discharge effluent to the unsaturated zone above unconfined aquifers. However, the potential exists for contaminants from drain fields to percolate to the saturated zone and contaminate groundwater supplies.

ACCIDENTAL SPILLS AND LEAKS

Accidental spills or releases of contaminants can potentially impact groundwater supplies. Potential sources of spills and leaks include USTs, accidents, and poor disposal practices. Transportation routes are of concern due to the potential for hazardous materials spills from cargo vehicles. Also, industrial and commercial operations in the WPA are potential locations for accidental spills and leaks.

It is important that spills and leaks receive a quick and thorough response. A quick response can make the difference between a few cubic yards of contaminated material needing disposal and a massive groundwater cleanup effort costing millions of dollars. In order to have a quick response, the responsible party and any witnesses need to take responsibility and realize that they can greatly reduce liability if they respond quickly. A program to educate the public and hazardous materials handlers would help to increase the likelihood of a quick response in the event of a hazardous materials spill in the WPA.

Generally, any report of a spill or leak in the WPA should be directed to the county emergency response number, 911. Staff at the 911 service will contact the appropriate response agencies. The following are possible responders to hazardous waste spills and leaks in the City's WPA:

- City Public Works Department
- City Police Department
- City Fire Department
- County Sheriff
- County Public Works Road Division
- County Health Department
- Washington State Patrol
- Washington State Department of Ecology
- Washington State Department of Transportation

IMPROPERLY SEALED OR SECURED WELLS

Improperly sealed or secured wells can act as direct conduits for contaminants to reach groundwater. It is recommended that any abandoned wells be securely capped to prevent unauthorized access. If wells remain out of service for an extended period of time, it is recommended that they be decommissioned and permanently abandoned to prevent aquifer cross-contamination.

CONFIRMED AND SUSPECTED CONTAMINATION SITES

Under the Model Toxics Control Act Cleanup Regulation, WAC 173-340, Ecology is responsible for ensuring that all hazardous waste sites are properly remediated. Hazardous waste sites include confirmed and suspected sites of contamination as well as LUSTs. A separate inventory for each, which includes the status of cleanup efforts, is maintained by Ecology. Ecology conducts an initial site investigation within 90 days of learning of a potentially contaminated site. If this investigation shows that remedial action is required, the site will appear on the Confirmed and Suspected Contaminated Sites Report. The sites are also given a Washington Ranking Code BIN number between 1 and 5, with 1 indicating the greatest assessed risk to human health and the environment and 5 indicating the least. The contaminant type and the affected media, such as groundwater, are also noted. Once the remedial action has been completed, Ecology's Toxics Cleanup Program determines if the site can be removed from the list. The City's recent inventory of contaminant sites indicates there is one toxic remediation site awaiting cleanup in the City's wellhead protection area.

WELLHEAD PROTECTION AREA MANAGEMENT STRATEGIES

Wellhead protection areas have been defined and potential sources of contamination were identified in Table 5-3. In order for this to result in actual protection for the City's wells, a management plan must be put into place. The goals of a management plan should include the following elements:

- Reduce the likelihood that potential groundwater contaminants will be disposed of, spilled, leaked, or otherwise discharged in the wellhead protection area such that they could contaminate groundwater.

- Increase the likelihood that any potential groundwater contaminants, that get disposed of, spilled, leaked, or otherwise discharged in the wellhead protection area, be cleaned up before they can reach the public water supply wells.

- Detect any groundwater contamination, which may occur before public health is affected.

- Develop a plan of action based on the event that a major source of the City's water supply should become contaminated.

MINIMUM REQUIREMENTS

Minimum management requirements for a wellhead protection plan are specified in WAC 246-290-135 (3)(c)(iv)-(vii). These requirements are listed as follows:

- Notification to owners and operators of potential sources of contamination of the wellhead protection areas and the findings of the wellhead protection plan.

- Notification to regulatory agencies and local governments of the wellhead protection areas and the findings of the wellhead protection plan.

- A contingency plan to assure that water system customers will have an adequate supply of potable water in the event of temporary or permanent loss of the principal source of supply.

- Documentation of coordination with local emergency incident responders including notification of wellhead protection area boundaries, results of susceptibility assessment, inventory findings, and contingency plan.

RECOMMENDED ADDITIONAL ACTIONS

In addition to the minimum requirements in the regulation, there are other measures the City could consider to enhance the effectiveness of its wellhead protection program:

- Public education regarding appropriate handling and disposal of potential groundwater contaminants.

- Public assistance for appropriate disposal of potential groundwater contaminants.

- Groundwater monitoring to detect groundwater contamination before it reaches the City's sources.

- Formation of a Local Wellhead Protection Committee.

- Ordinances to empower the City to take action as necessary to protect their water supply from contamination.

NOTIFICATIONS

Minimum requirements for notification of wellhead protection areas are issued to owners and operators of potential sources of contamination, to regulatory agencies and local governments, and to local emergency incident responders.

Notices to Owners of Potential Sources of Contamination

Several potential sources of contamination have been discussed above, including industrial and commercial activities, hazardous materials storage, underground storage tanks, septic tanks, accidental spills, and confirmed and suspected contamination sites.

A standard letter (included at the end of this chapter) has been sent to all land or business owners identified on the list of potential contaminant sources. The standard letter notifies the owners that their property is in the wellhead protection area, includes a map of the wellhead protection area, and states that the activities of their business may be a potential source for ground water contamination.

Notification to Regulatory Agencies and Local Governments

Under WAC 246-290-135, it is required that notification be provided to regulatory agencies and local government of the WPAs and an inventory of potential sources of contamination in the area be identified. The regulatory agencies and local government offices that must receive the notification are listed as follows:

Washington State Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, WA 98903-0009
Phone: (509) 575-2490

Washington State Department of Health
Division of Drinking Water
Eastern Regional Office
Contact: Sheri Miller, P.E.
Email: sheri.miller@doh.wa.gov
Phone: (509) 329-2123

Washington State Department of Commerce
Division of Growth Management
10 N. Post Street, Suite 445
Spokane, WA 99201
Phone: (509) 280-3602

Okanogan County Health District
1234 2nd Avenue South
Okanogan, WA 98840
Phone: (509) 422-7140

As part of the notification process, a copy of this Wellhead Protection Program was sent to the agencies noted above. An example letter is provided at the end of this chapter.

Notification to Local Emergency Incident Responders

It is required by regulation that documentation of coordination with incident responders be provided. The following incident responders have been contacted and provided with information regarding the City's WPAs:

City of Okanogan Police Department
The City of Okanogan contracts with the Okanogan County Sheriff's Office for police coverage within the City. Please see the Okanogan County Sheriff's Office contact information below.

Okanogan County Sheriff's Office
123 5th Ave #200
Okanogan WA, 98840
Business: (509) 422-7200

Okanogan County Health District
1234 2nd Avenue South
Okanogan, WA 98840
Phone: (509) 422-7140

City of Okanogan Public Works
120 3rd Avenue North
Okanogan, WA 98840
Business: (509) 422-3600

Washington State Emergency Management
Building 1
1 Militia Drive
Camp Murray, WA 98430-5000
Phone: (253) 512-8000

Okanogan County Emergency Management
123 5th Ave N #107
Okanogan, WA 98840
Emergency: 911
Business: (509) 422-7206

Washington State Patrol
State Fire Marshal
Helen Sommers Building
P.O. Box 42642
Olympia, WA 98504-2642

Washington State Department of Transportation
North Central Region
2830 Euclid Avenue
Wenatchee, WA 98801-5916
Emergency: 911
Business: (509) 667-3000

Washington State Department of Health
Division of Drinking Water
Eastern Regional Office
Contact: Sheri Miller, P.E.
Email: sheri.miller@doh.wa.gov
Phone: (509) 329-2123

Washington State Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, WA 98903-0009
Phone: (509) 575-2490

SPILL/INCIDENT RESPONSE PROGRAM

Spill response planning is an important element of an emergency management plan and a wellhead protection program. Specific response procedures for wellhead protection areas must be determined prior to the occurrence of a contamination incident. The information obtained as a result of the susceptibility assessment and the wellhead protection area inventory can be used to determine what types of spill response measures are necessary for the protection of drinking water sources. In order to be accepted by local emergency responders, spill response procedures for wellhead protection areas must be realistic and easy to implement.

In order for spill response procedures to be effectively executed, coordination, cooperation, and communication among the responding agencies, organizations, and individuals is imperative. Depending on the magnitude and type of the release, any of the following organizations may be involved in a spill response for a wellhead protection area in Washington State.

- Washington Emergency Management Division: The Washington Emergency Management Division should be contacted for oil spills and hazardous substance spills to water at (253) 512-8000.

- National Response Center: The National Response Center should be contacted for oil and hazardous substance spills to water, and any other release of hazardous substance at 1-800-424-8802.

- Department of Ecology (Ecology): Ecology's Central regional office should be notified of any release of hazardous substances, dangerous waste, spills to air, or leaking underground storage tanks at (509) 575-2490.

- Okanogan Police Department: The City police should be notified in the event of an emergency by calling 911.

- Okanogan County Sheriff: The Okanogan County Sheriff Emergency Operations Division should be contacted for spills or release of hazardous materials at (509) 422-7200.

- Department of Health (DOH): DOH should be contacted after any spills or release of hazardous materials that may impact drinking water quality. DOH also provides assistance through laboratory support and services if necessary to the clean-up effort.

- Department of Transportation (DOT): The Washington State DOT can provide spill response assistance through traffic control, equipment, and personnel for non-hazardous clean-up activities on State and interstate highways.

CONTINGENCY PLAN

The City has approximately 1,648,000 gallons of water storage capacity. If all four of the City's wells fail or become contaminated, the City has less than 4 days of supply during periods of average demand. Should such an emergency occur, the City would consider one or more of the following short-term options:

- Conservation. Under any scenario, strict conservation measures, including a ban on outdoor irrigation, vehicle washing, laundry, and other similar non-critical activities would be implemented to limit usage to that needed to maintain human health.

- Bottled Water. This would require transporting large quantities of bottled water from local and nearby major supply sources.

- Tanker Trucks. Tanker trucks could transport water from Omak and supply water for the City for several days or weeks until a permanent solution could be implemented.

- Treatment. In the case of contamination, it may be possible to provide a temporary treatment facility to maintain basic water supply service.

Long-term options include:

- Drill New Wells. In the unlikely event that all four of the City's wells have become contaminated permanently, the City could drill new wells to replace them, assuming new wells could be drilled outside the contamination plume. This approach would require engineering analysis to identify the best location to drill new wells, and may or may not require the City to work with Ecology to process water right change applications.

- Treatment. In the case of contamination where drilling new wells is not an option, the City would evaluate the best treatment option for its ground water sources.

- Interconnection. Interties with other water systems are sometimes a cost-effective solution. The nearest town with a reliable water supply is the City of Omak, located just north of Okanogan. The City may explore the possibility of an intertie with the City of Omak should conditions warrant.

- Water conservation. While it is possible to use conservation strategies to reduce consumption over the long term, the water savings from conservation are not likely to be large enough to replace the production of a contaminated well.

- Dual systems. A portion of the City is served by a separate non-potable irrigation system (Alta Vista), which reduces water demands on the potable water system. This system relies on the Okanogan River for source water. Expansion of this system could further reduce potable demand, and initial capital costs of infrastructure would be high.

- Surface water treatment. Water quality, water rights, and costs associated with surface water treatment make it an unattractive alternative.

Washington State Emergency Management can also provide assistance in emergency planning. The telephone for Washington State Emergency Management is (253) 512-8000.

SUMMARY

Following is a summary of recommendations from this WHPP. The recommendations are categorized by required actions based on minimum requirements of WAC 246-290-135, and voluntary actions based on recommendations of the Wellhead Protection Program Guidance Document.

REQUIRED ACTIONS

The following action items have been completed by the City. Sample letters are provided at the end of this chapter.

- Provide notification to owners of potential sources of contamination within the Wellhead Protection Areas for each water source.

- Provide notification to regulatory agencies and local government.

- Provide notification to emergency responders.

RECOMMENDED ACTIONS

- Provide information to owners of potential sources of contamination as to how they can minimize their chances of contaminating the City's water supply.

- Post informational signs at the borders of wellhead protection areas.
- Provide assistance to owners of potential sources of contamination regarding proper disposal of hazardous wastes.
- Form a community wellhead protection committee.

Sample of Agency Notification Letter

Date:

[agency/local government]
P.O. Box 123
123 Anywhere St.
City, WA ZIP

Dear [agency/local government];

As part of the wellhead protection program for the City of Okanogan, we are hereby informing you of the findings of our wellhead protection area delineation. This is in accordance with State regulations (WAC 246-290-135).

Our City serves approximately 1,058 connections and serves a population of over 2,400 people. Due to the groundwater nature of our water system sources, our drinking water supply is very vulnerable to contamination.

The enclosed map shows the 6-month, 1-, 5-, and 10-year time travel boundaries for our wellhead protection areas. Any groundwater contamination that occurs within these wellhead protection areas has a high potential to reach our wells. It is therefore of utmost importance to us that all reasonable steps be taken to ensure that land use activities within this area do not contaminate our customers' drinking water supplies.

Thank you for your support in protecting our drinking water.

Sincerely,

Shawn Davisson
Public Works Director

Sample of Contaminant Notification Letter

Date:

Mr/Ms.
P.O. Box 123
123 Anywhere St.
Okanogan, WA 98840

Dear Owner;

In order to protect the drinking water supply for the customers of the City of Okanogan, we have developed a wellhead protection program in accordance with State requirements. As part of our wellhead protection program, we mapped the area overlying the short-term recharge zone of our drinking water supply wells. This is called our wellhead protection area.

Following the mapping of the wellhead protection area, we conducted an inventory of **potential** sources of groundwater contamination within the area. The nature of your business, and its location within our wellhead protection area, means that your activities have the potential to affect our customers' drinking water supply.

We are required by the Washington State Department of Health to notify you periodically of your location within our wellhead protection area. We are also required to provide similar notifications to the regulatory agencies that regulate your type of business. You may wish to contact them to request technical assistance to help manage your business in a way that will best prevent groundwater contamination.

We realize you are already careful to protect the environment as you conduct your business. We hope that informing you of your location in our wellhead protection area will result in an increase in precautions to ensure that your activities will not impact our drinking water quality.

Sincerely,

Shawn Davisson
Public Works Director

CHAPTER 6

OPERATION AND MAINTENANCE

In its 2020 *Water System Planning Guidebook*, the Department of Health identifies several elements that are important in a properly managed operation and maintenance (O&M) program. A list of these elements and where they are discussed or presented in this Plan is provided in Table 6-1.

TABLE 6-1

Operation and Maintenance Program Elements

Operation and Maintenance Component	Location in Plan
Water System Management and Personnel	Chapters 1, 6
Operations and Preventive Maintenance	Chapter 6
Comprehensive Water Quality Monitoring	Chapter 6, Appendix B
Emergency Response Plan	Appendix L
Cross-Connection Control Plan	Appendix K
Sanitary Survey Findings	Appendix P
Recordkeeping, Reporting, and Customer Complaint Program	Chapter 6
Summary of O&M Deficiencies	Chapters 6, 8

WATER SYSTEM MANAGEMENT AND PERSONNEL

The City's water system personnel and contact information are listed in Table 6-2. The City's daytime phone number is (509) 422-3600.

TABLE 6-2

Water System Personnel

Name	Title	Certification(1)	Phone
Shawn Davisson	Public Works Director	N/A	(509) 322-0121
Barry Featherly	Water System Manager	WDM2, WTPO1, CCS	(509) 422-0717

(1) WDM2 = Water Distribution Manager 2; WTPO1 = Water Treatment Plant Operator 1; CCS = Cross-Connection Control Specialist.

OPERATIONS AND PREVENTIVE MAINTENANCE

Tables 6-3 through 6-5 provide general information on the City's operation and maintenance program. Table 6-3 summarizes the City's principal operating and preventive maintenance activities and their frequency. Photos of the City's facilities are provided at the end of this chapter.

TABLE 6-3

Operation and Maintenance Practices

Activity	Frequency
Well Inspection	Daily
Record Well Production and Reservoir Data	Daily
Record Well Static Water Levels	Seasonally
Lead and Copper Sampling	Every three years
Nitrates Sampling	Annually
Inorganic Chemical Sampling	Every 3 years
Volatile Organic Chemical Sampling	Every 3 years
Synthetic Organic Chemical Sampling	Every 3 years
PFAS Sampling	Every 3 years
Radionuclide Sampling	Every 3 years
Collect Water Samples for Coliform Testing	Monthly
Read Service Meters	Monthly
Flush Fire Hydrants and Blowoff	Annually
Exercise Valves	Annually
Inspect Reservoir Screen and Hatch	Annually
Preventive Maintenance on Control Valves	As needed
Leak Detection Survey	Every 3 years
Test/Replace Meters > 2-inches	As needed
Test/Replace Meters < 2-inches	Every 10 years
Inspect and Clean the Reservoir	Every 10 years
Pull and Inspect Well Pumps and Motors	Per manufacturer recommendations

Table 6-4 summarizes the normal settings, positions, and readings used for the City's water reservoirs. Lead-lag sequencing, pump hand-off-auto, and reservoir set points are set at the master telemetry control station computer located at the public works/wastewater treatment facility office.

TABLE 6-4

Normal Equipment Settings

	Control Tank	Start Level (ft)	Stop Level (ft)
Source Wells			
Well 1	Source Not in Use		
Well 2	North Reservoir	16.5	19.8
Well 3	North Reservoir	16.5	19.8
Well 4	North Reservoir	16.5	19.8
Well 5	North Reservoir	16.5	19.8
Watercress Springs	Source Not in Use		
Booster Pump Stations			
Sunrise Drive	Highlands Reservoir	17	19.8
Murray Street	Murray Pressure Zone is a Closed System		
	Location	**High-Level Alarm (ft)**	**Low-Level Alarm (ft)**
Reservoirs			
North Reservoir	1411 Sunrise Heights	20.0	16.0
West Reservoir 1	96 Crestview Drive	20.0	16.0
West Reservoir 2	96 Crestview Drive	20.0	16.0
Highlands Reservoir	927 Parks Drive	20.0	16.0
East Reservoir	30 Okanogan Landfill Road	20.0	16.0
Location	**Size (in)**	**Type**	**Setting (psi)**
Automatic Control Valves			
Highland Drive and 6th Avenue	4	Pressure Reducing Valve	20

Table 6-5 provides a list of the typical water system supplies used by the City, and the current suppliers for these materials.

TABLE 6-5

Supplies and Suppliers

Supply	Supplier	Phone
Gate Valves	Consolidated Supply Co., Wenatchee, WA	(509) 662-7128
Fire Hydrants		
Service Meters and Setters		
Meter boxes	HD Fowler Company, East Wenatchee, WA	(509) 886-8804
Repair bands		
Dresser couplings		
Miscellaneous pipe fittings		

COMPREHENSIVE WATER QUALITY MONITORING

The City's Water Quality Monitoring Schedule is provided in Appendix B, Coliform Monitoring Plan is provided in Appendix C, and lead and copper monitoring locations are located in Appendix F. Recent water quality sampling results are in Appendix B, and the City's 2023 Consumer Confidence Report is in Appendix E.

EMERGENCY PREPAREDNESS AND RESPONSE

The City has completed its risk and resiliency assessment and emergency response plan as required by the American Water Infrastructure Act. The City's current emergency response plan and water shortage response plan are included in Appendix L.

CROSS-CONNECTION CONTROL

The City's cross-connection control plan is included in Appendix K.

SANITARY SURVEY

Copies of the City's most recent sanitary survey, DOH report, and the City's responses are provided in Appendix P.

RECORDKEEPING, REPORTING, AND CUSTOMER COMPLAINT PROGRAM

The City keeps the following water system records and data.

TABLE 6-6

Record Keeping Practices

Record Type	Comment
Source meter readings	Daily readings are kept indefinitely
Service meter readings	Monthly readings kept for 7 years
Unbilled authorized consumption	Records kept indefinitely
Bacteriological test results	Records kept indefinitely
DOH correspondence, including sanitary surveys	Records kept indefinitely
Legal documents	Records kept indefinitely
Backflow Device Inspection Notices	Records kept 5 years
Backflow Violation Case Files	Records kept 5 years
Water Availability Request Forms	Records kept 2 years

The City also keeps water system mapping, including the location of pipelines, pipeline diameter, hydrants, and valves up to date.

The City maintains customer complaint records to verify trends that may help the City improve service to its customers. Response to questions and complaints is typically verbal, either through a field visit or a telephone call. However, depending on the nature of the question or complaint, a written response can also be given. Bimonthly City Council meetings, scheduled on the first and third Tuesdays of the month, are the main venue for public involvement in the water system.

DEFICIENCIES

The City has identified the following O&M deficiencies. Descriptions, costs, and schedules for the required O&M projects are provided in Chapter 8.

TABLE 6-7

Operation and Maintenance Improvements

Deficiency	CIP Project Number	Capital Improvement Description
Several valves within the existing water distribution system may be inadequate due to constant leakage or inoperability	OM1	The City plans to implement a program to replace deficient valves, as funding permits.

PHOTOS

		
Well 2	**Well 2 Electrical Panels**	**Well 2 Telemetry Panel**
		
Well 3	**Well 3 Electrical Panels**	**Well 3 Telemetry Panel**
		
Well 4 and Well 4 Telemetry	**Well 4 Arsenic Telemetry**	**Well 5**

		
Well 5 Telemetry Panel	**Well 5 Valve Vault**	**North Reservoir**
		
North Reservoir BPS	**East Reservoir**	**West Reservoir 1**
		
West Reservoir 2	**West Reservoir 2 Valve Vault**	**Master Telemetry Panel**

CHAPTER 7

CONSTRUCTION STANDARDS

The City has adopted construction standards for its water, sewer, stormwater, and street utilities. A copy of these documents is provided in Appendix O. Chapter 2 of these construction standards outlines developer submittal and project review procedures. Requirements include:

- Design services shall be provided by a Washington State Professional Engineer;
- Water system improvements shall meet the requirements of the DOH Water System Design Manual;
- Plans and specifications shall be submitted to the City for approval;
- The developer shall provide all state-required construction certification forms, and shall provide the City with copies of testing data (including compaction, pressure, and bacteriological testing);
- All utilities shall be within the City's right-of-way or easements;
- The developer shall provide the City with a performance bond and the developer's contractor shall provide proof of insurance, and
- The developer shall provide the City with construction record drawings.

Typically, the City's engineer reviews a developer's proposed construction documents. Construction documents are reviewed for conformance with the City's construction standards and regulatory requirements. The City's engineer also reviews the potential impact of the proposed development on water system demands, pressures, and fire flow availability. The City's engineer will determine and provide their recommendation to the City, which projects require DOH review and approval. If it is determined that the project requires DOH review and approval, the DOH will provide the construction completion report to the design engineer to certify the project was constructed per their design and DOH's approval. If it is determined that the project does not require DOH's review and approval, the City is to provide the required construction completion report to the design engineer to certify the project was constructed per their submitted design and the City's approval.

The City requests that DOH review and approve the water utility section of these documents. Such approval would allow the City to construct distribution mains and distribution-related projects without the requirement to submit project reports (WAC 246-290-110) and construction documents (WAC 246-290-020) to DOH.

CHAPTER 8

CAPITAL IMPROVEMENT PROGRAM

Several water system deficiencies and their associated improvements are identified in Chapter 3. A brief description of each improvement is presented in this chapter. A fire flow model which includes the improvements discussed in this chapter is presented in Figure 8-1. A schedule for implementing these improvements is provided in Table 8-1. Financing for improvements planned during the next 10 years is discussed in Chapter 9.

WATER RIGHTS

The City plans to file change applications with the Washington State Department of Ecology to consolidate its existing water rights and give the City greater flexibility in managing its water resources (Improvement WR1).

The City includes areas within the boundaries of the Confederated Tribes of the Colville Reservation (CTCR). The City plans to work with the CTCR to review and coordinate water rights applications as deemed beneficial to preserve, enhance, and support predictable growth within this area of joint planning jurisdiction.

SOURCE PROTECTION

The City plans to pursue protective covenants for City Wells 2, 3, and 5 (Improvement SP1).

TELEMETRY

The City has identified the following telemetry system improvements:

- Telemetry Upgrade (Improvement TL1): The City's telemetry will likely become outdated and require an upgrade within the next 20 years. Additionally, accommodation of the telemetry needs associated with other projects (e.g., the Murray Reservoir, well depth measurements) may require expansion or replacement of the existing telemetry system.

SOURCE IMPROVEMENTS

The City has identified the following source improvements:

- Well Inspections (Improvement SC1): Video inspection and recommendations for future rehabilitation, as required, of Wells 2, 3, 4, and 5 to ensure well longevity.

- Well Improvements (Improvement SC2): Install manual transfer switches and motor soft starts at Wells 2 and 3 to allow for portable generator connection during power outages. Provide ports for groundwater depth measurements at Wells 2, 3, 4, and 5. Install bypass piping improvements at Well 4.

- Well Decommissioning (Improvement SC3): Decommission old City Wells 1 and 4.

TREATMENT

The City has identified the following treatment improvements:

- Arsenic Treatment Facility Improvements (Improvement TR1): Improvements for the collection, dewatering, and disposal of arsenic-laced sludge from the arsenic treatment facility.

STORAGE

The City has identified the following storage improvements:

- Reservoir Inspections (Improvement ST1): Cleaning, inspection, and structural analysis of existing reservoirs to determine seismic code compliance, identify deficiencies, and recommend improvements.

- Murray Reservoir (Improvement ST2): Construct a new reservoir to meet the Murray Pressure Zone storage requirements for full buildout. This improvement includes the construction of a transfer station for water transfer to the main pressure zone during high-demand events; pressure-reducing valve stations, approximately 5,000 feet of 12-inch PVC C900 water main; and associated valves and appurtenances.

- West Reservoirs Improvements (Improvement ST3): Install security fencing and gates to limit access to the West reservoirs.

DISTRIBUTION SYSTEM

The City has identified the following distribution system improvements:

- Murray Booster Pump Station Upgrades (Improvement DS1): Construct a new booster pump station capable of serving future Murray Reservoir, including two booster pumps with pitless adapters, building for electrical

and control equipment, variable frequency drive motors, and appurtenances.

- Elmway Water Main Extension – Phase 3 (Improvement DS2): Construct a new 12-inch water line on 2nd Avenue (SR 215) from Elgin Street to Shell Rock Point to extend municipal water service to the City's northern city limits and eventual connection (at a location to be determined) with the North River Crossing.

- 1st Avenue Water Main Replacement (Improvement DS3): This improvement consists of the replacement of the existing 6-inch AC water line with a new 8-inch water line on 1st Avenue from Ione Street to Conconully Street and the construction of a new 8-inch water line from Conconully Street to Tyee Street to provide system looping.

- South Okanogan Water System Improvements (Improvement DS4): This improvement of replacing the existing 6-inch water lines on Ione Street, 2nd Avenue, Nickell Street, and at the entrance of the City's wastewater treatment facility, with new 8-inch and 12-inch water lines to improve fire flow in these areas.

- Rodeo Trail Water Main Extension (Improvement DS5): This improvement consists of the extension of the existing 12-inch waterlines on Rodeo Trail to the Central Valley Sports Complex to improve fire flows in this area and provide for future expansion to the north.

- Highland Drive Water Main Replacement (Improvement DS6): This improvement consists of the replacement of the existing 2.5-inch GI water pipe on Highland Drive and east to 6th Avenue with an 8-inch water main to improve fire flows in this area.

- Tacoma Street/Spokane Street Water Main Loop (Improvement DS7): This improvement consists of the replacement of the existing 4-inch AC and CI water pipe with 8-inch water lines on Tacoma Street, 4th Avenue, and Spokane Street to improve fire flows in this area.

- 2nd Avenue South Water Main Replacement (Improvement DS8): This improvement consists of the replacement of the existing 6-inch AC and DI water main pipe on 2nd Avenue from Ione Street to Rose Street with an 8-inch water main.

- Viewmont Drive Water Main Replacement (Improvement DS9): This improvement consists of the replacement of the existing 6-inch AC water main on Viewmont Drive from Highland Drive to Crestview Drive with an 8-inch water main pipe and the extension of 8-inch water main on

Delmav to Crestview Drive to improve fire flows in the area, provide looping on Delmav, and improve water transmission to the central grid from the Highland Reservoir.

- 3rd Avenue North Water Main Replacement (Improvement DS10): This improvement consists of the replacement of the existing 6-inch AC and CI waterline on 3rd Avenue North from June Street to Greta Street with 8-inch water main to improve fire flows in the area

- Mill Street Water System Improvements (Improvement DS11): This improvement consists of the construction of an 8-inch waterline on Mill Street and 9th Avenue to improve fire flows in the area

- Airport Booster Pump Station (Improvement DS12): This improvement consists of the construction of a new booster pump station to address fire flow deficiencies near the airport.

- 2nd Avenue Water System Improvements (Improvement DS13): This improvement consists of the installation of an 8-inch water main on 2nd Avenue from Oak Street to Greta Street.

- North River Crossing (Improvement DS14): This improvement consists of the installation of a 12-inch water main crossing the Okanogan River and eventual connection to the Elmway Water Main Extension – Phase 3.

- 4th Avenue Water Main (Improvement DS15): This improvement consists of the installation of an 8-inch water main on 4th Avenue from Pine Street to Lower Pine Street.

- 5th Avenue Water Main (Improvement DS16): This improvement consists of the replacement of the existing 4-inch water main on 5th Avenue from King Street northeast with a new 8-inch water main to improve available fire flows to this area.

- AC, CI, and Steel Piping Replacement (Improvement DS17): The asbestos cement, cast iron, and steel piping, which make up over 50 percent of the City's water distribution system, are nearing the end of their expected lifespan. This includes approximately 69,000 linear feet of piping. It is recommended that 15,000 linear feet be replaced within the next 20 years.

- Consumption Meter Replacement (Improvement DS18): The City plans to begin replacing 2 percent of consumption meters every year.

OPERATION AND MAINTENANCE

Several O&M projects have been identified for the 10- and 20-year planning period. These projects are also discussed in Chapter 6.

- Calibration of Existing Source Meters (Improvement OM1): The City plans to implement a program to calibrate their source meters every 4 years.

- Well Pump and Motor Service (Improvement OM2): It is recommended that the City implement a program to have the pumps and motors at all City wells serviced regularly.

- Isolation Valve Replacement (Improvement OM3): The City plans to implement a program to replace leaking or non-functioning isolation valves, as funding permits.

- Reservoir Coating Inspection (Improvement OM4): Regular inspection of reservoir coating will ensure coating failure does not go unnoticed and cause structural damage to the reservoir. For this reason, coatings inspection is recommended on a recurring 5-year interval. Additionally, coatings should be inspected within the warranty period (typically 2 years) after recoating.

SCHEDULE

A schedule for the City's planned capital improvements is provided in Table 8-1. Figure 8-1 illustrates the updated model results, which incorporate the previously discussed capital improvement projects. The costs shown are estimated to be in 2024 dollars.

TABLE 8-1

Capital Improvement Plan

	Project	2024 Cost[(1)]	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035-2045
Water Rights													
WR1	Water Rights Consolidation	$2,000		**X**									
Source Protection													
SP1	Protective Covenants	$5,000	**X**										
Telemetry													
TL1	Telemetry Upgrade	$150,000											**X**
Source													
SC1	Well Inspections	$212,000[(2)]			**X**								**X**
SC2	Well Improvements	$602,000[(3)]				**X**							
SC3	Well Decommissioning	$276,000					**X**						
Treatment													
TR1	Arsenic Treatment Facility Improvements	$370,000			**X**								
Storage													
ST1	Reservoir Inspections	$281,000[(4)]			**X**								
ST2	Murray Reservoir	$3,805,000		**X**									
ST3	West Reservoir Improvements	$75,000						**X**					
Distribution System													
DS1	Murray Booster Pump Station Upgrades	$964,000		**X**									
DS2	Elmway Water Main Extension – Phase 3	$1,447,000	**X**										
DS3	1st Avenue Water Main Replacement	$3,113,000					**X**						
DS4	South Okanogan Water System Improvements	$1,759,000			**X**								
DS5	Rodeo Trail Water Main Extension	1,634,000				**X**							
DS6	Highland Drive Water Main Replacement	$550,000						**X**					
DS7	Tacoma Street/Spokane Street Water Main Loop	$1,300,000							**X**				
DS8	2nd Avenue South Water Main Replacement	$3,656,000							**X**				
DS9	Viewmont Drive Water Main Replacement	$1,689,000								**X**			
DS10	3rd Avenue North Water Main Replacement	$1,557,000								**X**			
DS11	Mill Street Water System Improvements	$946,000									**X**		
DS12	Airport Booster Pump Station	$964,000									**X**		

TABLE 8-1 (continued)

Capital Improvement Plan

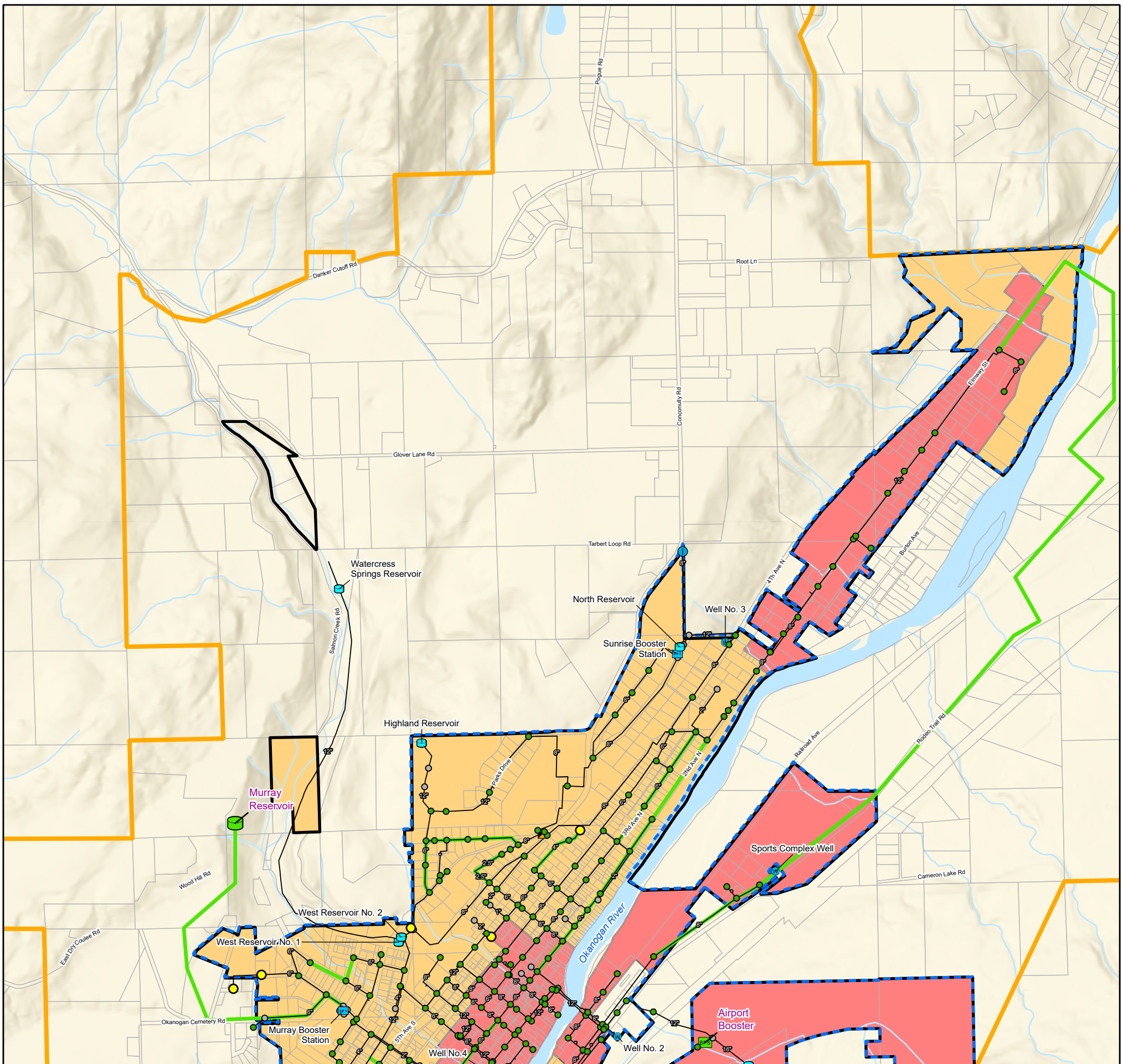
	Project	2024 Cost[(1)]	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035-2045
Distribution System (continued)													
DS13	2nd Avenue Water System Improvements	$3,638,000										**X**	
DS14	North River Crossing	$7,357,428											**X**
DS15	4th Avenue Water Main	$922,000											**X**
DS16	5th Avenue Water Main	$801,000											**X**
DS17	AC, CI, and Steel Piping Replacement	$6,900,000[(5)]											**X**
DS18	Consumption Meter Replacement	$26,450[(6)]	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Operation and Maintenance													
OM1	Calibration of Existing Source Meters	$2,000[(7)]			**X**				**X**				**X**
OM2	Well Pump and Motor Service	$20,000[(8)]	**X**				**X**				**X**		**X**
OM3	Isolation Valve Replacement	$10,000[(9)]	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
OM4	Reservoir Coating Inspection	$10,000[(10)]	**X**					**X**					**X**

(1) Engineering News-Record (ENR) Seattle Construction Cost Index 15,856.
(2) Recurring cost per occurrence. Cost includes inspection for all wells.
(3) Cost includes improvements for all wells.
(4) Recurring cost per occurrence. Cost includes inspection for all reservoirs.
(5) Cost of replacing 15,000 linear feet.
(6) Cost of replacing 2 percent of meters, setters, and meter boxes in the system, per occurrence.
(7) Cost per occurrence. Includes all source meters.
(8) Recurring cost per pump.
(9) Cost per occurrence.
(10) Cost of inspection per reservoir, per occurrence.

ANALYSIS

A useful metric to assess whether a utility's capital expenditures are adequate to maintain the utility's current level of service long-term is to compare the utility's average annual Capital Improvement Program budget to the total annualized replacement cost of the utility's assets. The total annualized replacement cost is defined as the cost of each asset divided by the expected useful life of that asset, summed for all assets. It is representative of the rate at which the utility's assets are declining in value (in dollars per year), assuming straight-line depreciation. If the utility is spending approximately as much every year on capital improvement projects as the rate at which its assets are declining in value (in dollars per year), the utility can reasonably be expected to maintain its current level of service, assuming that its capital spending is primarily focused on renewal of existing infrastructure. If it is spending significantly less, the utility's level of service could be expected to decline over time, and if it is spending significantly more, the utility's level of service could be expected to improve over time.

As shown in Table 3-11, the total estimated replacement cost in 2024 dollars of the City's major water system assets is $61,374,712 and the corresponding total annualized replacement cost of those assets is about $1,128,843. From Table 8-1, the amount the City plans to spend on capital improvement projects over the 10-year planning period (2025 to 2035) is $29,253,500, or an average of about $2,925,350 per year. This planned level of spending is more than the water system's annualized replacement cost, so it can be concluded that the City is likely investing sufficient resources in its Capital Improvement Program to maintain or improve its current level of service.



2044 MDD with CIP
- <1000 GPM
- 1000-1500 GPM
- >1500 GPM
- Not Modeled for Fire Flow

Capital Improvement Project
- Booster Pump Station
- Reservoir
- Water Main

Fire Flow Requirement
- 1000 GPM
- 1500 GPM

Water System
- Well
- Intertie
- Pump Station
- Pressure Reducing Valve
- Reservoir

- Arsenic Treatment Facility Plant
- Water Main (Diameter)

Reference
- Retail/Future Service Area
- UGA/Service Area
- City Limits
- Parcel
- Surface Water

N

0 625 1,250 2,500 Feet

CITY OF OKANOGAN

WATER SYSTEM PLAN

FIGURE 8-1

2044 MDD AND FIRE FLOW WITH CIP

Gray & Osborne, Inc.
CONSULTING ENGINEERS

Export Date: 12/20/2024

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CHAPTER 9

CAPITAL IMPROVEMENT FINANCING

EXISTING RATES AND CHARGES

Okanogan's water rates are established by the Okanogan Code of Ordinances Chapter 13.12. Meters are read and customers are billed on a monthly basis according to the rate schedule shown in Table 9-1. As indicated, the City charges a base rate that includes the first 3,000 gallons. Usage above the base charge outlined above is assessed on a per 1,000-gallon volume charge presented in Table 9-1. The last water rates resolution was a uniform rate structure adopted under Ordinance No. 1225.

TABLE 9-1[(1)]

2024 Water Service Rates

Classification	Monthly Base Rate	Volume Charge[(2)]	Volume (gal)
Inside City Limits			
Residential	$67.93	Included	First 3,000
		$2.98	Each Additional 1,000
Multi-Family[(3)]	$67.93	Included	First 3,000
		$2.98	Each Additional 1,000
Commercial	$67.93	Included	First 3,000
		$2.98	Each Additional 1,000
Outside City Limits			
Residential	$135.87	Included	First 3,000
		$5.96	Each Additional 1,000
Multi-Family[(3)]	$135.87	Included	First 3,000
		$5.96	Each Additional 1,000
Commercial	$138.87	Included	First 3,000
		$5.96	Each Additional 1,000

(1) Source: Okanogan Municipal Code of Ordinances Chapter 13.12. Rates were established as part of Ordinance No. 1225. See Appendix R for more information.

(2) After the initial 3,000 gallons is exceeded, the excess is charged on a per 1,000-gallon basis.

(3) Per unit, whether the unit is occupied or not.

The City charges a $25 "Water Availability Fee" to all water customers if their meter is set to OFF. Customers with past-due accounts will be charged a Delinquency/Penalty Charge of 20 percent. If a customer's service or a bank-owned home service has been shut off due to delinquencies, the City charges a $75 fee. Connection charges are defined by ordinance. The water installation charges are shown in Table 9-2.

TABLE 9-2

2024 Water Installation Charges

Installation of Service	Service Fee	
	By City[(1)(2)]	By Developer[(3)]
3/4-inch to 5/8-inch Water Service	$2,359.96	$1,000
1-inch Water Service	$2,640.91	-
1-1/2-inch Water Service	$2,753.29	-
2-inch Water Service	$2,921.85	-
General Facilities Charge	$1,500	$1,500
Per ERU	$500	$500
Fire Suppression Line/Connection Costs Incurred	$500	$500

(1) All connection fees are based on a standard type connection. Additional materials, road crossings, boring pipe under roadway, or labor will be an additional charge to the connection fee.

(2) Live tap connection fee of $550 for services up to 12-inch diameter by 1 inch. Additional cost for larger sizes.

(3) This rate is applicable where the developer provides the water system connection with the City of Okanogan's standard 3/4-inch meter box. Larger water services will incur additional costs depending on the size of the water meter.

In 2016, the City conducted a study to evaluate appropriate charges for water system users. The viability of the City's rate structure is discussed later in this chapter.

HISTORICAL FINANCIAL STATUS

Revenues and expenditures for the City's water system for 2019 through 2023 are shown in Table 9-3. The City tracks its water utility separately from its sewer utility.

TABLE 9-3

Water Utility Historical Revenue and Expenditures

	2019	2020	2021	2022	2023
Revenues					
Generators Well 4 and 5	$0	$0	$0	$0	$2,105
Water Sales	$1,003,630	$1,149,146	$1,213,285	$1,187,090	$1,300,094
Water Sales/Penalty	$4,084	$915	$1,487	$6,523	$7,034
Other Charges for Services	$21,610	$15,340	$7,555	$15,450	$12,880
Fire Hydrant Rental	$2,030	$1,050	$450	$1,170	$924
Investment Interest	$19,308	$4,389	$1,066	$18,697	$78,887
Cashiers Overages/Shortages			$101	$1	-$30
New Account/Turn-On Fees	$3,511	$3,234	$3,552	$6,419	$3,818
Misc. Revenues	$201	$163	$186	$253	$1,334
Total Operating Revenues	**$1,054,375**	**$1,174,237**	**$1,227,683**	**$1,235,602**	**$1,407,046**
Intergovernmental (Grants)	$0	$0	$0	$0	$0

TABLE 9-3 – (continued)

Water Utility Historical Revenue and Expenditures

	2019	2020	2021	2022	2023
Other 406, 407 Interest	$3,681	$1,145	$200	$2,788	$12,712
Transfers in 406,407		$20,000	$10,000	$10,000	$10,000
Debt Issuance	$0	$0	$0	$0	$0
Total Revenues	**$1,058,056**	**$1,195,382**	**$1,237,883**	**$1,248,390**	**$1,429,759**
Expenditures					
Salaries/Wages all Departments	$224,961	$234,798	$239,980	$247,505	$280,243
Benefits all Departments	$98,094	$105,888	$99,819	$109,401	$105,749
Supplies	$43,104	$33,222	$33,441	$32,953	$36,055
Fuel Consumed	$8,518	$6,947	$8,887	$15,001	$11,684
Professional Services	$21,097	$12,972	$11,825	$11,513	$16,119
Communications	$3,634	$3,454	$3,340	$4,618	$4,230
Training	$4,583	$765	$1,011	$1,469	$3,425
Utility Tax to 001	$97,767	$111,869	$118,016	$118,340	$127,955
Excise Taxes	$50,969	$58,161	$56,405	$60,595	$70,439
Insurance	$23,327	$19,180	$25,074	$30,088	$36,265
Insurance Admin Fee	$875	$595	$700	$1,027	$1,224
Utilities	$42,753	$47,258	$47,621	$47,285	$47,364
Repairs and Maintenance	$17,617	$14,364	$11,568	$8,366	$13,165
Miscellaneous	$7,802	$4,591	$2,913	$4,980	$3,081
Transfers Out	$16,000	$21,000	$21,000	$21,000	$21,000
Total Operating Expenditures	**$661,100**	**$675,063**	**$681,599**	**$714,143**	**$777,997**
Debt Service	$81,239	$83,970	$102,658	$94,809	$33,508
Capital Purchases	$143,000	$14,068	$70,096	$16,821	$68,192
Special or Extraordinary Items	$678,235	$0			
Total Expenditures	**$1,563,574**	**$773,101**	**$854,353**	**$825,773**	**$879,697**
Beginning/Ending Cash					
Beginning Fund Balance	**$1,579,531**	**$1,074,015**	**$1,496,296**	**$1,879,826**	**$2,360,826**
Net Operating Revenue	**$393,275**	**$499,174**	**$546,083**	**$521,459**	**$629,049**
Ending Fund Balance	**$1,074,013**	**$1,496,295**	**$1,879,826**	**$2,302,443**	**$2,910,887**

The table shows that the City's water utility has remained financially viable in recent years.

FINANCIAL VIABILITY

As defined in WAC 246-290, financial viability is the capability of a water system to obtain sufficient funds to construct, operate, maintain, and manage a public water system, continuingly, in full compliance with the federal, state, and local requirements. As discussed above, the City has adopted a uniform rate structure for all its users. In addition, the City has increased rates since the City's water rates resolution in 2016 (see Appendix R). From Table 9-3, while revenues and expenditures tend to fluctuate, the net

operating revenues were positive in the years 2019 through 2023. Given the City's current water service rates presented in Table 9-1, the City's current water rate structure is financially viable.

10-YEAR FINANCING PLAN

Table 9-4 summarizes the City's projected 10-year financing plan. The expense forecast shown is based on a review of historical expenses with adjustments for future inflationary increases and planned rate increases. Additional expenses are anticipated as a result of the planned capital improvement projects.

TABLE 9-4

10-Year Financing Plan

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Revenues										
Interest Income and Other	$36,660	$37,760	$38,893	$40,059	$41,261	$42,499	$43,774	$45,087	$46,440	$47,833
Charges for Goods and Services	$1,470,583	$1,514,700	$1,560,141	$1,606,945	$1,655,154	$1,704,808	$1,755,952	$1,808,631	$1,862,890	$1,918,777
Expenditures										
Salaries	$300,245	$309,252	$318,530	$328,086	$337,928	$348,066	$358,508	$369,263	$380,341	$391,752
Benefits	$109,180	$112,455	$115,829	$119,304	$122,883	$126,570	$130,367	$134,278	$138,306	$142,455
Maintenance	$13,905	$14,322	$14,752	$15,194	$15,650	$16,120	$16,603	$17,101	$17,614	$18,143
Supplies/Tools	$49,440	$50,923	$52,451	$54,024	$55,645	$57,315	$59,034	$60,805	$62,629	$64,508
Taxes	$216,300	$222,789	$229,473	$236,357	$243,448	$250,751	$258,274	$266,022	$274,002	$282,222
Utilities	$49,440	$50,923	$52,451	$54,024	$55,645	$57,315	$59,034	$60,805	$62,629	$64,508
Insurance/Admin/Other	$94,051	$96,873	$99,779	$102,772	$105,856	$109,031	$112,302	$115,671	$119,141	$122,716
Debt Service										
Capital Improvements (Outside Funding)	$0	$48,202	$211,829	$304,491	$385,882	$512,943	$537,078	$733,500	$866,484	$947,082
Capital Improvements (City Funding)	$31,450	$29,171	$27,789	$28,484	$29,196	$29,926	$30,674	$31,441	$32,227	$33,032
O&M Improvements	$40,000	$10,250	$12,608	$10,769	$33,114	$22,628	$13,916	$11,887	$36,552	$12,489
Net Costs										
Total Operating Revenues	$1,507,243	$1,552,460	$1,599,034	$1,647,005	$1,696,415	$1,747,307	$1,799,726	$1,853,718	$1,909,330	$1,966,610
Total Operating Expenditures	$832,561	$857,538	$883,264	$909,762	$937,055	$965,167	$994,122	$1,023,945	$1,054,664	$1,086,304
Net Revenue	$674,681	$694,922	$715,769	$737,242	$759,360	$782,140	$805,605	$829,773	$854,666	$880,306

TABLE 9-4 – (continued)

10-Year Financing Plan

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Debt Service	$71,450	$87,623	$252,226	$343,743	$448,192	$565,497	$581,669	$776,827	$935,263	$992,603
Beginning Fund Balance	$3,462,925	$4,066,156	$4,673,455	$5,136,998	$5,530,497	$5,841,665	$6,058,309	$6,282,245	$6,335,190	$6,254,593
Ending Cash	**$4,066,156**	**$4,673,455**	**$5,136,998**	**$5,530,497**	**$5,841,665**	**$6,058,309**	**$6,282,245**	**$6,335,190**	**$6,254,593**	**$6,142,295**

(1) The projected revenues presented are approximated based on City-provided financial data. Revenues may fluctuate during the 10-year projection period.

(2) The projected expenditures presented are approximated based on city-provided financial data. Revenues may fluctuate during the 10-year projection period. Expenditures are assumed to increase by 3 percent each year due to inflation.

(3) Capital improvement projects assume a 1.5 percent interest, 30-year term, and 80 percent loan.

(4) Capital improvements are based on the schedule presented in Table 8-1. Pro-rated improvements assume a 3 percent inflation based on 2024 dollars.

FUNDING SOURCES

The following section describes several funding sources for municipal water projects that are available to the City. The applicability of a specific funding source will depend on the nature of the project, the status of the City's existing financial commitments, capital and cash flow requirements, funding source availability, and the impact on the service rates and connection charges.

USDA RURAL DEVELOPMENT

USDA Rural Development (RD) has a loan program that is available to communities whose rates, as a result of projected RD debt payments, are expected to exceed the rates of "similar" communities. Under certain conditions, RD's funding options include a limited grant program. The loan program provides up to 40-year loan terms at an interest rate usually between 2.0 and 3.25 percent. Rates vary depending on hardship conditions and market interest rates. RD loans are issued as revenue bonds that require a bond reserve equal to one year of debt service. Applications are accepted year-round.

COMMUNITY DEVELOPMENT BLOCK GRANT

The Community Development Block Grant program, administered by the Washington State Department of Commerce, consists of a General Purpose Grant program that can be used to fund water system planning and construction projects. This program supports a range of planning activities that lead to the implementation of priority projects that benefit low- and moderate-income communities. Funding levels for planning are set at a maximum of $30,000. In addition, this program allows applicants to request up to $2 million for the design and construction of public facilities, community facilities, housing rehabilitation, or economic development projects that principally benefit low- and moderate-income persons. Local match is not required for either General Purpose program. Applications are accepted year-round after submission of an eligibility pre-application and review process.

DRINKING WATER STATE REVOLVING FUND

In 1997 the Washington State Department of Health began taking applications for a new loan program called the Drinking Water State Revolving Fund (DWSRF). The program was funded by Congress as part of the 1996 reauthorization of the Safe Drinking Water Act. The program provides low-interest loans to help publicly owned as well as privately owned not-for-profit and for-profit water systems make improvements to water systems for public health protection.

The Drinking Water State Revolving Fund (DWSRF) makes funds available to drinking water systems to pay for infrastructure improvements. This program is funded through federal and state money and is subject to state laws and additional federal regulations.

The program provides:

- Planning and Engineering loans to cover preconstruction work and activities such as water system plans, engineering designs, and cultural reviews. 10-year preconstruction loans are available with 0 percent interest, 2 percent loan origination fee, 2-year time of performance, and a maximum award of $500,000. Online applications are accepted year-round until funding is exhausted.

- Consolidation, Restructuring, and Regionalization loans.

- Low-interest construction loans to publicly (municipal) and privately-owned drinking water systems. These loans cover capital improvements that increase public health and compliance with drinking water regulations. Construction Loan repayments range from 20 to 30 years. In some cases, partial loan forgiveness (subsidy) is offered. The standard interest rate is 2.25 percent, and loans are subject to a 1 percent loan fee. The application period is October 1 through November 30.

- Lead Service Line loans cover work to complete the inventory, update any inventories with unknowns, or replace lead service lines and service line components.

- Source Water Protection Grants

- Emergency loans of up to $500,000 are offered with a 0 percent interest rate, 1.5 percent loan fee, 10-year repayment term, and 2-year performance term.

Project rankings and selection are made by the Department of Health; program financial administration is handled by the Department of Commerce.

PUBLIC WORKS BOARD FUNDING

The Public Works Board (PWB) is authorized by state statute (RCW 43.155) to loan or grant money to counties, cities, and special purpose districts to repair, replace, or create domestic water systems, sanitary sewer systems, storm water sewer systems, roads, streets, solid waste/recycling/organics facilities, and bridges.

Communities experiencing financial hardship may qualify for reduced interest rates on their PWB loans and/or for partial grant funding. Grant funding is awarded based on the availability of funds at the discretion of the Board. Communities experiencing severe distress have priority for grant funding. Current interest rates vary from 0.86 percent to 1.37 percent depending on the level of community distress.

Communities may receive grant funding of 25 percent up to 1 million dollars for distressed or 50 percent up to 2 million dollars for severely distressed.

PWB provides low-interest loans and grants to local governments to finance public infrastructure construction, pre-construction, and emergency projects. PWB awards per jurisdiction cannot exceed $10 million per biennium for all three programs combined.

- Construction awards are a maximum of $10 million with a loan term of 20 years, including 5 years for project completion within the loan term.

- Preconstruction awards are a maximum of $1 million per project. Capital facilities planning projects are also eligible for this funding. This is a competitive cycle with quarterly awards. The loan term is 5 years, including 2 years for project completion within the loan term.

- Emergency awards have an "open cycle" on a first-come, first-served basis until funds are exhausted. There is a maximum $1 million award per project. For jurisdictions that have experienced catastrophic conditions, PWB considers exceptions to the $1 million cap. The loan term is 20 years, including 12 months for project completion. The Emergency Construction program focuses on the activities that repair, replace, and/or reconstruct a facility that will restore essential services and must begin construction on the project within 90 days of award.

COMMUNITY ECONOMIC REVITALIZATION BOARD

The Community Economic Revitalization Board (CERB) offers programs to rural communities for prospective development projects when feasibility is demonstrated. Applicants must provide evidence that a private development or expansion is likely to occur as a result of the public improvements. CERB requires that the project generate either significant job creation or significant private investment in order to be eligible for funding. Grants up to $50,000 with 25 percent (of project cost) matching funds are available for planning, and loans up to $3 million with a maximum 20-year loan term are available for design and construction. Interest rates are 1 percent to 3 percent. Applicants must demonstrate the need for CERB assistance, and a private partner may be required.

UTILITY LOCAL IMPROVEMENT DISTRICTS

The formation of a Utility Local Improvement District (ULID) is a method of financing capital improvements by the sale of bonds. Bonds are retired with revenues collected via assessment on the properties benefitting from the capital improvements funded by the ULID, and via utility revenues. The process for formation and administration of LIDs and ULIDs is outlined in RCW 35.43 through 35.56.

ADDITIONAL RESOURCES

Several additional resources for locating funding opportunities are listed below.

- The Infrastructure Assistance Coordinating Council (IACC) is a nonprofit organization that aims to provide resources and technical assistance to local governments in order to support infrastructure development and maintenance. The IACC's current website is http://www.infrafunding.wa.gov/.

- The Washington Fund Directory is a resource maintained by the Office of the State Treasurer that lists various funding programs by type of project and type of funding. The Washington Fund Directory's current website is https://www.wafunddirectory.wa.gov/.

- The Washington Water and Salmon Fund Finder provides information on grant and loan opportunities for natural resources projects, and is currently located at https://data.wa.gov/stories/s/Washington-Water-Salmon-Fundfinder/xcku-b9qq/.

APPENDIX A

WATER FACILITIES INVENTORY

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

WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 04/03/2024
Printed: 12/31/2024
WFI Printed For: On-Demand
Submission Reason: Pop/Connect Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822 or email wfi@doh.wa.gov

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
63200 M	OKANOGAN WATER DEPARTMENT CITY OF	OKANOGAN	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

BARRY J. FEATHERLY
PO BOX 752
OKANOGAN, WA 98840

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS 1601 1ST AVE S
CITY OKANOGAN STATE WA ZIP 98840

7. OWNER NAME & MAILING ADDRESS

OKANOGAN, CITY OF
BARRY J. FEATHERLY
PO BOX 752
OKANOGAN, WA 98840

WATER MANAGER

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS 1601 1ST AVE S
CITY OKANOGAN STATE WA ZIP 98840

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone: (509) 322-3636		Owner Daytime Phone: (509) 322-3636	
Primary Contact Mobile/Cell Phone: (509) 322-3636		Owner Mobile/Cell Phone: (509) 322-3636	
Primary Contact Evening Phone: (509) 322-4048		Owner Evening Phone: (509) 322-4048	
Fax:	E-mail: waterdept@okanogancity.com	Fax: (509) 422-4337	E-mail: waterdept@okanogancity.com

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

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

SMA NAME: _____ SMA Number:

12. WATER SYSTEM CHARACTERISTICS (mark all that apply)

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

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

1,710,000

- 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
63200 M	OKANOGAN WATER DEPARTMENT CITY OF	OKANOGAN	A	Comm

15	16	17	18									19			20	21						22	23	24			
	SOURCE NAME	INTERTIE	SOURCE CATEGORY									USE				TREATMENT						DEPTH		SOURCE LOCATION			
Source Number	LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE SYSTEM ID NUMBER	WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN INTERVAL IN FEET	CAPACITY (GALLONS PER MINUTE)	1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	InAct 09/13/1995 Alma Park		X											X	Y	X						90	100	SE NE	17	33N	26E
S02	Well #2 - ABR535		X									X			Y	X						95	200	SE NW	16	33N	26E
S03	Well #3 - AGJ158		X										X		Y	X						117	650	SW NE	09	33N	26E
S04	Well #4 - AGJ157		X										X		Y			X			X	285	550	NE SE	17	33N	26E
S05	InAct 01/01/1970 Salmon Creek Spring					X						X					X						300	NE SW	05	33N	26E
S06	Well #5 - AGJ156		X									X			Y	X						94	350	SE SW	17	33N	26E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
63200 M	OKANOGAN WATER DEPARTMENT CITY OF	OKANOGAN	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		1028	1400
A. Full Time Single Family Residences (Occupied 180 days or more per year)	764		
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	45		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	264		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	216	216	0
28. TOTAL SERVICE CONNECTIONS		1244	1400

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 2420

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?	13750	13750	13750	13750	13750	13750	13750	13750	13750	13750	13750	13750
B. How many days per month is water accessible to the public?	31	28	31	30	31	30	31	31	30	31	30	31

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 that are NOT already included in the residential population?	10	10	10	10	10	10	10	10	10	10	10	10
B. How many days per month are they present?	31	28	31	30	31	30	31	31	30	31	30	31

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	3	3	3	3	3	3	3	3	3	3	3	3

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

35. Reason for Submitting WFI:

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

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

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____ **TITLE:** _____

APPENDIX B

WATER QUALITY MONITORING SCHEDULE

Water Quality Monitoring Schedule

System: OKANOGAN WATER DEPARTMENT CITY OF **PWS ID: 63200 M** **Region: EASTERN**
Contact: Barry J Featherly **Group: A - Comm** **County: OKANOGAN**

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

	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Jan 2025	Feb 2025	Mar 2025	Apr 2025
Coliform Monitoring Population	2874	2888	2874	2874	2888	2874	2888	2874	2874	2921	2874	2888
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

Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*	
Lead and Copper	10	Jan 2024 - Dec 2026	standard - 3 year	07/19/2023	Jul 2026	
Asbestos	1	Jan 2020 - Dec 2028	standard - 9 year	04/16/2019	Apr 2028	

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 we recommend no more than 12 hours (e.g. overnight).
- If your sampling frequency is annual or every 3 years, samples must be collected between June 1 and September 30. Samples collected outside this time frame for systems with an annual or triennial schedule are invalid and may lead to a monitoring violation.

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.

Water Quality Monitoring Schedule

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.
- Nitrate, arsenic, iron, and other individual inorganics are included as part of a Complete Inorganic (IOC) analysis when it is collected.

Source S02 *Well #2 - ABR535* *Well* *Use - Permanent* *Susceptility - High*

Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*
Nitrate	1	Jan 2024 - Dec 2024	standard - 1 year	05/16/2023	***May 2024***
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	10/05/2015	***Oct 2024***
Conductivity	1	Jan 2023 - Dec 2025	standard - 3 year	03/31/2021	***Mar 2024***
TDS-Total Dissolved Solids	1	Jan 2023 - Dec 2025	standard - 3 year	03/31/2021	***Mar 2024***
Volatile Organics (VOC)	1	Jan 2024 - Dec 2024	R&C - 1 year	04/18/2023	***Apr 2024***
Herbicides	1	Jan 2023 - Dec 2025	standard - 3 year	06/15/2021	Oct 2025
Pesticides	1	Jan 2023 - Dec 2025	standard - 3 year	10/12/2022	Oct 2025
PFAS	1	Jan 2023 - Dec 2025	standard - 3 year	06/24/2022	Jul 2025
Soil Fumigants	0	Jan 2023 - Dec 2025	waiver - 3 year	06/08/2011	
Radium 226 + 228	1	Jan 2023 - Dec 2031	Baseline - 9 year	03/14/2016	Sep 2025
Gross Alpha (minus Uranium)	1	Jan 2020 - Dec 2025	standard - 6 year	03/14/2016	Sep 2025
Uranium	1	Jan 2023 - Dec 2025	standard - 3 year	11/02/2022	Aug 2025

Source S03 *Well #3 - AGJ158* *Well* *Use - Seasonal* *Susceptility - High*

Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*
Nitrate	1	Jan 2024 - Dec 2024	standard - 1 year	07/12/2023	***Jul 2024***
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	07/15/2019	Jul 2028
Arsenic	1	Jan 2023 - Dec 2025	standard - 3 year	08/10/2022	Jul 2025
Manganese	1	Jan 2023 - Dec 2025	standard - 3 year	08/02/2022	Jul 2025
Conductivity	1	Jan 2023 - Dec 2025	standard - 3 year	08/10/2022	Jul 2025
TDS-Total Dissolved Solids	1	Jan 2023 - Dec 2025	standard - 3 year	08/02/2022	Jul 2025

Water Quality Monitoring Schedule

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.
- Nitrate, arsenic, iron, and other individual inorganics are included as part of a Complete Inorganic (IOC) analysis when it is collected.

Source S03 *Well #3 - AGJ158* *Well* *Use - Seasonal* *Susceptility - High*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due	
Volatile Organics (VOC)	1	Jan 2020 - Dec 2025	waiver - 6 year	07/15/2019	Jul 2025	
Herbicides	1	Jan 2023 - Dec 2031	waiver - 9 year	08/10/2022	Jul 2030	
Pesticides	1	Jan 2023 - Dec 2031	waiver - 9 year	07/15/2019	Jul 2031	
PFAS	1	Jan 2023 - Dec 2025	standard - 3 year	06/24/2022	Jul 2025	
Soil Fumigants	0	Jan 2023 - Dec 2025	waiver - 3 year	08/21/2000		
Gross Alpha	1	Jan 2020 - Dec 2025	standard - 6 year	10/12/2022		
Radium 228	1	Jan 2020 - Dec 2025	standard - 6 year	10/12/2022		

Source S04 % *Well #4 - AGJ157* *Well* *Use - Seasonal* *Susceptility - Low*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due	
Nitrate	1	Jan 2024 - Dec 2024	standard - 1 year	07/12/2023	***Jul 2024***	
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	07/15/2013	Jul 2028	
Arsenic	1	Jan 2024 - Dec 2024	monthly	08/02/2023	monthly	
Iron	1	Jan 2023 - Dec 2025	standard - 3 year	08/02/2022	Jul 2025	
Manganese	1	Jan 2023 - Dec 2025	standard - 3 year	08/10/2022	Jul 2025	
Volatile Organics (VOC)	1	Jan 2020 - Dec 2025	waiver - 6 year	07/22/2019	Jul 2025	
Herbicides	1	Jan 2023 - Dec 2031	waiver - 9 year	08/14/2018	Jul 2031	
Pesticides	1	Jan 2023 - Dec 2031	waiver - 9 year	08/14/2018	Jul 2031	
PFAS	1	Jan 2023 - Dec 2025	standard - 3 year	06/24/2022	Jul 2025	
Soil Fumigants	0	Jan 2023 - Dec 2025	waiver - 3 year	12/18/2001		
Gross Alpha	1	Jan 2023 - Dec 2025	standard - 3 year	08/14/2018	***May 2023***	***Past Due***

Water Quality Monitoring Schedule

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.
- Nitrate, arsenic, iron, and other individual inorganics are included as part of a Complete Inorganic (IOC) analysis when it is collected.

Source S04 % *Well #4 - AGJ157* *Well* *Use - Seasonal* *Susceptility - Low*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due	
Radium 228	1	Jan 2023 - Dec 2025	standard - 3 year	08/14/2018	***May 2023***	***Past Due***

% Because this source has treatment to remove arsenic, you must collect a sample EVERY MONTH from that source after treatment and have an accredited lab analyze it for arsenic.

Source S06 *Well #5 - AGJ156* *Well* *Use - Permanent* *Susceptility - High*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due
Nitrate	1	Jan 2024 - Dec 2024	standard - 1 year	04/16/2024	
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	08/19/2019	Aug 2028
Iron	1	Jan 2023 - Dec 2025	standard - 3 year	08/10/2022	Aug 2025
Manganese	1	Jan 2023 - Dec 2025	standard - 3 year	08/10/2022	Aug 2025
Volatile Organics (VOC)	1	Jan 2020 - Dec 2025	waiver - 6 year	07/15/2019	Jul 2025
Herbicides	1	Jan 2023 - Dec 2031	waiver - 9 year	03/31/2021	Mar 2030
Pesticides	1	Jan 2023 - Dec 2031	waiver - 9 year	04/11/2016	Apr 2025
PFAS	1	Jan 2023 - Dec 2025	standard - 3 year	06/24/2022	Sep 2025
Soil Fumigants	0	Jan 2023 - Dec 2025	waiver - 3 year	11/05/2001	
Gross Alpha	1	Jan 2020 - Dec 2025	standard - 6 year	05/03/2021	
Gross Alpha	1	Jan 2023 - Dec 2025	standard - 3 year	05/03/2021	***May 2024***
Radium 228	1	Jan 2020 - Dec 2025	standard - 6 year	05/03/2021	
Radium 228	1	Jan 2023 - Dec 2025	standard - 3 year	05/03/2021	***May 2024***

Water Quality Monitoring Schedule

Other Information

Other Reporting Schedules	*Due Date*
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):	07/01/2024
Submit CCR certification form to ODW (Community systems only):	10/01/2024
Submit Water Use Efficiency report online to ODW and to customers (Community and other municipal water systems only):	07/01/2024
Send notices of lead and copper sample results to the customers sampled:	30 days after you receive the laboratory results
Submit Certification of customer notification of lead and copper results to ODW:	90 days after you notify customers
Submit Lead Service Line Inventory	10/16/2024
Homeowner notification of LSLI status for those with LSL, GRR or unknown	11/15/2024 or 30 days after completion

Special Notes

Collect MONTHLY arsenic samples for S04 after treatment.

Eastern Regional Water Quality Monitoring Contacts

For questions regarding chemical monitoring:	Anna Duron: (509) 329-2132 or Anna.Duron@doh.wa.gov
For questions regarding DBPs:	Anna Duron: (509) 329-2132 or Anna.Duron@doh.wa.gov
For questions regarding coliform bacteria and microbial issues:	Joseph Perkins: (509) 329-2134 or ero.coli@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.

APPENDIX C

COLIFORM MONITORING PLAN

Coliform Monitoring Plan

Coliform Monitoring Plan for: City of Okanogan

A. System Information

Plan Date: May 2015

Water System Name City of Okanogan	**County** Okanogan	**System I.D. Number** 63200M
Name of Plan Preparer Shawn Davisson	**Position** City Public Works Director	**Daytime Phone #** (509) 422-3600
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	S02, Well #2, 95 ft, 200 gpm S03, Well #3, 117 ft, 650 gpm S04, Well #4, 285 ft, 550 gpm S06, Well #5, 94 ft, 350 gpm	
Storage: List and Describe	East Reservoir – 550,000 gallons North Reservoir – 550,000 gallons Highland Reservoir – 200,000 gallons West Reservoir #1 – 210,000 gallons West Reservoir #2 – 200,000 gallons	
Treatment: Source Number & Process	S02, No Treatment S03, No Treatment S04, Filtration Treatment S05, No Treatment	
Pressure Zones: Number and name	Zone 1, Zone 2, Zone 3, and Zone 4	
Population by Pressure Zone	Murray – 50 Highland – 150 Main – 2,395	
Number of Routine Samples Required Monthly by Regulation: 3	**Number of Sample Sites Needed to Represent the Distribution System:** 6	
***Request DOH Approval of Triggered Source Monitoring Plan?** **Yes** ☐ **No** ☒		

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name Edge Analytical	**Office Phone #** (800) 755-9295
Address 1620 South Walnut Street Burlington, WA 98232	**After Hours #**
Hours of Operation 8 AM to 5 PM, Monday through Friday	

Contact Name	
Emergency Laboratory Name Okanogan County Public Health	**Office Phone #** (509) 422-7140
Address 1234 South 2nd Avenue Okanogan, WA 98840	**After Hours #**
Hours of Operation 7:30 AM to 4:30 PM, Monday through Friday	
Contact Name	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: _____ Contact Name: _____ Telephone Numbers: _____		
We sell groundwater to other public water systems.	☒	☐
If yes, Water System Name: Progressive Flats Water District Contact Name: Bob Blank Telephone Numbers: (509) 422-1968		

D. Routine, Repeat, and Triggered Source Sample Locations*

Routine Sample Group 1:

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**
X1. 1617 N. 2nd Ave. Breakroom Sink	1-1. 1409 Sunrise
	1-2. 847 N. 2nd Ave.
	1-3. 1617 N. 2nd Ave.
	1-4. 1331 N. 2nd Ave.
	Source Contribution
X2. 1251 S. 2nd Ave. Breakroom Sink	2-1. 146 Ione Street
	2-2. 936 S. 1st Ave.
	2-3. 1251 S. 2nd Ave.
	2-4. 1161 S. 2nd Ave.
	Source Contribution
X3. 1 Patrol Street Bathroom Sink	3-1. 115 Rose Street
	3-2. 146 Ione Street
	3-3. 1 Patrol Street
	3-4. 847 N. 2nd Ave.
	Source Contribution

Routine Sample Group 2:

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**
X1. 115 Rose Street Breakroom Sink	1-5. 146 Ione St. 1-6. 1 Patrol 1-7. 115 Rose St. 1-8. 1251 S. 2nd Ave.
X2. 1409 Sunrise Test port - pump house	2-1. 142 Conconully Rd. 2-2. 847 N. 2nd Ave. 2-3. 1409 Sunrise 2-4. 1622 N. 2nd Ave.
X3. 1331 N. 2nd Ave. Breakroom Sink	3-1. 1617 N. 2nd Ave. 3-2. 847 N. 2nd Ave. 3-3. 1331 N. 2nd Ave. 3-4. 315 N. 2nd Ave.

*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 source that was in use when the original routine sample was collected.**

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

System has multiple groundwater sources, not considering reducing the triggered source monitoring requirements. The “no” box has been checked in Section A.

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	1	July	1
February	2	August	2
March	1	September	1
April	2	October	2
May	1	November	1
June	2	December	2

G. Five Routine Sample Locations – Month after an Unsatisfactory Sample

Routine Sample Group 1:

Location/Address for Routine Sample Site(s) Unsatisfactory the Previous Month	Location/Address for the five Routine Sample Sites
X1. 1617 N. 2nd Ave.	1. 115 Rose St. 2. 1409 Sunrise 3. 1331 N. 2nd Ave. 4. 1622 N. 2nd Ave. 5. 1251 S. 2nd Ave.
X2. 1251 S. 2nd Ave.	1. 115 Rose St. 2. 1409 Sunrise 3. 1331 N. 2nd Ave. 4. 1661 S. 2nd Ave. 5. 1417 N. 2nd Ave.
X3. 1 Patrol St.	1. 115 Rose St. 2. 1409 Sunrise 3. 1331 N. 2nd Ave. 4. 1409 Sunrise 5. 146 Ione St.

Routine Sample Group 2:

Location/Address for Routine Sample Site(s) Unsatisfactory the Previous Month	Location/Address for the five Routine Sample Sites
X1. **115 Rose St.**	**1. 1617 N. 2nd Ave.** **2. 1251 S 2nd Ave.** **3. 1 Patrol St.** **4. 847 N. 2nd Ave.** **5. 110 Oak St.**
X2. **1409 Sunrise**	**1. 1617 N. 2nd Ave.** **2. 1251 S. 2nd Ave.** **3. 1 Patrol St.** **4. 1161 S. 2nd Ave.** **5. 146 Ione St.**
X3. **1331 N. 2nd Ave.**	**1. 1617 N. 2nd Ave.** **2. 1251 S. 2nd Ave.** **3. 1 Patrol St.** **4. 847 N. 2nd Ave.** **5. 315 N. 2nd Ave.**

H. *E. coli*-present response plans

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH (Mark Stewart – (253) 512-7072).
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Inspect our water system facilities, including the treatment plant, for proper operation.
4. Interview staff to determine whether anything unusual was happening in the water system service area, especially since the previous month's sample(s).
5. Review new construction activities, water main breaks, and pressure outages that may have occurred during the previous month.
6. Review Cross-Connection Control Program status.
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 Plan – All Sources

If we have *E. coli* in any source water we will immediately:

1. Call DOH (Mark Stewart – (253) 512-7072).
2. Distribute required notice.
3. Interview staff.
4. In concert with DOH, begin work on corrective action plan. Corrective action options include discontinuing the use of the contaminated source, or providing 4-log virus treatment of the source.

I. System Map

See Figure 1-1.

APPENDIX D

WATER QUALITY SAMPLE RESULTS

Washington State Department of HEALTH

Division of Environmental Health
Office of Drinking Water

He

Individual System View - OKANOGAN WATER DEPARTMENT CITY OF - Water System Id - 63200M

Compliance Actions | Operating Permits | Operators | Reports | Water Use Efficiency

General Information | Source Information | Samples | Exceedances | Water Quality Monitoring Schedule

Type	Source	DOE Source	Collect Date	Analyte	Result Quantity	Units	Test Panel	Analyte Group	Sample Number	Lab Number
MCL2	02	49G014	4/16/2024	CONDUCTIVITY	760.0	Umhos/cm	IOC	IOC	43181	111
P	Distribution		5/2/2023	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	00451	093
MCL1	04		8/2/2022	ARSENIC	0.013	mg/L	IOC_SHORT	IOC	09701	105
MCL2	03	49G015	8/2/2022	MANGANESE	0.089	mg/L	IOC	IOC	09901	105
MCL2	03	49G015	8/2/2022	TDS-TOTAL DISSOLVED SOLIDS	514.0	mg/L	IOC	IOC	09901	105
P	Distribution		3/1/2022	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	00188	093
P	Distribution		12/7/2021	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01457	093
MCL2	02	49G014	3/31/2021	CONDUCTIVITY	807.0	Umhos/cm	IOC	IOC	05808	105
MCL2	03	49G015	7/15/2019	MANGANESE	0.084	mg/L	IOC	IOC	50545	046
MCL2	03	49G015	7/15/2019	CONDUCTIVITY	758.0	Umhos/cm	IOC	IOC	50545	046
MCL2	03	49G015	7/15/2019	TDS-TOTAL DISSOLVED SOLIDS	526.0	mg/L	IOC	IOC	50545	046
P	Distribution		11/13/2018	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01482	093
P	Distribution		11/8/2017	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01449	093
P	Distribution		11/6/2017	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01409	093
P	Distribution		11/7/2016	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01596	093
P	Distribution		11/7/2016	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01595	093
P	Distribution		11/1/2016	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01577	093
MCL1	04		7/19/2016	ARSENIC	0.013	mg/L	IOC_SHORT	IOC	41359	046
P	Distribution		11/3/2015	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01455	093
P	Distribution		8/4/2014	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01082	093
P	Distribution		5/5/2014	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	00453	093
MCL1	04		1/6/2014	ARSENIC	0.011	mg/L	AR	IOC	00902	046
MCL1	04		7/15/2013	ARSENIC	0.014	mg/L	IOC	IOC	28440	046

P	Distribution	12/3/2012	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01648	093
P	Distribution	11/5/2012	TOTAL COLIFORM	Present	/100ml	COLI_AP	MICRO	01531	093

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View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	8/10/2022
Lab Number	125
Lab Name	Anatek Labs, Inc Moscow
Sample Number	71301
Source	03
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	HERB1-CHLOROPHENOXY HERBICIDES
Sample Location	1537 4th ave n
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0037	2,4 - D	LT	0.1000	70.0000	0.1000	ug/L
0038	2,4,5 TP (SILVEX)	LT	0.2000	50.0000	0.2000	ug/L
0134	PENTACHLOROPHENOL	LT	0.0400	1.0000	0.0400	ug/L
0135	2,4 DB	LT	1.0000		1.0000	ug/L
0136	2,4,5 T	LT	0.4000		0.4000	ug/L
0137	DALAPON	LT	1.0000	200.0000	1.0000	ug/L
0138	DICAMBA	LT	0.2000		0.2000	ug/L
0139	DINOSEB	LT	0.2000	7.0000	0.2000	ug/L
0140	PICLORAM	LT	0.1000	500.0000	0.1000	ug/L
0220	BENTAZON	LT	0.5000		0.5000	ug/L
0221	DICHLORPROP	LT	0.5000		0.5000	ug/L
0223	ACIFLUORFEN	LT	2.0000		2.0000	ug/L
0225	DCPA ACID METABOLITES	LT	0.1000		0.1000	ug/L
0226	3,5 DICHLORBENZOIC ACID	LT	0.5000		0.5000	ug/L

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Office of Drinking Water

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View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	8/19/2019
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	60628
Source	06
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	IOC-COMPLETE INORGANIC ANALYSIS
Sample Location	s06
Sample Type	Unknown

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0004	ARSENIC	EQ	0.0040	0.0104	0.0010	mg/L
0005	BARIUM	EQ	0.0710	2.0000	0.1000	mg/L
0010	MANGANESE	EQ	0.0140	0.0500	0.0100	mg/L
0014	SODIUM	EQ	14.4000		5.0000	mg/L
0015	HARDNESS	EQ	288.0000		10.0000	mg/L
0016	CONDUCTIVITY	EQ	623.0000	700.0000	70.0000	Umhos/cm
0017	TURBIDITY	EQ	0.1300		0.1000	NTU
0019	FLUORIDE	EQ	0.1700	4.0000	0.2000	mg/L
0020	NITRATE-N	EQ	0.8800	10.0000	0.5000	mg/L
0021	CHLORIDE	EQ	12.6000	250.0000	20.0000	mg/L
0022	SULFATE	EQ	120.2000	250.0000	50.0000	mg/L
0026	TDS-TOTAL DISSOLVED SOLIDS	EQ	406.0000	500.0000	100.0000	mg/L
0111	NICKEL	EQ	0.0040	0.1000	0.0050	mg/L
0161	TOTAL NITRATE/NITRITE	EQ	0.8800		0.5000	mg/L
0006	CADMIUM	LT	0.0010	0.0050	0.0010	mg/L
0007	CHROMIUM	LT	0.0070	0.1000	0.0070	mg/L
0008	IRON	LT	0.1000	0.3000	0.1000	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L
0011	MERCURY	LT	0.0002	0.0020	0.0002	mg/L
0012	SELENIUM	LT	0.0020	0.0500	0.0020	mg/L
0013	SILVER	LT	0.1000	0.1000	0.1000	mg/L
0018	COLOR	LT	15.0000	15.0000	15.0000	CU
0023	COPPER	LT	0.0200		0.0200	mg/L
0024	ZINC	LT	0.2000	5.0000	0.2000	mg/L
0110	BERYLLIUM	LT	0.0003	0.0040	0.0003	mg/L

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Office of Drinking Water

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Collect Date	8/19/2019
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	60628
Source	06
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	IOC-COMPLETE INORGANIC ANALYSIS
Sample Location	s06
Sample Type	Unknown

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0112	ANTIMONY	LT	0.0030	0.0060	0.0030	mg/L
0113	THALLIUM	LT	0.0010	0.0020	0.0010	mg/L
0114	NITRITE-N	LT	0.1000	1.0000	0.1000	mg/L
0116	CYANIDE	LT	0.0500	0.2000	0.0500	mg/L

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Collect Date	10/12/2022
Lab Number	125
Lab Name	Anatek Labs, Inc Moscow
Sample Number	75101
Source	02
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	PEST1-GENERAL PESTICIDE SUITE
Sample Location	100 Van Doyn
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0033	ENDRIN	LT	0.0100	2.0000	0.0100	ug/L
0034	LINDANE (BHC - GAMMA)	LT	0.0200	0.2000	0.0200	ug/L
0035	METHOXYCHLOR	LT	0.1000	40.0000	0.1000	ug/L
0036	TOXAPHENE	LT	1.0000	3.0000	1.0000	ug/L
0117	Alachlor	LT	0.2000	2.0000	0.2000	ug/L
0118	ALDRIN	LT	0.1000		0.1000	ug/L
0119	ATRAZINE	LT	0.1000	3.0000	0.1000	ug/L
0120	BENZO (A) PYRENE	LT	0.0200	0.2000	0.0200	ug/L
0121	BUTACHLOR	LT	0.1000		0.1000	ug/L
0122	CHLORDANE (TOTAL)	LT	0.2000	2.0000	0.2000	ug/L
0123	DIELDRIN	LT	0.1000		0.1000	ug/L
0124	DI (ETHYLHEXYL) ADIPATE	LT	0.6000	400.0000	0.6000	ug/L
0125	DI (ETHYLHEXYL) PHTHALATE	LT	0.6000	6.0000	0.6000	ug/L
0126	HEPTACHLOR	LT	0.0400	0.4000	0.0400	ug/L
0127	HEPTACHLOR EPOXIDE	LT	0.0200	0.2000	0.0200	ug/L
0128	HEXACHLOROBENZENE	LT	0.1000	1.0000	0.1000	ug/L
0129	HEXACHLOROCYCLO PENTADIENE	LT	0.1000	50.0000	0.1000	ug/L
0130	METOLACHLOR	LT	0.1000		0.1000	ug/L
0131	METRIBUZIN	LT	0.1000		0.1000	ug/L
0132	PROPACHLOR	LT	0.1000		0.1000	ug/L
0133	SIMAZINE	LT	0.0700	4.0000	0.0700	ug/L
0153	PCB (AS TOTAL AROCHLORS)	LT	0.5000	0.5000	0.5000	ug/L
0173	AROCHLOR 1221	LT	20.0000		20.0000	ug/L
0174	AROCHLOR 1232	LT	0.5000		0.5000	ug/L
0175	AROCHLOR 1242	LT	0.3000		0.3000	ug/L

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Collect Date	10/12/2022
Lab Number	125
Lab Name	Anatek Labs, Inc Moscow
Sample Number	75101
Source	02
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	PEST1-GENERAL PESTICIDE SUITE
Sample Location	100 Van Doyn
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0176	AROCHLOR 1248	LT	0.1000		0.1000	ug/L
0177	AROCHLOR 1254	LT	0.1000		0.1000	ug/L
0178	AROCHLOR 1260	LT	0.2000		0.2000	ug/L
0179	BROMACIL	LT	0.1000		0.1000	ug/L
0180	AROCHLOR 1016	LT	0.0800		0.0800	ug/L
0183	PROMETON	LT	0.2000		0.2000	ug/L
0190	TERBACIL	LT	0.1000		0.1000	ug/L
0202	DIAZINON	LT	0.2000		0.2000	ug/L
0208	EPTC	LT	0.1000		0.1000	ug/L
0218	MOLINATE	LT	0.1000		0.1000	ug/L
0232	4,4 DDD	LT	0.1000		0.1000	ug/L
0233	4,4 DDE	LT	0.1000		0.1000	ug/L
0234	4,4 DDT	LT	0.1000		0.1000	ug/L
0236	CYANAZINE	LT	0.2000		0.2000	ug/L
0238	ENDOSULFAN I	LT	0.1000		0.1000	ug/L
0239	MALATHION	LT	0.2000		0.2000	ug/L
0243	TRIFLURALIN	LT	0.1000		0.1000	ug/L
0244	ACENAPHTHYLENE	LT	0.2000		0.2000	ug/L
0245	ACENAPHTHENE	LT	0.2000		0.2000	ug/L
0246	ANTHRACENE	LT	0.2000		0.2000	ug/L
0247	BENZO (A) ANTHRACENE	LT	0.2000		0.2000	ug/L
0248	BENZO (B) FLUOROANTHENE	LT	0.2000		0.2000	ug/L
0249	BENZO (G,H,I) PERYLENE	LT	0.2000		0.2000	ug/L
0250	BENZO (K) FLUORANTHENE	LT	0.2000		0.2000	ug/L
0251	CHRYSENE	LT	0.2000		0.2000	ug/L

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Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	10/12/2022
Lab Number	125
Lab Name	Anatek Labs, Inc Moscow
Sample Number	75101
Source	02
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	PEST1-GENERAL PESTICIDE SUITE
Sample Location	100 Van Doyn
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0252	DIBENZO (A,H) ANTHRACENE	LT	0.2000		0.2000	ug/L
0254	FLUORENE	LT	0.2000		0.2000	ug/L
0256	PHENANTHRENE	LT	0.2000		0.2000	ug/L
0257	PYRENE	LT	0.2000		0.2000	ug/L
0258	BENZYL BUTYL PHTHALATE	LT	1.0000		1.0000	ug/L
0259	DI-N-BUTYL PHTHALATE	LT	1.0000		1.0000	ug/L
0260	DIETHYL PHTHALATE	LT	1.0000		1.0000	ug/L
0261	DIMETHYL PHTHALATE	LT	1.0000		1.0000	ug/L

Records 51 - 58 of 58

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View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	8/2/2022
Lab Number	105
Lab Name	Eurofins Cascade Analytical-Wenatch
Sample Number	09701
Source	04
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	IOC_SHORT-INORGANIC SHORT FORM
Sample Location	51 tyee st
Sample Type	Unknown

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0004	ARSENIC	EQ	0.0133	0.0104	0.0010	mg/L
0008	IRON	LT	0.0500	0.3000	0.1000	mg/L

Records 1 - 2 of 2

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Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00502
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0093		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

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View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	4/16/2024
Lab Number	093
Lab Name	Okanogan County Public Health Lab
Sample Number	00081
Source	06
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	NIT-NITRATE SUITE
Sample Location	well 5 test port
Sample Type	Unknown

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0020	NITRATE-N	EQ	0.7400	10.0000	0.5000	mg/L

Records 1 - 1 of 1

Home Page | Find Water Systems | Find Water Quality | Downloads/Reports

DOH Home | Community and Environment| Drinking Water Home | Drinking Water Contacts
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Collect Date	4/16/2024
Lab Number	163
Lab Name	Eurofins St. Louis
Sample Number	43181
Source	02
Analyte Group	RAD-RADIONUCLIDES
Test Panel	RAD-RADIONUCLIDES
Sample Location	well 2 test port
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0165	GROSS ALPHA	EQ	22.0000		3.0000	pCi/L

Records 1 - 1 of 1

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View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	4/16/2024
Lab Number	130
Lab Name	Eurofins Eaton Analytical, South Be
Sample Number	43181
Source	02
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	well 2 test port
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0027	CHLOROFORM	LT	0.5000		0.5000	ug/L
0045	VINYL CHLORIDE	LT	0.5000	2.0000	0.5000	ug/L
0046	1,1 DICHLOROETHYLENE	LT	0.5000	7.0000	0.5000	ug/L
0047	1,1,1 TRICHLOROETHANE	LT	0.5000	200.0000	0.5000	ug/L
0048	CARBON TETRACHLORIDE	LT	0.5000	5.0000	0.5000	ug/L
0049	BENZENE	LT	0.5000	5.0000	0.5000	ug/L
0050	1,2 DICHLOROETHANE	LT	0.5000	5.0000	0.5000	ug/L
0051	TRICHLOROETHYLENE	LT	0.5000	5.0000	0.5000	ug/L
0052	1,4 DICHLOROBENZENE	LT	0.5000	75.0000	0.5000	ug/L
0053	CHLOROMETHANE	LT	0.5000		0.5000	ug/L
0054	BROMOMETHANE	LT	0.5000		0.5000	ug/L
0056	METHYLENE CHLORIDE(DICHLOROMETHANE)	LT	0.5000	5.0000	0.5000	ug/L
0057	TRANS- 1,2 DICHLOROETHYLENE	LT	0.5000	100.0000	0.5000	ug/L
0058	1,1 DICHLOROETHANE	LT	0.5000		0.5000	ug/L
0060	CIS- 1,2 DICHLOROETHYLENE	LT	0.5000	70.0000	0.5000	ug/L
0062	1,1 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0063	1,2 DICHLOROPROPANE	LT	0.5000	5.0000	0.5000	ug/L
0064	DIBROMOMETHANE	LT	0.5000		0.5000	ug/L
0066	TOLUENE	LT	0.5000	1000.0000	0.5000	ug/L
0067	1,1,2 TRICHLOROETHANE	LT	0.5000	5.0000	0.5000	ug/L
0068	TETRACHLOROETHYLENE	LT	0.5000	5.0000	0.5000	ug/L
0070	1,3 DICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0071	CHLOROBENZENE	LT	0.5000	100.0000	0.5000	ug/L
0072	1,1,1,2 TETRACHLOROETHANE	LT	0.5000		0.5000	ug/L
0073	ETHYLBENZENE	LT	0.5000	700.0000	0.5000	ug/L

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Collect Date	4/16/2024
Lab Number	130
Lab Name	Eurofins Eaton Analytical, South Be
Sample Number	43181
Source	02
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	well 2 test port
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0074	M/P XYLENES (MCL FOR TOTAL)	LT	0.5000		0.5000	ug/L
0075	O- XYLENE (MCL FOR TOTAL)	LT	0.5000		0.5000	ug/L
0076	STYRENE	LT	0.5000	100.0000	0.5000	ug/L
0078	BROMOBENZENE	LT	0.5000		0.5000	ug/L
0079	1,2,3 TRICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0080	1,1,2,2 TETRACHLOROETHANE	LT	0.5000		0.5000	ug/L
0081	O- CHLOROTOLUENE	LT	0.5000		0.5000	ug/L
0082	P- CHLOROTOLUENE	LT	0.5000		0.5000	ug/L
0083	M- DICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0084	1,2 DICHLOROBENZENE	LT	0.5000	600.0000	0.5000	ug/L
0085	TRICHLOROFLUOROMETHANE	LT	0.5000		0.5000	ug/L
0086	BROMOCHLOROMETHANE	LT	0.5000		0.5000	ug/L
0087	ISOPROPYLBENZENE	LT	0.5000		0.5000	ug/L
0088	N-PROPYLBENZENE	LT	0.5000		0.5000	ug/L
0089	1,3,5 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0090	TERT- BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0091	1,2,4 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0092	SEC- BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0093	P-ISOPROPYLTOLUENE	LT	0.5000		0.5000	ug/L
0094	N-BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0095	1,2,4 TRICHLOROBENZENE	LT	0.5000	70.0000	0.5000	ug/L
0096	NAPHTHALENE	LT	0.5000		0.5000	ug/L
0097	HEXACHLOROBUTADIENE	LT	0.5000		0.5000	ug/L
0098	1,2,3 TRICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0104	DICHLORODIFLUOROMETHANE	LT	0.5000		0.5000	ug/L

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Collect Date	4/16/2024
Lab Number	130
Lab Name	Eurofins Eaton Analytical, South Be
Sample Number	43181
Source	02
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	well 2 test port
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0154	1,3 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0160	TOTAL XYLENES	LT	0.5000	10000.0000	0.5000	ug/L

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APPENDIX E

CONSUMER CONFIDENCE REPORT

City of Okanogan Consumer Confidence Report 2022

Spanish (Espanol)

Este informe contiene informacion muy importante sobre la calidad de su agua beber. Traduscalo o hable con alguien que lo entienda bien.

Is my water safe?

We are pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality. We are committed to providing you with information because informed customers are our best allies.

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-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 can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

Where does my water come from?

City of Okanogan water comes from 4 different well sources.

Source water assessment and its availability

The Wellhead Protection Plan is available at City Hall and provides information on our wellhead protection area, risk assessment and potential contaminants.

Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity:
microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

How can I get involved?

City Council meetings are held on the first and third Tuesday of each month. Public participation is welcome. Meetings are at 7:00 pm at 120 3rd Ave N. Okanogan Wa.

Water Conservation Tips

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference - try one today and soon it will become second nature.

- Take short showers - a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
- Visit www.epa.gov/watersense for more information.

Source Water Protection Tips

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides - they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community or visit the Watershed Information Network's How to Start a Watershed Team.
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste - Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

Additional Information for lead

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. City of Okanogan is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 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.

Additional Information for Arsenic

While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Water Quality Data Table

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The table below lists all the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions below the table.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Detect In Your Water	Range		Sample Date	Violation	Typical Source
				Low	High			
Inorganic Contaminants								
Arsenic (ppb)	0	10	6.12	4.35	6.12	2022	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Nitrate [measured as Nitrogen] (ppm)	10	10	1.89	.39	1.89	2022	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

Contaminants	MCLG	AL	Your Water	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Inorganic Contaminants							
Copper - action level at consumer taps (ppm)	1.3	1.3	.0236	2020	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	.24	2020	0	No	Corrosion of household plumbing systems; Erosion of natural deposits

Unit Descriptions	
Term	**Definition**
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (µg/L)
NA	NA: not applicable
ND	ND: Not detected
NR	NR: Monitoring not required, but recommended.

Important Drinking Water Definitions	
Term	**Definition**
MCLG	MCLG: Maximum Contaminant Level Goal: 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.
MCL	MCL: Maximum Contaminant Level: 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.
TT	TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Important Drinking Water Definitions	
Variances and Exemptions	Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
MRDLG	MRDLG: Maximum residual disinfection level goal. 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.
MRDL	MRDL: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MNR	MNR: Monitored Not Regulated
MPL	MPL: State Assigned Maximum Permissible Level

For more information please contact:

Contact Name: Barry Featherly
Address: P.O Box 752
Okanogan, WA 98840.
Phone: (509) 422 – 0717 or Email waterdept@okanogancity.com.

APPENDIX F

LEAD AND COPPER SAMPLING LOCATIONS

Lead and Copper Sampling

State regulations require all community and nontransient noncommunity water systems to monitor for lead and copper in drinking water.

Unlike other contaminant monitoring, the samples for lead and copper testing must come from regularly used cold water taps inside your customers' homes.

For assistance, call the nearest Department of Health regional office listed at the end of this brochure.



For More Information

If you have questions about sampling procedures, call our regional office:

- **Eastern Region**
  Spokane Valley
  509-329-2100
- **Northwest Region**
  Kent
  253-395-6750
- **Southwest Region**
  Tumwater
  360-236-3030

Our publications are online at doh.wa.gov/drinkingwater

Other Sampling Publications

Lead and Copper Monitoring (331-111)

Nitrate Sampling Procedure (331-222)

Synthetic Organic Chemical (SOC) Sampling Procedure (331-224)

Inorganic Chemical (IOC) Sampling Procedure (331-221)

Volatile Organic Chemical (VOC) Sampling Procedure (331-220)

Total Trihalomethane (TTHM) Sampling Procedure (331-226)

Haloacetic Acid (HAA5) Sampling Procedure (331-223)

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

DOH 331-227
June 2016

If you need this publication in an alternative format, call 800.525.0127 (TDD/TTY call 711). This and other publications are available at www.doh.wa.gov/drinkingwater.



Lead and Copper Sampling Procedure

1 Select Homes or Locations for Sampling

There are specific guidelines for selecting the homes or locations where you collect samples, the number of samples required, and setting up a monitoring schedule. For more information, see the publication, Lead and Copper Monitoring (DOH 331-111).

You can:

- Have residents collect the samples. Be sure to provide directions and sampling kits.
- Take the samples yourself. Ask residents to allow system personnel into their homes to take the samples.

2 Prepare to Collect the Sample

- The sample must come from a regularly-used kitchen or bathroom cold-water faucet.
- The object is to get the "first draw" of the water that has been sitting stagnant in the pipes for at least 6 hours, but no more than 12 hours prior to sampling.
- To ensure stagnant water conditions exist, the best sampling times are first thing in the morning, or after residents return home from work or school.
- Make sure that cold water is the last water to go through the faucet before the water sits stagnant in the pipes for the 6 – 12 hours prior to sampling.
- Do not remove the aerator from the faucet before the stagnation time nor before collecting the sample.

3 Collect Samples

- Do not run any water immediately prior to collecting the sample.
- Make sure the water does not go through a hose, water softener, or any kind of filter before it reaches the sample container.
- Place the open bottle below the faucet and gently open the cold-water tap.
- Fill the sample container to the shoulder of the bottle or the line marked "1,000 ml" and turn the water off.
- Cap the bottle tightly.
- Label the bottle (see step 4), and place it in the sample kit provided.

4 Complete Lab Form and Sample Label

You will either provide completed labels to the homeowners, or fill them out when you collect the samples.

Laboratory forms vary, so be sure to include the following:

- Water system name and ID number
- System type (Group A or Group B)
- Date and time each sample was collected
- Sample location for each sample (use the street address or another location identifier for the home or building where the sample was collected)
- DOH source number – write in "distribution" to indicate distribution samples
- Sample purpose (usually "RC" for routine compliance)
- Sample type (post-treatment)



5 Ship the Samples

When the samples are ready for shipping, package them with the completed sample information form and send them to the laboratory.

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The _____ Water System, I.D. _____ , is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at _____

are: **lead _____ mg/L and copper _____ mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is "0" and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

For more information, please contact: _____
(owner or operator)

at ( ) - or _____
(phone number) (address)

This notice is sent to you by _____ Water System on ___/___/_____

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

Sistema comunitario de agua
AVISO al CONSUMIDOR
Resultados de las muestras de agua para plomo y cobre

El sistema de agua_____número de identificación_____ , le presenta con los resultados de plomo y cobre en la muestra de agua colectada en su ubicación. Por favor, comparta los resultados con todos quienes usan o beben el agua.

Los resultados para: _____

son: **_____ mg/L de plomo y ___ mg/L de cobre.**

El límite del nivel máximo de contaminantes (LNMC) distingue entre niveles de contaminantes por debajo de lo cual no hay riesgos para la salud conocidos o esperados. Los LNMC toman en cuenta el margen de seguridad. Los límites regulatorios para plomo y cobre se llaman niveles de acción. Se considera sobrepasar los límites cuando la concentración del nivel de plomo o cobre en más de10 por ciento de las muestras de agua potable excede un nivel de acción.

- El LNMC para plomo es "0" y el nivel de acción es 15 ppb (o .015 mg/L).
- El LNMC y nivel de acción para cobre es 1,300 ppb (or 1.3 mg/L).

Sobrepasar los niveles de acción de plomo o cobre provocará tratamiento de control u otros requisitos. Avisaremos a todos los usuarios de agua si nuestro sistema excede el nivel de acción de plomo.

Para más información, por favor contacte: _____
(dueño o operador)

a ( ) - o_____
(número de teléfono) (dirección)

El sistema de agua _____le mandó este aviso en la fecha ___/___/___.

Como entra en el agua el plomo

La fuente de plomo en agua potable más frecuente son las líneas de distribución de agua o plomería residencial en vez de la fuente del sistema de agua. Fuentes de plomería incluyen tuberías de plomo, soldadura de plomo, grifos, válvulas, y otros componentes hechos de latón. Plomo de otras fuentes (tal como pintura a base de plomo y polvo o tierra contaminada) puede aumentar la exposición total de una persona, que se suma con los efectos del plomo en agua.

Efectos potenciales a la salud del plomo

El mayor riesgo de exposición a plomo es para bebés, niños, y mujeres embarazadas. Plomo puede causar problemas serios de salud si entra demasiado en el cuerpo. Los huesos almacenan plomo y eso puede descargar más adelante en la vida. Plomo puede dañar al cerebro y los riñones y causar interferencia con la producción de células rojas sanguinas que portan oxígeno, lo cual puede resultar en un QI disminuido en niños. Durante el embarazo, el niño recibe plomo de los huesos de la madre, que puede afectar al desarrollo cerebral. Niveles bajos de plomo pueden afectar a adultos con alta presión sanguina o con problemas de riñón.

Como entra en el agua el cobre

Cobre es un mineral y componente natural de sedimentos. En las cantidades correctas, es un nutriente esencial para humanos y plantas. En el estado de Washington, la mayoría del cobre en el agua potable viene de la corrosión de la plomería del hogar. Fuentes de plomería pueden incluir tuberías y accesorios. Cobre de la corrosión de plomería puede acumularse durante la noche.

Efectos potenciales a la salud del cobre

Aunque cobre es un mineral esencial en la dieta, demasiado cobre puede provocar problemas de salud. Cobre tiene una ancha distribución a través de los tejidos corporales, pero se acumula ante todo en el hígado y los riñones. Una sola dosis de 15 mg de cobre puede causar nausea, vómitos, diarrea, y calambres intestinales. Casos severos de intoxicación de cobre han resultado en anemia y a la disrupción del funcionamiento del hígado y riñón. Los individuos con las enfermedades de Wilson o Menke corren mayor riesgo de la exposición al cobre.

Como puede reducir exposición:

- Cuando el agua no ha corrido durante varias horas, enjuagar las tuberías dejando correr agua fría hasta que el agua se nota bastante más fría antes de usarla para beber o cocinar. **(Mientras más tiempo está el agua estancada en las tuberías, más disueltos estarán los metales que puede contener).**
- Use solo agua fría para beber, cocinar y preparar el biberón de fórmula para el bebé. Agua caliente puede contener altos niveles de plomo o cobre.
- Limpie las pantallas de filtro y los aireadores del grifo para quitar las partículas acumuladas.
- Si está construyendo o remodelando, solo use materiales “sin plomo” o con tubería de bajo plomo. Evite usar tuberías de cobre o accesorios de latón para lugares donde el agua se va a consumir o usar para preparar comida (como en la cocina o el grifo del baño).

Lead and Copper Consumer Notice certification form

All Group A water systems that conduct lead and copper monitoring must provide individual sampling results to the persons at each sample location. (CFR 141.85 (d))

Notification of Results: The water system must provide the consumer notice as soon as possible, but no later than 30 days after learning the results.

Community water systems: You must provide individual sampling results to all residences for which you received lead and copper samples. In multi-unit structures, only notify each unit tested.

Nontransient noncommunity water systems (NTNCs): You must notify all consumers who use water from the sample tap, even if they do not receive a water bill. With prior approval from DOH, NTNC water systems can post the notice in public areas.

Certification to the state: DOH must receive a sample copy of one consumer notice and a signed certification form (below) within 90 days after the end of the monitoring period.

To meet this reporting requirement, you may:

- Use the DOH Consumer Notice Template.
- Use the applicable EPA Consumer Notice template.
- Prepare your own Consumer Notice in conjunction with the state.

If you choose to produce your own Consumer Notice, it must include all of the following:

1. The sample results of the tap tested.
2. An explanation of the health effects of lead.
3. Steps consumers can take to reduce exposure to lead in drinking water.
4. The water system's contact information.
5. The maximum contaminant level goal (MCLG) and action level for lead, and the definitions of these two terms.

If you are responsible for multiple water systems, you can send to the Office of Drinking Water:

- A list of the water systems you provided Consumer Notices to, with name and PWS ID number.
- Send one copy of the Consumer Notice you used.
- Send one completed certification form (below).

Lead and Copper Results: Consumer Notification Certification Form

The water system must complete this section. The signature below certifies that the notice contains all required elements.

Complete the following items (check all that apply):

☐ I mailed/delivered all Consumer Notices to the water users at all of the lead and copper sampling locations within 30 days of receiving the lead and copper results from the laboratory.

☐ (**For NTNC systems ONLY**) Notice posted at _____ on ___ / ___ / ____ within 30 days of receiving the lead and copper results from the laboratory. (***Only By Department Approval***)

_____ _____

Water System PWS ID

_____ _____ _____

Signature of owner or operator Position Date

Send a copy of the completed notice and this certification form to: Washington State Department of Health, Office of Drinking Water, Water Quality Section,PO Box 47822, Olympia WA 98504-7822 or fax to (360) 236-2252.

DOH Form 331-462-F

If you need this publication in alternate format, call (800) 525-0127. For TTY/TDD, call (800) 833-6388

Washington State Department of HEALTH

Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00506
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0009	LEAD	EQ	0.0014		0.0010	mg/L
0023	COPPER	EQ	0.0136		0.0200	mg/L

Records 1 - 2 of 2

Links to external resources are provided as a public service and do not imply endorsement by the Washington State Department of Health

Department of Health, Office of Drinking Water

Street Address:
243 Israel Road S.E. 2nd floor
Tumwater, WA 98501

Mail:
PO BOX 47822
Olympia, WA 98504-7822

Comments or questions regarding this Web site? Send email to Environmental Health Application Testing and Support

Washington State Department of HEALTH

Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00505
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxxo)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0279		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

Records 1 - 2 of 2

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Olympia, WA 98504-7822

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Washington State Department of HEALTH

Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00509
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0185		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

Records 1 - 2 of 2

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Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00507
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0124		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

Records 1 - 2 of 2

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243 Israel Road S.E. 2nd floor
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Olympia, WA 98504-7822

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Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00504
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0118		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

Records 1 - 2 of 2

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Department of Health, Office of Drinking Water

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243 Israel Road S.E. 2nd floor
Tumwater, WA 98501

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Olympia, WA 98504-7822

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Washington State Department of HEALTH

Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00503
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0065		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

Records 1 - 2 of 2

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Washington State Department of HEALTH

Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00501
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0853		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

Records 1 - 2 of 2

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Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00502
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0093		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

Records 1 - 2 of 2

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Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00508
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0009	LEAD	EQ	0.0021		0.0010	mg/L
0023	COPPER	EQ	0.0043		0.0200	mg/L

Records 1 - 2 of 2

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Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 63200M - OKANOGAN WATER DEPARTMENT CITY OF

Collect Date	7/19/2023
Lab Number	112
Lab Name	Anatek Labs, Inc Spokane
Sample Number	00510
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	YDxxxxxxxxx)
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0022		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

Records 1 - 2 of 2

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Olympia, WA 98504-7822

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APPENDIX G

WATER SYSTEM OPERATING PERMIT

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

Operating Permits

Report Create Date: 03/21/2024

WS Id(s): 63200

STATE OF WASHINGTON
Public Water System
Operating Permit

The Department of Health Office of Drinking Water issues a permit to operate:

OKANOGAN WATER DEPARTMENT CITY OF (ID# 63200 M)

to owner: OKANOGAN, CITY OF County: OKANOGAN

OKANOGAN, CITY OF
PO Box 752
OKANOGAN, WA 98840

This Permit is valid through: 31 May 2024

PERMIT CATEGORY: **** Green ****

The permit category may be modified or the permit revoked subject to water system compliance with applicable State of Washington drinking water rules and regulations and the following statements.

The system operating permit color category is based on information on file with the Department at the time this permit was printed.

System is substantially in compliance with applicable drinking water requirements

Washington State Department of Health

Explanation of Permit Categories

1. **Green** - This category means your system is substantially in compliance with applicable drinking water requirements. Placement in this category indicates the system is adequate for growth up to approved number and existing uses.

2. **Yellow** - This category means your system is substantially in compliance except water system notified to submit water system plan, but has not satisfied planning requirement and/or is under a compliance agreement for a state significant non-complier (SSNC) violation. Placement in this category indicates the system is adequate for growth up to approved number unless otherwise limited by compliance agreement and adequate for existing uses.

3. **Blue** - This category means your system is substantially in compliance except water system does not meet design approval or has exceeded number of approved connections. Placement in this category means the system is adequate for existing uses, but not adequate for growth.

4. **Red** - This category means your system is in substantial non-compliance with applicable drinking water requirements. Placement in this category indicates the system is not adequate for growth or existing uses. **This could result in building permits, on-site sewage disposal permits, food service permits, liquor licenses and other pemits and licenses being denied for properties connected to or to be connected to the water system. In addition, lending institutions may choose not to finance loans associated with these properties.**

If you have questions about your operating permit or wish to formally appeal the permit category through an adjudicative proceeding, contact the appropriate Drinking Water Regional Office;

Northwest Regional Office
Kent
(253) 395-6750

Southwest Regional Office
Tumwater
(360) 236-3030

Eastern Regional Office
Spokane
(509) 329-2100

**** End of Report ****

APPENDIX H

CONSISTENCY STATEMENTS

Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: City of Okanogan Water System PWS ID: 63200M

Planning/Engineering Document Title: Water System Plan Plan Date: January 2025

Local Government with Jurisdiction Conducting Review: City of Okanogan Planning Department

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, the reviewer 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 page 2.

Local Government Consistency Statement	For Use by Water System Identify page(s) in submittal	For Use by Local Government Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	Figure 1-2	yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-9	yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	1-13	yes
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-13	yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	Enter here	Enter here

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.

Chris Johnson Digitally signed by Chris Johnson Date: 2025.08.11 18:39:21 -07'00'
Signature

08/11/2025
Date

Chris Johson
Printed Name, Title, & Jurisdiction

Consistency Review Guidance
For Use by Local Governments and Municipal Water Suppliers

This checklist may be used to meet the requirements of WAC 246-290-108. When using an alternative format, it must describe all the elements; 1a), b), c), d), and e), when they apply.

For **water system plans (WSP)**, a consistency review is required for the municipal water supplier's service area. Municipal water suppliers may exclude wholesale areas from the consistency review provided the water system receiving the wholesale water complies with the requirements for a consistency review when developing a water system plan for any new connection within their service area.

For **small water system management programs**, a consistency review is only required for areas where a municipal water supplier wants to expand its water right's place-of-use. If no water right place-of-use expansion is requested, a consistency review is not required.

For **engineering documents,** a consistency review is required for areas where a municipal water supplier wants to expand its water right's place-of-use (water system plan amendment is required). For noncommunity water systems, a consistency review is required when requesting a place-of-use expansion. All engineering documents must be submitted with a service area map (WAC 246-290-110(4)(b)(ii)).

A) Documenting Consistency: The planning or engineering document must include the following when applicable.

a) A copy of the adopted land use/zoning map corresponding to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map. Include any other portions of comprehensive plans or development regulations that relate to water supply planning.

b) A copy of the growth projections that correspond to the service area. If the local population growth projections are not used, explain in detail why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

c) Include water service area policies and show that they are consistent with the utility service extension ordinances within the city or town boundaries. (This applies to cities and towns only.)

d) All **service area policies** for how you will provide new water service to new customers.

e) **Other relevant elements** the Department of Health determines are related to water supply planning. See Local Government Consistency—Other Relevant Elements, Policy B.07

B) Documenting an Inconsistency: Please document the inconsistency, include the citation from the comprehensive plan or development regulation, and explain how to resolve the inconsistency.

C) Documenting a Lack of Local Review for Consistency: Where the local government with jurisdiction did ***not*** provide a consistency review, document efforts made, and the amount of time provided to the local government for review. Please include name of contact, date, and efforts made (letters, phone calls, and emails). To self-certify, please contact the DOH Planner.

Washington State Department of HEALTH

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: City of Okanogan Water System PWS ID: 63200M

Planning/Engineering Document Title: Water System Plan Plan Date: January 2025

Local Government with Jurisdiction Conducting Review: Okanogan County Office of Planning and Development

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, the reviewer 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 page 2.

Local Government Consistency Statement	For Use by Water System Identify page(s) in submittal	For Use by Local Government Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	Figure 1-2	Yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-9	Yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	1-13	Yes
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-13	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	Enter here	N/A

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.

Pete Palmer

Signature

08/14/25

Date

Pete Palmer, Director Okanogan County Planning

Printed Name, Title, & Jurisdiction

APPENDIX I

WELL LOGS

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

DOH-571

UNIQUE WELL I.D. NUMBER A B R 5 3 5
X Y Z 1 2 3

WELL TAGGING FORM

Date of Field Visit 8/11/94 By R HANDLEY

ADDITIONAL WELL IDENTIFIERS

Department of Health System ID Number 63200M Source Number SO 02

USGS Site Identification _____

RECORD VERIFICATION

☒ Well Report available *(please attach)*
☐ Well Report not available
☐ Verification inconclusive

WELL OWNERSHIP IF DIFFERENT FROM WELL REPORT

Name _____

Street address _____

City _____ State _____

LOCATION OF WELL IF DIFFERENT FROM WELL REPORT

Well Address _____

City _____ County _____

T _____ N R _____ ___ W M Sec _____ SC ¼ of the NE ¼

Latitude _____ _____ _____
Longitude _____ _____ _____

☐ GPS (raw data)
☐ GPS (corrected)
☐ Topographic Map
☐ Survey
☐ Computer generated
☐ Other _____

Elevation at land surface _____ feet/meters *(circle one)*

☐ Digital Altimeter
☐ Topographic Map

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Additional information if available

☐ Location marked on topographic map *(please attach)*

☐ Location marked on air photo *(please attach)*

Water Right # ~~369~~ 369A Priority Date NOV 20, 1947

Circle one Application Permit (Certificate) Claim Exempt

WELL CHARACTERISTICS

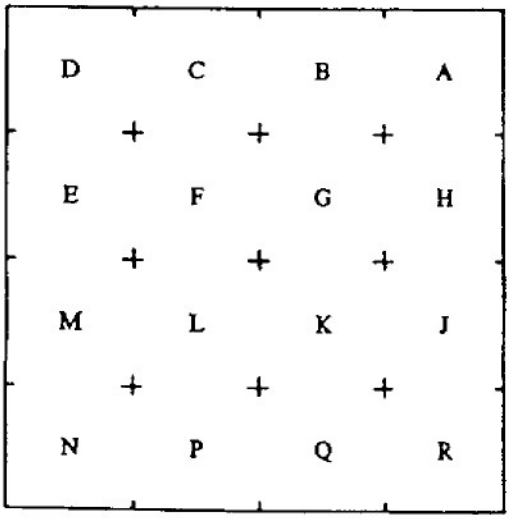
Physical Description of Well (size of casing type of well housing etc) 12 CASING, CABLE DRILLED, CONCRETE BLOCK WELL HOUSE

Location of Well Identification Tag DISCHARGE PIPE 12" AWAY FROM PUMP MOTOR

Was Supplemental Tag needed for ease of identifying well?
☐ NO ☐ YES

If yes where was tag placed? _____

Scale 1 24 000 (1 =2 000)



Indicate the location of the well within the Section by d aw ng a do at that point

SECTION _____

COMMENTS _____

Pleas atta h this f rm to the W ll R p rt and bmit it to the Department f E log Wat R P g am H adq rt rs
W ll f P P O B (1

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Well #

STATE OF WASHINGTON

WELL LOG

Apply. #321
Cert. #369A

D e Nov. 20 1947
Pec d b Geo. W. Sample
So e Drill r record

L St WASHINGTON
C Okanogan
A a
M p Town of Okanogan, Wash
SE/NE/ 17 T33 N P26 E
D l g C Geo. W. Sample
Add Brewster, Wash
M h d D l g D Dec.23 1947
O Town of Okanogan
Ad Washington
d f d t bo b l

Muck	3	4
Muck and Boulders	27	31
Sedimentary sand some small gravel	14	45
Top of s.w. - W L. fr. s		45
Sand water bearing	3	48
Sand, some gravel, w.b.	17	65
Clay, sand & cemented gravel, non w.b.	6	71
Top of g.w., w.l. 35' from surface		71
Sand & various gravels	2	73
Fine and coarse sand, some small & medium gravel	1	74
Lg coarse and medium gravel 10% sand	4	78

(over)

SEC 17 T33N R26E WM

WELL LOG — C d N A-321

Lg. coarse and medium gravel, 15% sand	11	89
Small and medium gravel, 40% sand	1	90
Small and medium gravel, 50% sand	5	95
Cemented sand, gravel and clay 75% sand	5	100
Cemented gravel clay and 80% sand	18	118
Pump test.		
Dim. 117' x 12"		
SWL. 40'		
D.D. 38'		
Yield. 220 g.p.m.		
Casing. 12" dia. from 0 to 117'		
Perforations. 8 rows from 74 to 84'		
4 rows from 84 to 94'		

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

STATE OF WASHINGTO
DEPARTMENT OF CONSERVATION AND DEVELOPMENT Appli. #6878

WELL LOG No...../.....-.....

Date September 27, 1963

Record by Driller

Source Driller's Record

Location: State of WASHINGTON

County Okanogan

Area

Map

NW¼SW¼ NE¼ sec. 9 T. 33 N., R. 26 E. E. W.

Diagram of Section

33/26-9G

Drilling Co. Charlton & Son

Address Route 1, Box 369, Okanogan, Washington

Method of Drilling Cable Date Sept. 3, 1963

Owner City of Okanogan

Address Okanogan, Washington

Land surface, datum ..... ft. above / below

Correlation	Material	Thickness (feet)	Depth (feet)
	(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)		
	Municipal well		
	Sand, gravel, boulders	0	12
	Hard pan	12	15
	Sand and 2" gravel	15	18
	Coarse sand & pea gravel	18	32
	Sand & 2" to 3" gravel	32	55
	Fine and coarse sand	55	58
	Coarse sand and gravel	58	70
	Sand & gravel w/yellow clay	70	75
	Water gravel	75	86
	Gravel and C. sand, clay	86	96
	Clean water gravel	96	117
	Casing: 12" from 0 to 117'		
	Perforated from 80 to 117'		

Turn up

Sheet ..... of ..... sheets

The Dep The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WELL LOG.—Continued No. A. 6878

CORRELATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
	City of Okanogan Depth forward	———	
	No screens		
	SWL: 75' on Sept. 4, 1963		
	Yields 1150 gpm with 20' DD after 4 hours		
	1 hour, 15 minutes recovery		
	Sept 4, 1963		
	Temp: 56°		
	Pump: 75 HP, Turbine		

S. F. No. 7448—OS—6-61—2M

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Well Tagging Form

Unique Well Tag No: AGS158 63200 S03

RECORD VERIFICATION (check ✓ one)

- ☐ Well Report available *(please attach this form to the well report and submit it to the Ecology Regional Office near you)*
- ☐ Verification inconclusive
- ☒ Well Report not available

Okanogan Water Dept., City

WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

First Name: 004214 Last Name:

Street Address:

City: State:

LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address: Northwell 3

City: County: Oka

T. 33 N. R. 26 W.M. Sec. 09 SW 1/4 of the NE

FOR AGENCY USE ONLY

Latitude 48° 22 · 38 15348"

Longitude 119° 34 · 07 65421"

- ☒ GPS
- ☐ Topographic Map
- ☐ Survey
- ☐ Computer generated

Elevation at land surface 881.29 (feet) meters *(circle one)*

- ☐ Digital Altimeter
- ☐ Topographic Map
- ☐ Other

Additional information, if available:

- ☐ Location marked on topographic map *(please attach)*
- ☐ Location marked on air photo *(please attach)*

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

FOR AGENCY USE ONLY

WELL CHARACTERISTICS:

Physical Description of well (size of casing, type of well, housing, etc.)

Location of Well identification Tag:

on piping near casing.

Was supplemental tag needed for ease of identifying well? ☐ Yes ☒ No

If yes, where was tag placed? _____

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Scale 1:24,000 (1"=2,000')

Indicate the location of the well within the Section by drawing a dot at that point.

SECTION _____

COMMENTS:

FOR ECOLOGY WATER RESOURCES PROGRAM ONLY

Water Right # _____ Date Issued _____

Circle One: Application Permit Certificate Claim Exempt

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

...e Original and First Copy with Department of Ecology
Second C...y — Owner's Copy
Th...d Cop... — Driller's Copy

NOTE

WATER WELL REPORT

STATE OF WASHINGTON

Application No. G4-23854

Permit No. .....

(1) OWNER: Name City of Okanaogan Address City Hall, Okanogan Wa. 98840

(2) LOCATION OF WELL: County Okanogan SE ¼ NE ¼ Sec. 17 T. 33 N., R. 26 E.W.

Bearing and distance from section or subdivision corner N 79°45'E & 2,430' from Center of Section 17

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☒
City Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 4
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 12 inches.
Drilled 275 ft. Depth of completed well 275 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 12 " Diam. from 0 ft. to 259 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

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.

Screens: Yes ☒ No ☐ 10" Riser Pipe 248-256
10Tail pipe 270-275
Manufacturer's Name Johnson Well Screen
Type Stainless Steel Model No 12" Telescope
Diam. 12 Slot size 200 from 256 ft. to 264 ft.
Diam. 12 Slot size 100 from 264 ft. to 270 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft. Sealed from 7' to 27'
Material used in seal Cement
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off by casing only

(7) PUMP: Manufacturer's Name Bryron Jackson 7 stage
Type: Submersible 550 GPM H.P. 75

(8) WATER LEVELS: Land-surface elevation above mean sea level 831 ft.
Static level 15 ft. below top of well Date 5-12-76
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? Driller
Yield: 316 gal./min. with 52 ft. drawdown after 24 hrs.
" 548 " 110 " 4+ "
" 781 " XXX 162 " 5 "
Total Step Test was 24 hrs.
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
0 min	66'-2"			0 min	149'3"
4 min	16'11"			±0 min	15'0" t
5 min	16'9"			Static=	15'0"

Date of test 5/25/76
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water 61 F. Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, a... show thickness of aquifers and the kind and nature of the material in ea... stratum penetrated, with at least one entry for each change of formatio...

MATERIAL	FROM	TO
Fill	0	1
Rock gravel boulders	1	8
Rock gravel boulders	8	20
Rock gravel boulders	20	27
Gravel-sand	27	36
Gravel and sand	36	37
Boulders, gravel and sand	37	42
Sand & gravel a little water	42	44
sand gravel little water	44	56
Gravel little water	56	59
Water, gravel & sand	59	60
Water, gravel & sand	60	76
Water, gravel & sand	76	85
Fine brown sand-water	85	94
Fine couse gray sand water	94	101
Fine course sand water	101	103
Fine gray sand water	103	113
Fine gray sand water	113	115
Fine course gray sand water	115	130
Fine course gray sand little - gravel water	130	136
Fine course gray sand water	136	140
Fine course gray sand water	140	145
Fine course gray sand water	145	151
Gray silt fine sand water	151	175
Gray silt fine sand water	175	187
Gray silt fine sand water	187	191
Gravel sand dry	191	194
Gravel sand water	194	198
Gray silt fine sand water	198	205
Gray silt fine sand water	205	208
Gray silt fine sand water	208	225
Gray silt fine sand water	225	234
Gray fine some course sand water	234	240
Fine course sand gray water (Cont)		

Work started 2-25 19 76 Completed XXX 5-31 19 76

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Richardson Well Drilling Co.
(Person, firm, or corporation) (Type or print)

Address P.O. Box 44408 Tacoma, Wa. 98444

[Signed] (Well Driller)
Neil H. Richardson

License No. 223-02-6500 Date 7-19, 19 76

OK B-7/29/76

ECY 050 1-20

Sheet 1 of 2.

(USE ADDITIONAL SHEETS IF NECESSARY)

The Dep. 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

CITY OF OKANOGAN

WATER WELL REPORT

STATE OF WASHINGTON

Application No. G-2-29193
Permit No.

(1) OWNER: Name City of Okanogan Address City Hall, Okanogan, WA 98840

(2) LOCATION OF WELL: County Okanogan SE ¼ SW ¼ Sec. 17 T. 33 N., R. 26E W.M.

Bearing and distance from section or subdivision corner Lot 17 Shirley Garden Tracts

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) five (5)
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 18" inches.
Drilled 110 ft. Depth of completed well 94 ft.

(6) CONSTRUCTION DETAILS: Includes 25' Pump Sump Below Screen

Casing installed: 18" Diam. from 0 ft. to 39 ft.
Threaded ☐ 12" Diam. from 69 ft. to 94 ft.
Welded ☒ " Diam. from ft. to ft.

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.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson Well Screen
Type Stainless Steel Model No. 18" Pipe Size
Diam. 18" Slot size 12 from 39'— ft. to 69'— ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Sealed from 6' to 25'
Yes ☒ No ☐ To what depth? 25 ft.
Material used in seal Cement + 5% Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? N/A Depth of strata N/A
Method of sealing strata off N/A

(7) PUMP: Manufacturer's Name To Be Determined
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level Top Casing 823.74 / 818.5 ft.
Static level 16.81 (ECY 806.93) ft. below top of well Date 6/24/87
Artesian pressure N/A lbs. per square inch Date N/A
Artesian water is controlled by N/A (Cap, valve, etc.)
River Elev. = 808.20 6/24/87
6-(1½"/61 Top casing = 823.74

(9) WELL TESTS: Drawdown is amount water level is lowered below static level elev. 807.14
Zero Hours = 16.60
Was a pump test made? Yes ☒ No ☐ If yes, by whom? BACH DRILLING
Yield: 600 gal./min. with 15.35 ft. drawdown after 24:00 hrs.
" 600 " 14.66 " 8:20 "
" 600 " 14.10 " 1:00 "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Minutes Time	Water Level	Minutes Time	Water Level	Minutes Time	Water Level
0	31.95	3:06	17.83	230	17.15
1:50	13.00	9:32	17.60	370	17.06
:40	17.38	50:00	17.42	900	16.87

Date of test June 19-20, 1987
Bailer test N/A gal./min. with N/A ft. drawdown after N/A hrs.
Artesian flow N/A g.p.m. Date N/A
Temperature of water 55°F Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:

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 formation.

MATERIAL	FROM	TO
(SEE ATTACHED SHEET)		

RECEIVED
SEP 10 1987
DEPARTMENT OF ECOLOGY
CENTRAL REGION OFFICE

Work started May 4 19 87 Completed July 8, 19 87

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Bach Drilling
(Person, firm, or corporation) (Type or print)

Address Route 5, Box 1010, Ellensburg, WA 98926

[Signed] Mike Bach
(Well Driller)

License No. 22 Date 8/31 19 87

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

The Dep The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

(10) Well Log

Material	From	To
Cobbles & Fill Material	0	10
Cobbles & Gravel	10	15
Large Gravel & Clay	15	23
Small Gravel with Sand	23	25
Water Table Encountered		28
Static Water Level		13
Sand and Small Gravel	25	31
Pea Gravel	31	35
Small Gravel with Sand	35	36
Sand with Some Small Gravel	36	37
Sand, Some Small Gravel, Light Brown	37	42
Sand, Some Small Gravel, Some Clay, Lightly Grey	42	48
Sand, Some Small gravel, Silt, Light Brown	48	53
Sand and Larger Gravel	53	54
Sand and Large Gravel, Light Brown	54	56
Coarse Sand and Some Gravel (Brownish Grey)	56	57
Coarse Sand & 1-1/2" Round Gravel	57	58
Coarse Sand, Fine Sand & Small Gravel	58	61
Sand with Some Gravel with Blue Tinge Color Clay	61	65
Sand with Small Gravel (Grey to Blue)	65	66
Sand with Coarse Gravel (Grey with Blue Tinge)	66	68
Sand with Small Amount of Gravel (Grey with Blue Tinge)	68	69
Coarse Sand and Sparse Gravel, Predominantly Grey	69	70
Sand with Gravel & Clay (Grey with Blue Tinge)	70	73
Sand with Gravel, Brown Clay with Blue Tinge	73	74
Gravel with Sand, Clay Film, Brown Clay with Blue Tinge	74	77
1" Gravel, Little Sand, Clay Film	77	79
Sand with Some Gravel, Light Brown Clay With Blue Tinge	79	80
Fine Sand & Silt	80	82
Fine Silt	82	90
Silt & Blue Clay	90	110

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Well Tagging Form

63200
506
Well 5

Unique Well Tag No: AGS156

RECORD VERIFICATION (check ✓ one)

- ☐ Well Report available *(please attach this form to the well report and submit it to the Ecology Regional Office near you)*
- ☐ Verification inconclusive
- ☒ Well Report not available

WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

First Name: 004214 Last Name:

Street Address:

City: State:

LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address: well 5

City: County: Okan

T. 33 N. R. 26 W.M. Sec. 17 SE 1/4 of the SW

FOR AGENCY USE ONLY

Latitude 48° 21 ' 19 12320 "

Longitude 119° 35 ' 46 16414 "

- ☒ GPS
- ☐ Topographic Map
- ☐ Survey
- ☐ Computer generated

Elevation at land surface 815.67 (feet) meters *(circle one)*

- ☐ Digital Altimeter
- ☐ Topographic Map
- ☐ Other

Additional information, if available:

- ☐ Location marked on topographic map *(please attach)*
- ☐ Location marked on air photo *(please attach)*

FOR AGENCY USE ONLY

WELL CHARACTERISTICS

Physical Description of well (size of casing, type of well, housing, etc.)

12" casing
Sub Mersible
no housing

Location of Well identification Tag:

on top of casing.

Was supplemental tag needed for ease of identifying well? ☐ Yes ☒ No

If yes, where was tag placed? _____

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Scale 1:24,000 (1"=2,000')

Indicate the location of the well within the Section by drawing a dot at that point.

SECTION _____

COMMENTS:

FOR ECOLOGY WATER RESOURCES PROGRAM ONLY

ter Right # _____ Date Issued _____

Circle One: Application Permit Certificate Claim Exempt

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

APPENDIX J

WATER USE EFFICIENCY REPORT

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

Date Submitted: 2/28/2024

Water Use Efficiency
Annual Performance Report - 2023

WS Name: OKANOGAN WATER DEPARTMENT CITY OF

Water System ID# : 63200 WS County: OKANOGAN

Report submitted by: *Barry Featherly*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2023* To *12/31/2023*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*199,163,000*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*169,074,051*	gallons	
Distribution System Leakage – Annual Volume TP – AC	*30,088,949*	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*15.1 %*		
3-year annual average - %	*11.7 %*		*2021, 2022, 2023*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *02/07/2017*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Reduce per capita usage by 3% over a 6 year period.

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	18,716,000
February	9,479,000
March	8,930,000
April	8,590,000
May	14,549,000
June	25,764,000
July	26,105,000
August	31,422,000
September	23,935,000
October	15,656,000
November	7,879,000
December	8,138,000

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- [x] Yes
- [ ] No
- [ ] There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- [ ] Advisory Conservation
- [ ] Voluntary Conservation
- [x] Mandatory Conservation
- [ ] Rationing
- [ ] Other

What factors caused your water shortage the previous year?

- [x] Drought
- [ ] Fire
- [ ] Landslides
- [ ] Earthquakes
- [ ] Flooding
- [ ] Water Supply Limitations
- [ ] Other

Do not mail, fax, or email this report to DOH

APPENDIX K

CROSS-CONNECTION CONTROL PLAN

CROSS-CONNECTION CONTROL PLAN

Okanogan Municipal Code (OMC) Section 13.10 addresses the Cross-Connection Control Plan (CCCP). The City of Okanogan uses "Cross-Track 5.2" computer software by Backflow Management Inc., for managing their CCCP. A copy of OMC 13.10 and a copy of the CCCP Manual with associated forms follow later in this appendix.

The City of Okanogan Public Works Water Department carries out the CCCP. A list of approved testers and specialists in the area is also attached.

Barry Featherly is the Water System Manager and is CCS-certified.

When the City is requested to provide a new water service connection, the customer fills out a water service application questionnaire and submits the construction drawings for the proposed development. The City reviews the questionnaire and submitted plans with respect to codes and regulations and the CCCP.

Records for the CCCP are recorded to a BMI Trac-5.2 computer-based program and paper records are kept for backup as well.

CCCP Public Notice educational and awareness publications are sent with the utility billings.

The following documents consist of:

- Cross-Connection Control Manual
- Okanogan Municipal Code Chapter 13.10, "Cross Connections"
- Cross-Connection Control Field Inspection Form
- Cross-Connection Control Plan Check
- List of Testing Locations
- Cross-Connection Control Program Survey
- Water Service Application

CROSS CONNECTION CONTROL MANUAL

I. DEFINITIONS

A. **Approved**

Accepted by the Building Inspector as meeting an applicable specification stated or cited in this regulation.

B. **Auxiliary Water Supply**

Any water supply to the premises other than the City's approved public potable water supply.

C. **Backflow**

The undesirable reversal of the flow of water or other substances through a cross-connection and into the piping of a public water system or consumer's potable water system.

D. **Backflow Prevention Assembly**

The nomenclature "assembly" refers to a backflow preventer that is designed to be in-line tested and repaired, and to meet the head loss and flow requirements of the recognized approval authority. The "assembly" consists of the backflow prevention unit, two resilient seated shutoff valves, and test cocks.

E. **Backflow Prevention Device**

The nomenclature "device" refers to a backflow preventer that is not designed for in-line testing.

1. **Air Gap (AG)**

A physical separation between the free-flowing end of a potable water supply pipeline and the overflow rim of an open or non-pressurized receiving vessel. To be an "approved air gap," the separation must be at least twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one inch. When located within three pipe diameters (measured horizontally) of a wall, the separation must be at least three times the diameter of the supply piping or four times the diameter of the supply piping for intersecting walls.

2. **Atmospheric Vacuum Breaker (AVB)**

A device that contains a float check (poppet), a check seat, and an air inlet vent. When water pressure is reduced to a gauge pressure of zero or below, the float check drops, allowing air to enter the device, and preventing backsiphonage. It is designed to prevent backsiphonage only.

3. **Double Check Valve Assembly (DCVA)**

   An approved assembly consisting of two independently operating check valves, loaded to the closed position by springs or weights, and installed as a unit with, and between, two resilient seated shut-off valves and having suitable connections for testing.

4. **Pressure Vacuum Breaker Assembly (PVBA)**

   An approved assembly consisting of a spring-loaded check valve loaded to the closed position and installed as a unit with, and between, two resilient seated shut-off valves and having suitable connections for testing. It is designed to protect against backsiphonage only.

5. **Reduced Pressure Backflow Assembly (RPBA)**

   An approved assembly consisting of two independently operated check valves, spring-loaded to the closed position, separated by a spring-loaded differential pressure relief valve loaded to the open position, and installed as a unit with, and between, two resilient seated shut-off valves and having four suitable test cocks for checking the water tightness of the check valves and the operation of the relief valve.

F. **Backpressure**

Backflow due to increased pressure above the supply pressure caused by pumps, gravity, or other sources of pressure.

G. **Backsiphonage**

Backflow due to negative or subatomic pressure in the distribution system.

H. **City**

The City of Okanogan or their duly authorized representative.

I. **Contamination**

An impairment of the quality of potable water creates an actual hazard to public health through poisoning or the spread of diseases by sewage, industrial fluids, or waste. Also defined as a severe or high hazard. Also see *Pollution*. The term "contamination" used in EPA and state drinking

water regulations "maximum contamination level" bestows a different meaning than that used in describing a cross-connection hazard.

J. **Cross-Connection**

Any actual or potential physical connection between a public water system and any source of non-potable liquid, solid, or gas that could contaminate the public water supply by backflow.

K. **Customer**

For purposes of cross-connection control, the owner or operator of a plumbing system is connected to a public water system via a service connection.

L. **Director**

The Director, or delegated representative, is in charge of the City of Okanogan Department of Public Works.

M. **In-Premise Protection**

A method of backflow prevention in which a backflow prevention assembly is installed on the customer's internal water supply line prior to a fixture, piece of equipment, or area that has been determined to have backflow potential. This shall effectively isolate the fixture, piece of equipment, or area from the rest of the customer's distribution system.

N. **Owner**

Any person who has legal title to, or license to operate or occupy, a property upon which a cross-connection inspection will be made or upon which a cross-connection is present.

O. **Person**

Any individual, partnership, company, public or private corporation, political subdivision, or agency of the State or the United States or any other legal entity.

P. **Pollution**

An impairment of the quality of the potable water supply does not create a hazard to public health but does adversely affect the aesthetic qualities of such potable waters for domestic use. Also defined as low hazard. See also *Contamination*.

Q. **Premise Isolation**

A method of protecting a public water system by installation of approved air gaps or approved backflow prevention assemblies at or near the service connection to isolate the customer's plumbing system from the purveyor's distribution system.

R. **Purveyor**

The Purveyor or delegated representative in charge of the City of Okanogan's water system.

S. **Reclaimed Water**

Effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for direct beneficial use or a controlled use that would not otherwise occur and is no longer considered wastewater.

T. **Water Service Entrance**

The point in the Owner's water system beyond the sanitary control of the City, is generally considered to be the outlet end of the water meter and always before any unprotected branch.

II. PURPOSE AND SCOPE

A. This Manual establishes minimum standards for the City to protect the public potable water supply from possible contamination of pollution due to backflow or backsiphon from a customer's private internal system into the public potable water system.

B. This Manual establishes minimum cross-connection control operating policies, provides guidelines and requirements for installation, testing, and maintenance of approved backflow prevention assemblies, and establishes permitting and inspection requirements for existing and new backflow prevention assemblies.

C. The purpose of this Manual is not to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this Manual.

III. AUTHORITY

A. The Federal Safe Drinking Water Act of 1974 (and amendments of 1996), the statutes of the State of Washington Title 43 RCW and Chapter 246-290-490 WAC require purveyors to "protect public water systems from contamination due to cross connections."

B. City of Okanogan Municipal Code, Chapter 13.10 regulates cross-connections.

IV. RESPONSIBILITY

A. The Director shall be responsible for administering the provisions of this Manual.

B. If the Director determines, consistent with the provisions of this Manual, a backflow prevention assembly is required at any Customer's premises, the Director, or his delegated agent, shall give notice to the Customer to install an air gap or approved backflow prevention assembly which isolates the customer's plumbing system from the City's distribution system.

C. Installation of required backflow protection assemblies shall be a condition of continued water service from the City. Service from the City's water supply system to any premises upon which the potential for backflow into the City's system exists shall be discontinued or refused unless corrective action is taken in accordance with this Manual.

D. Upon installation, the customer shall have the backflow prevention assembly tested once each year by a certified backflow assembly tester (BAT). The customer shall notify the Director in advance of the test so that a City representative can witness the test if desired. Records of the test and any required repair shall be submitted to the City within 30 days.

V. FAILURE TO COMPLY – VIOLATIONS - PENALTIES

Any person, firm, or corporation who willfully violates any provisions and requirements of this Manual, or the City municipal code shall be subject to discontinuance of supply of City water to the premise where the violation exists. Discontinuance of the City potable water supply to the premise shall remain in effect until corrective action, as required by the Director is completed, tested, and approved.

VI. REQUIREMENTS

A. General

1. Compliance with the provisions of the City of Okanogan's Cross Connection Control Manual shall be a condition of receiving the City's water supply.

2. It is unlawful for any person to allow any contaminants or pollutants to backfeed from their facility and/or property into the City distribution system. Any connections now existing or hereafter installed that could allow for backfeed or any contaminants or pollutants into the City's distribution system shall be disconnected and/or eliminated. Connections that cannot be disconnected and/or eliminated shall require the installation of the State of Washington-approved backflow protection assembly that shall be regularly inspected and tested in accordance with the City's Cross Connection Control Manual.

3. When the City requires that the public water supply be protected by premise isolation, the Owner shall be responsible for water quality beyond the outlet end of the premise isolation assembly and should utilize fixture isolation protection for that purpose. Fixture isolation assemblies shall be installed in accordance with the Uniform Plumbing Code.

4. The City may allow the public water supply to be protected by fixture isolation for existing customer connections. Such an allowance shall only be permitted so long as the Director determines that the level of protection is adequate to protect the City's distribution system, and the Owner agrees, in writing (unless waived by the City) to: (1) implement and maintain the fixture isolating backflow protection to the satisfaction of the City, and (2) comply with all applicable plumbing codes, including permitting requirements.

B. City of Okanogan

1. On new installations, the City will provide on-site evaluation and/or inspection of plans in order to determine the type of backflow prevention assembly, if any, that will be required.

2. For premises existing prior to the start of this program, the City will perform evaluations and inspections of plans and/or premises

and inform the Owner by letter of any corrective action deemed necessary, the method of achieving the correction, and the time allowed for the correction to be made. Up to sixty days will be allowed; however, this time period may be shortened by the Director depending on the degree of hazard involved and the history of the device(s) in question.

3. Premises are subject to inspection on or after the expiration date or required action to correct a cross-connection. Premises that have failed to comply with the City's request shall receive written notice, via registered mail, that their water service to the premise will be terminated within a period not to exceed thirty (30) calendar days.

4. In the event the Owner informs the City of extenuating circumstances as to why the correction has not been completed, the City may grant a time extension, up to, but not exceeding sixty (60) days.

5. If the City determines at any time that a serious threat to the public health exists, the water service shall be terminated immediately, provided, that notice will be posted on the premises affected at the time said service is terminated.

6. Inspection shall be done during the initial installation, during on-site reviews of existing installations, and after any relocation.

7. When an initial installation or test identifies a backflow prevention assembly is not properly functioning, the Owner shall correct the malfunction and have the assembly inspected and re-tested until the backflow device operates correctly.

C. Owner

1. The Owner shall be responsible for the elimination or protection, by an air gap or approved backflow prevention assembly, of all cross-connections on their premises.

2. The Owner after having been informed by a letter from the City shall, at their expense, install and maintain any and all required backflow prevention assemblies.

3. The Owner shall, at their expense, be responsible for having all backflow assemblies tested: (1) at the time of installation; (2) annually after installation, or more frequently if tests indicate

repeated failures to meet test criteria; and (3) after an assembly is repaired, reinstalled or relocated or an air gap is replumbed or replaced by an approved RPBA. The test shall be performed by a State of Washington certified Backflow Assembly Tester (BAT) and signed by the Owner. The results of the test shall be reported within 30 days to the Director on a form provided by or approved by the City.

4. The Owner shall, immediately, or no later than 30 days, or otherwise as directed by the Director, correct any malfunction of the backflow preventer which is revealed by periodic testing.

5. The Owner shall inform the City of any proposed or modified cross-connection and also any existing cross-connections of which the Owner has actual knowledge but has not been found by the City.

6. The Owner shall install only backflow prevention assemblies approved by the City.

7. Any Owner having a private well or other private water source shall not cross-connect to the City's system.

8. The Owner shall provide access of the premises to the City at the City's request. Failure to provide access to inspect facilities shall be grounds for termination of water service.

9. The Owner shall be responsible for the payment of all fees for permits, annual or semi-annual device testing, re-testing in the case that the assembly fails to operate correctly, and any re-inspection for non-compliance with City requirements. Permits and fee schedules shall be as specified in the applicable sections of the City of Okanogan's municipal code.

VII. INSTALLATION AND TESTING – MINIMUM REQUIREMENTS

A. Minimum requirements for the installation and testing of all backflow protection assemblies shall be in accordance with the Cross Connection Control Manual – Accepted Procedure and Practice produced by the Pacific Northwest Section, American Water Works Association (PNWS/AWWA), Sixth Edition, December 1995, including subsequent revisions adopted by reference herein. A copy is available for viewing at the Public Works Department of the City of Okanogan, additional copies can be purchased from the PNWS/AWWA.

B. In addition, all backflow protection assemblies shall be installed at a location that is easily accessible for inspection and testing. Assemblies located in vaults shall have adequate clearances and depths to allow the City to inspect and test. Assemblies that cannot be easily and readily inspected shall be required to be relocated and re-plumbed as required by the City. The Owner shall contact the City for applicable installation requirements and standards.

C. All bypass lines parallel to a line on which a backflow prevention assembly is installed shall have an approved backflow prevention assembly installed that is equal in type to the assembly required by the City on the main line.

VIII. BACKFLOW PROTECTION DEVICES

A. All backflow protection assemblies (RPBAs, RPDAs, DCVAs, DCDAs, PVBAs, and AVBs) installed for the protection of the public water supply shall be models included on the current approved DOH backflow prevention assemblies list titled "Backflow Prevention Assemblies Approved for Installation in Washington State" or other such agency acceptable to the Director. A copy is available for viewing at the Public Works Department of the City of Okanogan, additional copies can be requested from the DOH.

B. Any existing backflow protection assembly in use, but not currently listed by DOH, can continue to be used, provided all the following conditions are met:

1. The assemblies were included on the City and/or DOH list of approved backflow prevention assemblies at the time of installation;

2. The assemblies have been properly maintained;

3. The assemblies are functioning properly based on inspection by the City and testing by a certified Backflow Assembly Tester;

4. The degree of protection is satisfactory for the protection of the City's water system as determined by the Director.

C. When an unlisted assembly does not meet the above conditions, is moved, or cannot be repaired using spare parts from the original manufacturer, the assembly shall be replaced by an assembly currently listed as approved by the DOH or other such agency acceptable to the Director.

IX. APPLICABILITY

A. The provisions of this Manual are applicable to all connections of the City's water supply. The City recognizes there are varying degrees of risks associated with different types of uses and will consider this when determining if a cross-connection exists and when determining an applicable backflow prevention assembly.

B. The following tables, Tables 1, 2, 3, and 4 are derived from the Pacific Northwest Section – American Water Works Association's Cross Connection Control Manual, Accepted Procedures and Practices, Sixth Edition, December 1995. These tables, subject to revisions, provide minimum requirements and guidance for the assessment of the degree of hazard and required level of protection. If the actual degree of hazard is determined, by the Director to be higher than these tables indicate, a higher level of protection may be required.

Table 1 Summarizes the relative level of protection provided by the different categories of assemblies and devices.

Table 2 A list of customer categories or types of water use where premise isolation is required in all cases.

Table 3 A list of customer categories or types of water use where premise isolation is required for existing service connections in accordance with the provisions of Section VI, GENERAL, D. of this Manual.

Table 4 A list of some of the fixtures, equipment, or uses of water that may constitute a cross connection and the minimum level of protection required.

TABLE 1

Relative Level of Protection

Abbreviations	Description/Application Summary[1]	Relative Level of Protection[2]
AG	Approved Air Gap For high and low health hazards, backpressure, and backsiphonage	1
RPBA	Reduced Pressure Backflow Assembly	2
RPDA	Reduced Pressure Detector Assembly For high and low health hazards, backpressure, and backsiphonage	
DCVA	Double Check Valve Assembly	3
DCDA	Double Check Detector Assembly For low health hazards only, backpressure and backsiphonage	
PVBA	Pressure Vacuum Breaker Assembly	4
SVBA	Spill-Resistant Vacuum Breaker Assembly For high and low health hazards, backsiphonage only	
AVB	Atmospheric Vacuum Breaker	5
HBVB	Hose Bib Vacuum Breaker	
LFVB	Lab Faucet Vacuum Breaker For very low health hazards, and backsiphonage only	
DCAV	Dual Check Valve with Atmospheric Vent	
DCV	Dual Check Valve or Meter Check Valve (Dual) For very low health hazards, backpressure and backsiphonage	

(1) The above description of applicable and relative level of protection is based on the perspective of the City's selection of assemblies and devices for the prevention of the contamination of the water distribution system. Plumbing codes may classify some devices as providing higher levels of protection and as suitable for both backpressure and backsiphonage.

(2) This Manual does not address the location, inspection, and testing of AVB's, HBVB's, LFVB's, DCAV's, and DCV's.

TABLE 2

Mandatory Service Isolation

Category of Premise or Use of Water	Assessed Health Hazard	Minimum Protection Recommended at Meter
Radioactive Material Processing Plants or Nuclear Reactors	Severe	RPBA & AG
Sewer Treatment Plants or Sewage Pump Station	Severe	RPBA & AG
Hospitals, Medical Centers, Medical/Dental or Vet Clinics, Plasma Centers, Blood Plasma Centers, Nursing Homes	High	RPBA
Mortuaries	High	RPBA
Laboratories	High	RPBA
Metal Plating Industries	High	RPBA
Petroleum Processing or Storage Plants	High	RPBA
Food Processing and Beverage Bottling Plants, Canneries, Packing (Slaughter) Houses	High	RPBA
Film Processing Facilities	High	RPBA
Piers and Docks, Graving Docks, Boat Marinas, Dry Docks	High	RPBA
Commercial Laundries and Dry Cleaners	High	RPBA
Premises Restricting Inspection	High	RPBA
Premises with Unapproved Auxiliary Supply, Including Reclaimed Water		
New	High	RPBA
Existing		
Interconnected with Potable Water Supply	High	RPBA
Not Interconnected with Potable Water Supply	Low	DCVA
Premises with Approved Auxiliary Supply	Low	DCVA
Car Washes	High	RPBA
Premises with Fire Sprinkler Systems and/or Private Hydrants		
With Chemical Addition	High	RPBA/RPDA
Without Chemical Addition	Low	DCVA/DCDA
Tall Buildings (Over 30 feet) – Elevation Above the Connection Between the Service Line and the Distribution System	Low	DCVA
Irrigation Systems – Individually Metered and Supplied by Domestic Water Supply		
With Chemical Addition	High	RPBA
Without Chemical Addition	Low	DCVA

TABLE 3

Recommended Service Isolation

Category of Premise or Use of Water	Assessed Health Hazard	Minimum Protection Recommended at Meter
Battery Manufacturing/Repair Facilities	High	RPBA
Ice Manufacturing and Cold Storage Plants	High	RPBA
Residential Irrigation	Low	DCVA

TABLE 4

Recommended Protection at Fixture and Equipment

Description of Fixture, Equipment, or Use of Water[(1)]	Assessed Health Hazard	Minimum Protection at Fixture	Additional Premise or Internal Isolation[(2)]
Air Compressor	Low	DCVA	
Air Conditioning Systems	High	RPBA	
Air Washers	High	RPBA	
Aquarium, Make-Up Water	High	AG/RPBA	
Aspirators, Medical/Lab	High	AVB	RPBA
Aspirators, Medical/Lab	High	RPBA	
Aspirator, Weedicide, Herbicide, and Pesticide	High	RPBA	
Aspirator, Vault Drain	High	RPBA	
Autoclave	High	RPBA	
Autopsy Table	High	RPBA	
Baptismal Fountain	High/Low	RPBA, AG/AVB	
Bathtub, Below Rim Filler	High	RPBA	
Bedpan Washer	High	RPBA	
Post-Mix Beverage Dispenser Using CO_2	High	RPBA	
Bidets	Low	AVB	
Boiler Feed Lines	High	RPBA	
Bottle Washing Equipment	High	RPBA	
Bottle Washing Equipment	High	PVBA/AVB	RPBA
Box Hydrant (Irrigation)	High	PVBA/DCVA	
Brine Tank	Low	AG/DCVA	
Can Washing Equipment	High	RPBA	
Can Washing Equipment	High	PVBA/AVB	RPBA
Chemical Feed Tank for Industrial Process	High	AG/ RPBA	RPBA
Chemical Feeder for Commercial Cleaners	High	AG/ RPBA	RPBA/DCVA
Chemical Feeder for Commercial Cleaners	High	AVB/PVBA	
Chlorinators	High	RPBA	
Commercial Coffee Urns	Low	AG/AVB	
Computer Cooling Lines	High	RPBA	
Condensation Tanks	High	RPBA	

Commercial Cooling Kettles	Low	AG/AVB	

TABLE 4 – (continued)

Recommended Protection at Fixture and Equipment

Description of Fixture, Equipment, or Use of Water[1]	Assessed Health Hazard	Minimum Protection at Fixture	Additional Premise or Internal Isolation[2]
Cooling Towers	High	AG/RPBA	
Decorative Ponds	High	AG/RPBA	
Degreasing Equipment	High	RPBA	
Dental Equipment/Cuspidors	High	RPBA	RPBA
Dialysis Equipment	High	RPBA	
Dishwashers	Low	AVB	
Drinking Fountains	Low	AG	
Dye Vats and Tanks	High	AG/RPBA	
Etching Tanks	High	AG/RPBA	RPBA
Fermenting Tanks	High	AG/RPBA	RPBA
Fertilizer Injection	High	RPBA	
Film Processors	High	RPBA	
Fire Department Connection	Low	DCVA	
Fire Sprinkler System without Chemical Addition	Low	DCVA/DCDA	
Fire Sprinkler System with Chemical Addition	High	RPBA/RPDA	
Floor Drains	High	AG	
Flushing Floor Drains	High	AVB	DCVA
Fume Hoods	High	AVB	RPBA
Garbage Can Washers	High	RPBA	
Heat Exchangers Other than Double Wall with Leak Path	High	RPBA	
Heat Pumps	High	RPBA	
High-Pressure Washers without Chemical Injection	Low	DCVA	
Hose Bibs (Residential)	Low	AVB/HBVB	
Hose Bibs (Industrial)	Varies	AVB/HBVB	RPBA/DCVA
Hoses, Kitchen Rinse	Low	AVB	
Hot Tubs	High	AG/RPBA	
Commercial Hot Water Heating Boilers	High	RPBA	
Hydrotherapy Baths	High	RPBA	
Ice Makers	High	AG/RPBA	
Industrial Fluid Systems	High	RPBA	
Intertied (Looped) Services	Low	DCVA	
Irrigation System (Lawn) with Chemical Addition	High	RPBA	
Irrigation System (Lawn) without Chemical Addition	Low	PVBA/DCVA	

TABLE 4 – (continued)

Recommended Protection at Fixture and Equipment

Description of Fixture, Equipment, or Use of Water[(1)]	Assessed Health Hazard	Minimum Protection at Fixture	Additional Premise or Internal Isolation[(2)]
Janitor Sinks	Low	AVB/HBVB	
Kitchen Equipment	Low	AVB	
Laboratory Equipment	High	AVB/LFVB	RPBA
Laundry Machines, Commercial	High	RPBA	
Livestock Drinking Tanks	High	AG/AVB	DCVA
Make-Up Tanks	High	AG/ RPBA	
Mobile Carpet Cleaners	High	RPBA	
Pesticide Applicator Trucks	High	AG/RPBA	
Photo Developing Sinks/Tanks	High	RPBA	
Private Fire Hydrants	Low	DCVA	
Pump Prime Lines	High	RPBA	
Radiator Flushing Equipment	High	RPBA	
Recreational Vehicle Dump Station	Severe	AG	RPBA
Sewer Connected Equipment	Severe	AG	
Sewer Flushing	Severe	AG	
Spas	High	AG/RPBA	
Steam Generating Equipment	High	RPBA	
Sterilizers	High	RPBA	
Stills	High	RPBA	
Sumps	High	AG	
Swimming Pools	High	AG/RPBA	
Trap Primers	High	AG	
Used or Gray Water Systems	High	RPBA	
X-Ray Equipment	High	RPBA	

(1) The information in Table 4 may differ from the backflow prevention requirements for individual plumbing fixtures found in plumbing codes. For public health protection within a customer's premise, the Uniform Plumbing Code governs. Table 4 is provided to illustrate only some of the health hazards found in plumbing systems. This table will be used by the City in assessing the degree of hazard a customer's plumbing system places upon the City's water distribution system. Deficiencies in backflow prevention within the customer's premise should be compensated for through the selection of an appropriate assembly for premise isolation.

(2) Where a high health hazard is assessed, the use of an atmospheric vacuum breaker or other backflow device for protection at a fixture should only be allowed when area or premise isolation is provided by an approved backflow assembly.

X. ADMINISTRATIVE PROCEDURES

The City of Okanogan is in compliance with DOH cross-connection control requirements. No additional administrative procedures are necessary to correct the existing program.

The following requirements are based on the most current edition of the Cross Connection Control Manual published by the PNWS-AWWA. These requirements are provided for clarification and in any disagreement between these listed below and requirements listed elsewhere in this Manual, the more restrictive shall govern. As described elsewhere in this Manual, the premise isolation requirements may be waived or reduced for certain existing businesses, providing certain conditions are met.

A. **Minimum Requirements**

1. RPBAs

   a. Premises on which materials dangerous to health or wherein toxic substances are handled, shall be required to have an approved reduced backflow assembly installed at the service connection.

   b. Premises where entry is physically restricted so that inspections for cross-connections cannot be made sufficient to assure that cross-connections do not exist, shall be required to have an approved reduced pressure backflow assembly installed at the service connection.

   c. Premises having an auxiliary water supply with internal cross-connections that are not correctable, or intricate plumbing arrangements which make it impractical to ascertain whether or not cross-connections exist, shall be required to have an approved reduced pressure backflow assembly installed at the service connection.

2. DCVAs

   a. Premises which handle a substance that is objectionable, although not a health hazard, in a manner constituting a potential cross-connection, shall be required to have an approved double check valve assembly installed at the service connection.

   b. Premises having an auxiliary water supply with no known cross connections shall be required to have an approved double check valve assembly installed at the service connection.

c. Premises on which any substance that is not a health hazard but is under pressure so as to enable entry into the public water supply or where a cross-connection could reasonably be expected to be present, shall be required to have an approved double check valve assembly installed at the service connection.

d. Premises which have a repeated history of cross-connections being established or re-established, shall be required to have an approved double check valve assembly installed at the service connection.

3. Fire Protection Systems

a. Premises having a fire protection system where no chemicals are allowed to be used shall be required to have an approved double check valve assembly (DCVA) or approved double check detector assembly (DCDA) installed at the fire service connection.

b. Residential premises having a fire protection system where no chemicals are allowed to be used, shall be required to have an approved double check valve assembly (DCVA) installed at the water service connection.

c. Residential fire systems with a flow-through system using approved potable water pipes and materials shall not be required to install backflow protection.

4. Irrigation Systems

a. Premises having an irrigation system where chemicals or herbicides are allowed to be used, shall be required to have an approved reduced pressure backflow assembly installed at the service connection.

b. Non-residential premises having an irrigation system which is subject to flooding, backpressure, elevated piping, or where compressed air is allowed to be used, shall be required to have an approved double check valve assembly installed at the service connection.

c. Non-residential premises having an irrigation system which does not fall into one of the prior categories, shall be required to have an approved pressure vacuum breaker

assembly or double check valve assembly installed on the system.

B. **New and Proposed Construction**

1. Upon application for a building permit, the Building Official or authorized designate shall require detailed plans and specifications for the plumbing installation. The customer shall also be required to complete a Cross Connection Control Program Survey.

2. The Building Official, or authorized designate, shall review these plans, specifications, and survey to determine the probability of cross-connections, the availability of auxiliary water supply, and the handling of substances which, if introduced into the water supply, would constitute a health, plumbing, or system hazard.

3. During the construction phase of any new building, structure, or ground installation, and during the plumbing inspection, the Building Official or authorized designate will also perform the required cross-connection control inspection. Upon completion of the plumbing inspections, the Building Official or authorized designate shall complete the Cross Connection Control Field Inspection Form (shown at the end of the Appendix), to document that subject cross connection control inspection has been made and to document the location of any and all backflow prevention assemblies and/or devices.

4. All backflow prevention assemblies installed internally or at the service connection shall be tested by a certified Backflow Assembly Tester and the test reports submitted to the Building Official or authorized designate (using the Backflow Assembly Test Report form shown at the end of the Appendix).

C. **Existing Building, Structures, and Grounds**

A systematic program of inspection has been established with priority given on the basis of risk to public health and is conducted as outlined below.

1. A form letter will be sent to each commercial and industrial metered customer explaining the program and stressing the relationship between cross connections, water-borne disease epidemics, and types of health hazards. The duties and liabilities of the Owners or Managers as well as the rules and regulations that apply, will be explained. The letter will also include a

questionnaire of desired information such as the type of water used on the premises, auxiliary water supplies, chemicals used, and certain types of fixtures installed. These questionnaires are to be returned to the Building Official or authorized designate.

2. Based on the known information of the customer's operation and the information received on the questionnaire, an inspection schedule will be prepared based on the location of the hazard within the facility and the degree of hazard posed to the utility.

3. Approximately 10 days prior to the scheduled date of inspection, the City will contact the Owner requesting an appointment with the Owner/Manager of the premises to discuss the necessity for the inspection and other pertinent matters.

4. On the appointed date, the Building Official or authorized designate will meet with the Owner/Manager and explain the purpose of the inspection. The Building Official or authorized designate will suggest the Owner/Manager appoint an individual from his firm who is knowledgeable with the firm's plumbing system to accompany the inspectors. At this time, the Building Official or authorized designate can obtain any blueprints or drawings of the "in-plant" systems that are available and discuss any questions or other problems the Owner/Manager may have.

5. On the date of the scheduled inspection, the City of Okanogan's Inspector, with the Owner's representative, will make a complete physical survey of all exposed piping. The underground system is to be checked as accurately as possible. All lines will be sketched on a field drawing, except where intricate plumbing arrangements make it impractical. In this case, an "as-built" drawing will be requested. Each line shall be followed to its end and a survey made to determine whether there are any actual or potential cross connections or any conditions that might tend to pollute the potable water system.

6. Immediately upon completion of the survey, the inspection team will orally brief the Owner/Manager of their findings.

7. The inspection team will prepare a written report that will include, but shall not be limited to, the following:

    a. Complete identifying information;

b. All cross-connections found, their location, and optional methods of control;

c. All industrial fluids, chemicals, or other contaminating liquids used or pumped under pressure and their use and probability of cross connections;

d. Any applicable drawings, sketches, blueprints or other documents used in support of the inspection;

e. Summary of findings;

f. Specific recommendations.

8. The inspection team will submit a copy of the completed report to the Building Official or authorized designate.

9. Upon completion of the review of the report, the Building Official or authorized designate shall prepare a letter to the respective customer. The letter will outline the findings of the report, the corrective action required, and establish a corrective action completion date (usually 60 days). A copy of the report will be maintained on file for review by the State Department of Health.

10. On the corrective action completion date, or soon thereafter, the Inspector shall take a copy of the report and re-inspect the items that required corrective action.

11. Upon completion, the Inspector shall report in writing to the Building Official or authorized designate, the results of the re-inspection.

12. After receiving the results of the re-inspection the Building Official or authorized designate shall take such action as deemed appropriate under the provisions of the City's Cross Connection Control Manual.

13. When all required actions have been completed and the device(s) tested by a certified Backflow Assembly Tester, a letter shall be sent to the Owner. Said letter will inform them of the annual testing requirements, including maintaining all backflow prevention devices in proper operating order as evidenced by submission, to the city, of the annual testing report.

D. **Residential Education and Awareness**

The City may develop or acquire pamphlets and/or bill stuffers to send to all of the water system customers. These shall include, but are not limited to, the following subjects:

1. Home irrigation safety;

2. Residential fire sprinkler systems;

3. Health hazards associated with hose connections (chemical sprayers, radiator flush kits, etc.), utility sinks, and other household dangers

If the City develops this program, this information shall be mailed directly to the customers.

The City shall also take advantage of other opportunities for public education by developing a traveling exhibit that can be set up at community events, schools, and City Hall.

E. **Registering of Certified Testers**

The City will maintain a list of Backflow Assembly Testers (BATs) that may be provided to customers. Persons or organizations wishing to be added to this list will be required to provide the City with copies of the following:

1. Proof of current certification by the State of Washington as a BAT for all persons that are authorized to perform tests.

2. Proof of current calibration tests performed for all testing equipment (annual calibration is required).

3. A copy of a current business license authorizing the company to work in the City of Okanogan.

F. **Record Keeping and Tracking of Assemblies**

The City maintains records that meet all of the record-keeping requirements of the State and allow effective monitoring and tracking of customer compliance with the annual backflow assembly testing and requirements. The general content of the City's records are as follows:

Information on each assembly will include:

1. Location of the business (or water service).

2. Location on premises (some businesses may have multiple devices).

3. Initial inspection information for each location (inspector, date, survey number, comments).

4. Installation information (installed by, contact information, date installed, specific location, water line size, water pressure, hazard level, and hazard protected).

5. Assembly information (assembly number, type, manufacturer, size, model, serial number, and inspection period).

6. Complete testing history (initial and final test results for each year with: pass/fail, test type, date, tester's name and certification number, line pressure and test results for all three valves, repair information, test kit information, and Owner's signature).

Chapter 13.04
WATER

Sections:

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13.04.420 Fire protection service.

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13.04.450 Water-sewer fund.

13.04.460 Violation – Civil infraction.

13.04.010 Water department established.

There is and is created for the city a water department. (Ord. 43A § 1, 1910)

13.04.020 City of Okanogan books of account.

A. The city clerk-treasurer is appointed as chief financial officer of the water department.

B. Moneys due the city for the furnishing of water service of any kind shall be paid to the clerk-treasurer upon statements rendered to users. The city clerk-treasurer shall keep accurate books of account of all water charges and other monetary transactions connected with the water department, and the same shall at all times be open to inspection of the mayor and council or any person or persons delegated by the council to inspect the same. (Ord. 1118 § 1, 2011; Ord. 52 § 1, 1912; Ord. 43A § 2, 1910)

13.04.030 Rules and regulations.

The rules and regulations set out in this chapter are established for the fixing, regulating and controlling of the use and price of water supplied by the city and providing penalties for violation thereof. (Ord. 43A § 3, 1910)

13.04.040 Application for service.

A. All applications for the use of water must be made at the clerk-treasurer’s office on printed forms to be furnished by the public works department for that purpose; such application must be made by the owner or authorized agent of the property to which the water is to be furnished; the applicant shall state fully all the purposes for which the water may be required and must agree to conform to the rules and regulations, and any modification thereof, that may be established from time to time, as a condition for the use of water.

B. Each connection application for a new structure or expansion of use thereof within the municipal limits of the city of Okanogan shall require application for a sanitary sewer and/or water connection permit upon the application forms as provided by the city. Such sanitary sewer or water connection approval shall only be issued by the city if such applications are made together and concurrently with or subsequent to the issuance of a building permit for the construction of a single- or multiple-family residential, commercial business or establishment, industrial business or establishment, or public use, hereinafter “building permit,” requiring sanitary sewer or water service from the city. Such actual sewer and water connections shall be made within the time limits established under such building permit, or extensions thereof, and shall expire on the expiration date of such building permit. Water connection applications may only be approved without concurrent sewer application where alternate sewerage systems have been reviewed and accepted by the public works department, and where physical connection to the city’s sewer system has been confirmed by the city to be unavailable or impractical.

C. Each sewer connection application for an existing structure or use within the sewer service area shall make application for water service if water service is available as provided elsewhere in this code, except if said structure or use is served by an approved existing water source.

D. An applicant may request a refund of application fees when the owner or authorized agent does not proceed with the development activity for which water connection fees were paid, and the applicant shows that no impact has or will result, and the city has not yet spent or encumbered the fees; however, the connection fee shall not be refunded if the city has spent or encumbered the fees.

E. If water connection fees must be refunded for any reason, the city council may authorize the refund of not more than 80 percent of the fees collected. The refund will be issued to the owners as they appear of record with the Okanogan County assessor at the time of refund. (Ord. 1231 § 1, 2024; Ord. 1118 § 2, 2011; Ord. 1081 § 2, 2007; Ord. 43A § 4, 1910)

13.04.050 Name of accounts.

All accounts for water shall be kept in the name of the owner of the property, when known, and all charges shall be made against the property, as well as the owner thereof; no change of ownership or occupancy shall affect the application of this section. (Ord. 43A § 5, 1910)

13.04.060 Payment of charges.

All bills for water by fixed rate are due and payable monthly on the twelfth day of the month, at the office of the clerk-treasurer, regardless of notice to the consumer, and if not paid on or before the

twelfth day of the month, a penalty as specified in the current fee schedule will be added and if not made, water service may be terminated except as outlined in Chapter 13.12 OMC. The water will not be turned on until all the charges due are paid except as outlined in Chapter 13.12 OMC. When the twelfth or last day for the payment of water falls upon a Sunday or any legal holiday, the consumer will be allowed the next succeeding business day on which to pay before the penalty for nonpayment attaches. (Ord. 1223 § 1, 2023; Ord. 1118 § 3, 2011; Ord. 43A § 6, 1910)

13.04.070 Use of water.

No person supplied with water from the city water system shall be entitled to use it for any purpose other than those stated in the application, nor add any fixtures, or supply in any way, or for any purpose, other persons or families without first securing permit for the same from the city. See Chapter 13.10 OMC. (Ord. 1118 § 4, 2011; Ord. 43A § 7, 1910)

13.04.080 Hookup.

When a permit has been obtained for the use of water and the charges prescribed in this chapter for the services have been paid to the clerk-treasurer's office, the service will be put in as soon as it is practicable for the city to do so. The charges for hookup services including the cost of and installation charges for water meters shall be established by ordinance based upon pipe size and/or connection type as specified. (Ord. 1118 § 5, 2011; Ord. 762 § 7, 1992; Ord. 705 § 7, 1988; Ord. 184 § 1, 1946; Ord. 86 § 1, 1918; Ord. 43A § 8, 1910)

13.04.090 Service pipe and meter location.

All service pipes must come directly from the city water main and shall not cross any intervening lands not owned by the city or the applicant or within an approved utility corridor and shall be laid not less than 36 inches below the surface of the ground with the meter placed on the city's utility easement near the outside line of owner's property, all of which will be put in and maintained by the city and kept within its exclusive control. (Ord. 1118 § 6, 2011; Ord. 43A § 9, 1910)

13.04.100 Operation of city meter valve.

No person except an employee of the public works department will be allowed to turn the water off or on at the city's meter valve after the plumbing has been completed and the water turned on by the city. (Ord. 1118 § 7, 2011; Ord. 43A § 10, 1910)

13.04.110 Expense of pipes and connections.

All pipes and connections from the city's water main to the city's meter vault/box located near the applicant's property line shall be installed by the city at the expense of the property owner. The property owner shall be responsible for the installation, maintenance and future operation of all

water lines extending from the city's meter vault/box to the applicant's structure. Any individual who knowingly accesses, operates, tampers with the city-owned portion of the pipes and connections which results in damages/alterations to the city's property shall be liable for any and all costs incurred by the city in repairing such damages. (Ord. 1118 § 8, 2011; Ord. 43A § 10, 1910)

13.04.120 Depth of service pipe.

All pipes leading from the city's meter shall be laid not less than 36 inches below the surface of the ground and no work shall be covered until it has been inspected and accepted by public works. (Ord. 1118 § 9, 2011; Ord. 43A § 12, 1910)

13.04.130 Permit for work on pipes.

No plumber or other person will be allowed to make connection with the city's mains or to make alterations in conduits, pipe or other fixtures connecting therewith, or to connect pipes when they have been disconnected, or to turn water off or on at any premises at the city's meter valve without a permit from the clerk-treasurer's office. (Ord. 1118 § 10, 2011; Ord. 43A § 13, 1910)

13.04.140 Working without required permit.

Repealed by Ord. 1118. (Ord. 616, 1982; Ord. 43A § 14, 1910)

13.04.150 Resumption of service.

Should it be desired to have the water turned on after it has been turned off, or where new services have been put in and the plumbing is completed, a request by the owner or his/her authorized agent must be given to the city to restore or initiate service. The city will restore or initiate only after the property owner's request and verification that there are no defective or leaky faucets, closets or other fixtures. If such defects are observed, the water will be turned off. (Ord. 1118 § 12, 2011; Ord. 43A § 15, 1910)

13.04.160 Unauthorized turn-on.

Should the water be turned on to any premises by anyone without authorization by the public works department after it has been turned off at the city's meter, it will be locked out and will not be turned on again until all regular charges together with any additional fees, fines or penalties, as described in OMC 13.04.410 and Chapter 13.12 OMC, have been paid. (Ord. 1118 § 13, 2011; Ord. 43A § 16, 1910)

13.04.170 Vacant premises.

Should it be desired to discontinue the use of water supplied to vacant premises for a period of not less than 30 days, notice must be given to the clerk-treasurer's office. The water will then be turned off and turned on again on written application, subject to applicable charges, but no remission of

charge will be made for a period of less than 30 days, or without the notice prescribed in this section. (Ord. 1118 § 14, 2011; Ord. 43A § 17, 1910)

13.04.180 Discontinuance of use.

Should it be desired to discontinue the use of water to any property or connection thereon, notice shall given in writing at the clerk-treasurer's office before any reduction will be made in the rate. (Ord. 1118 § 15, 2011; Ord. 43A § 18, 1910)

13.04.190 Partially vacant premises.

Multifamily residential and multi-tenant commercial structures shall be charged a base rate for the total number of units available for rental regardless of occupancy/rental status so long as water is available for use. (Ord. 1118 § 16, 2011; Ord. 43A § 19, 1910)

13.04.200 Shutoff for repairs – Boiler safety valves.

The water may at any time be shut off from the mains, without notice, for repairs, extensions or other necessary purposes, and persons having boilers supplied by direct pressure from the mains are cautioned against danger of explosion or collapse, and where meters are in use or to be used on such service, a safety valve shall be placed between the boiler and the meter at the owner's expense, who shall be held responsible to the city for all damages to meters caused by hot water. The city will not be responsible for the safety of boilers on the premises of any water consumer. (Ord. 43A § 20, 1910)

13.04.210 Sprinkling suspensions.

The city council reserves the right to promote conservation and in case of a shortage of water, or an emergency to make an order forbidding or suspending the use of water for sprinkling purposes, and may at its discretion, at any time, make such an order by giving notice through a public announcement, the city official newspaper, radio and/or handout or otherwise. Violation of this order may result in civil penalties and the water will be turned off except as outlined in Chapter 13.12 OMC and so remain until the penalty and other charges due are paid. (Ord. 1223 § 1, 2023; Ord. 1118 § 17, 2011; Ord. 43A § 21, 1910)

13.04.220 Use during fire.

Repealed by Ord. 1118. (Ord. 43A § 22, 1910)

13.04.230 Inspections.

Public works may conduct inspections of any and all buildings within the city in order to inspect the conditions of pipes and fixtures therein and to perform repair functions; provided, that such inspections shall be conducted during normal business hours; and provided further, that the

employees of the water department shall first present proper credentials and obtain the consent of the owner or occupier of the premises to the inspection. In the event that consent to inspect and/or repair pipes or fixtures is not granted by the owner or occupier of the building in question, inspection shall not be conducted on the premises except pursuant to warrant issued by the municipal court of the city or any other court of competent jurisdiction, upon a finding of reasonable cause for the inspection and/or repair. (Ord. 1118 § 19, 2011; Ord. 616, 1982; Ord. 43A § 23, 1910)

13.04.240 Access to meter covers.

Property owners/tenants shall maintain clear access to the water meter covers at all times. All persons are prohibited from impeding access to meters by piling rubbish or building material, parking vehicles, erecting fencing, or any other actions that prevent or limit city employee access thereto. (Ord. 1118 § 20, 2011; Ord. 43A § 24, 1910)

13.04.250 Service for specific purposes.

Water for residential, commercial or irrigation uses will not be furnished to consumers who do not pay for the use of water, and the water will be turned off from any such premises in the event that payments are discontinued except as outlined in Chapter 13.12 OMC. (Ord. 1223 § 1, 2023; Ord. 1118 § 21, 2011; Ord. 43A § 24, 1913)

13.04.260 Metered service for irrigation – Rates and policies.

A. Services to supply water for irrigation shall be metered and properly sized as determined in OMC 13.04.040.

B. Proper backflow prevention devices are required on all irrigation services as set forth in the cross-connection policies of the city.

C. In the event that a temporary water shortage exists as determined by the city public works department, the city may temporarily order interruption of water usage for irrigation purposes under this subsection. (Ord. 1223 § 1, 2023; Ord. 1118 § 22, 2011; Ord. 43A § 26, 1910)

13.04.270 Applicability of sprinkling rates.

Repealed by Ord. 1118. (Ord. 43A § 27, 1910)

13.04.280 Sprinkling hoses and nozzles – Wasting water.

Wasting water is prohibited; continuance will be the basis for discontinuance of service. Violations of this rule shall be subject to fines as set forth in the current fee schedule. Repeated violations may be subject to termination of service until such time as these fines have been paid. (Ord. 1118 § 24, 2011; Ord. 43A § 28, 1910)

13.04.290 Unmetered water rates.

Repealed by Ord. 1118. (Ord. 43A § 29, 1910)

13.04.300 Rates for uses not mentioned.

For water for other uses or businesses than those mentioned in this chapter, charges shall be made by special rates as ordered by the city council. (Ord. 43A § 30, 1910)

13.04.310 Meters – Right to require.

The city council reserves the right to place a water meter on each service for the purpose of measuring the water supplied to the premises by such service, and payment for the same shall be made at the same time and in the same manner as prescribed in OMC 13.04.060. (Ord. 1118 § 26, 2011; Ord. 43A § 31, 1910)

13.04.320 Meters – Installation to check consumption.

A water meter shall be placed on all service connections, for the purpose of measuring the water supplied to the premises by such service, but in no case shall more than one service be placed on any one meter. All meters shall be and remain the property of the city and may be removed and replaced at the option of the city council. (Ord. 1118 § 27, 2011; Ord. 43A § 32, 1910)

13.04.330 Meters – Installation upon request.

A. Meters will be put in by the public works department upon application to the city council and deposit of the cost of same by the person or firm applying therefor. All meters shall be and remain the properties of the city and may be removed whenever the city elects.

B. In all cases where meters are lost, damaged or broken by the carelessness or negligence of owners or occupants of premises, they shall be repaired by the public works department, and the cost charged against the owner or occupant of the premises. In case of nonpayment the water shall be shut off, and in no case turned on again until all charges have been paid except as outlined in Chapter 13.12 OMC.

C. In the event of a meter getting out of order, or failing to register properly, the consumer shall be charged at the average monthly consumption as shown by the meter reading during the last three months that the same was in good order. (Ord. 1223 § 1, 2023; Ord. 1118 § 28, 2011; Ord. 52 § 2, 1912; Ord. 43A § 33, 1910)

13.04.340 Meters – Payment of charges.

Public works may require payment in advance or satisfactory security for all water to be furnished by meter, and if such payment is not made or security furnished within the time fixed by public

works, water will be shut off from the premises concerned until such charges have been paid except as outlined in Chapter 13.12 OMC. A base or standby charge shall be applied to all properties where a meter has been installed regardless of current use. (Ord. 1223 § 1, 2023; Ord. 1118 § 29, 2011; Ord. 52 § 2, 1912; Ord. 43A § 34, 1910)

13.04.350 Meters – Reading.

All meters shall be read on or near the fifteenth day of each and every month by the public works department. If the director of public works discovers that any meter has been tampered with or the seal broken, the director of public works shall shut off the water supply until the full amount of fixed rate for the month, together with the expense of turning water off and on, has been paid to the city clerk-treasurer. The current amount for the fee is set forth in the city's annual fee schedule as adopted by ordinance. (Ord. 1118 § 30, 2011; Ord. 52 § 2, 1912; Ord. 43A § 35, 1910)

13.04.360 Meters – Location.

The public works department shall have full charge of the placing of all meters and shall not locate any meter where it will be in danger of freezing or being otherwise damaged. (Ord. 1118 § 31, 2011; Ord. 52 § 2, 1912; Ord. 43A § 35, 1910)

13.04.370 Special rates.

The director of public works is not authorized to grant special rates for any purpose nor to supply water for any purpose until regular rates have been paid, except by order of the city council. The right is reserved by the city to amend or to add to these rules and regulations and provisions or to change the water rates provided for in this chapter, as experience shows to be necessary or expedient. (Ord. 1118 § 32, 2011; Ord. 52 § 2, 1912; Ord. 43A § 35, 1910)

13.04.380 Responsibility for each service.

One person, company or association must pay for all the water used through a service for his or their own use or the use of others to whom it may be accessible. (Ord. 43A § 35 1/2, 1910)

13.04.390 Separate pipes and valves.

Each separate dwelling or structure must be connected to the water system by a separate pipe controlled by a meter accessible at all times to the employees of the public works department, except as provided in OMC 13.04.110. (Ord. 1118 § 33, 2011; Ord. 43A § 35 1/2, 1910)

13.04.400 Connection specifications.

A. The director of public works shall specify how connections shall be made with the water system, but shall not allow any connection to be made until all rules contained in this chapter for the same have been complied with.

B. All pipes on premises must be connected to the city pipes outside the meter/vault box. (Ord. 1118 § 34, 2011; Ord. 52 § 2, 1912; Ord. 43A § 35 1/2, 1910)

13.04.410 Unlawful acts – Misuse of water – Damage to system.

A. It shall be unlawful for any person, firm or corporation:

1. To accept payment of any kind for water furnished by the city of Okanogan except as provided in this chapter;

2. To use the city water or permit it to be used for any other purpose than that for which the person, persons, firm or corporation pays water rates;

3. To permit water pipes or fixtures to remain in a leaky condition;

4. To allow water to run to waste;

5. To open, close, turn or interfere with, or to attach or connect with, any fire hydrant, stop valve, meters or pipe belong to the city of Okanogan;

6. To disturb or damage any pipe, machinery, tools or other property of the water department;

7. To bathe in, fish in or throw any substance in any reservoir, or any part of the city water system;

8. To permit cattle, sheep, swine, horses or other animals to stand in or be about any portion of the water system of the city, so as to contaminate the water supply;

9. To deface any building or other improvement of the city;

10. To place any foreign substance upon the grounds of the city or such portion of the streets or other places as may be under its control;

11. To disturb or injure any lawn, grass, plot, flowers, vines, bushes or trees belonging to the city;

12. To make any connection between the city’s water system and to any other water system, well or conveyance.

B. Working Without Required Permit. Any person making connections to, or alterations in, any pipe

whereby water may be drawn from the city mains, or taking water from any fire hydrant, bib, pipe or fixture of any kind without first having secured a permit for the same from the clerk-treasurer's office, and further, any plumber willfully and knowingly failing to perform his work in connection with the public works department according to the established rules and regulations or willfully and knowingly executing his work to the damage or detriment of the water department is guilty of a civil infraction. See penalties in this section.

C. Any person violating any of the provisions of this section shall upon conviction be subject to OMC 13.04.460(A)(1). (Ord. 1118 § 35, 2011; Ord. 43A § 36, 1910)

13.04.420 Fire protection service.

A. Pipes for fire protection purposes must be fitted up with such fixtures only as are needed for fire protection, and each fixture shall be sealed by the chief of the fire department, and in no case shall these seals be broken except in case of fire, or by the chief of the fire department, for the purpose of testing the pipes, fixtures or hose. When seals are broken in case of fire it shall be the duty of the owner or tenant of the premises to notify the chief of the fire department of the same within 24 hours after its occurrence, and he shall replace the seals.

B. Any person violating any of the provisions of this section shall upon conviction be subject to OMC 13.04.460(A)(1). (Ord. 1118 § 36, 2011; Ord. 43A § 37, 1910)

13.04.430 Protection from freezing.

After the adoption of the ordinance codified in this chapter, the service pipes must be so arranged that the supply is controlled by a stop-and-waste cock with extension handle properly protected from frost and so placed within the premises that the service pipes may be thoroughly drained during freezing weather. No remission of rentals will be allowed on account of frozen pipes within private premises, and the city will not be responsible for any damage on account of such freezing. (Ord. 43A § 38, 1910)

13.04.440 City to make connections.

All connections from the street main to the curb of the sidewalk including meters and valves will be made by the city at the prices stated in OMC 13.04.080. (Ord. 1118 § 37, 2011; Ord. 43A § 39, 1910)

13.04.450 Water-sewer fund.

There is created in the office of the city clerk-treasurer a water-sewer fund, into which fund there shall be paid from month to month all moneys received by the clerk-treasurer from the users of city water furnished by the city. The fund shall not be commingled with any other fund or funds in the

hands of the clerk-treasurer, and shall be disbursed only upon vouchers drawn by the order of the city council against such fund. (Ord. 1118 § 38, 2011; Ord. 43A § 40, 1910)

13.04.460 Violation – Civil infraction.

A. Administrative, Technical and Procedural Violations. Because of their nature the following are civil infractions:

1. Noncompliance. Any person who fails to conform to the terms of the water application issued under this chapter or who undertakes work without approval of the city shall also be subject to a civil infraction not to exceed $250.00 and water service discontinued until all charges and fines are paid except as outlined in Chapter 13.12 OMC. Each day that a violation exists or continues shall be deemed to be a separate offense.

2. Violator Liabilities – Damages, Attorneys' Fees/Costs. Any person subject to the regulatory provisions of this chapter who violates any provision thereof or application thereto shall be liable for all damage to public or private property arising from such violation including the costs of restoring affected area to city standards, including any attorneys' fees and costs incurred by the city to maintain any civil action for damages. (Ord. 1223 § 1, 2023; Ord. 1118 § 39, 2011; Ord. 43A § 41, 1910)

The Okanogan Municipal Code is current through Ordinance 1232, passed April 16, 2024.

Disclaimer: The city clerk's office has the official version of the Okanogan Municipal Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

City Website: https://www.okanogancity.com/
City Telephone: (509) 422-3600

Codification services provided by General Code

APPENDIX L

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN

The following section describes means and methods for the City to respond to emergency situations affecting its water utility. It includes a list of important telephone numbers for emergencies, some general considerations that should be kept in mind by City staff during an emergency, and specific emergency response plans.

EMERGENCY CONTACTS

TABLE 1

Emergency Call List

Person or Agency	Phone Number
City Personnel	
Wayne Turner, Mayor	(509) 422-3600 (Office)
Shawn Davisson, Public Works Director	(509) 322-0121 (Cell) (509) 422-2692 (Home)
Barry Featherly, Water System Manager	(509) 322-3636 (Cell) (509) 422-0717 (Office)
Jessica Blake, Clerk-Treasurer	(509) 422-3600 (Office)
Local, State, and Federal Agencies	
Fire Department	911 or (509) 422-5757
Washington State Department of Health, Spokane Sheri Miller, P.E., Engineer	(509) 329-2100 (509) 407-7160
Washington State Dept. of Ecology (DOE), Yakima	(509) 575-2490
Department of Health Emergency Hotline	(877) 481-4901
Okanogan County Public Works	(509) 422-7300
Okanogan County Sheriff	(509) 422-7200
Okanogan County Health Department	(509) 422-7140
State Division of Emergency Management	(800) 258-5990
U.S. Environmental Protection Agency	(206) 553-1200
Utilities	
Okanogan County Public Utility District (Emergency Outages)	(509) 422-3310
CenturyTel	(800) 201-4099
One-Call Locates	(800) 424-5555
Suppliers, Contractors	
H.D. Fowler	(509) 547-2410
City Engineer	
Gray & Osborne	(509) 453-4833

EMERGENCY PROCEDURES

Although it is not possible to anticipate all potential disasters affecting the City's water system, formulating procedures to manage and remedy several common emergencies is appropriate.

BACTERIOLOGICAL DETECTION

The persistent detection of coliforms in the water supply, particularly E. coli or fecal bacteria, may require issuing a public boil water notice to ensure the health and safety of the City's water customers. In addition, emergencies such as floods, earthquakes, or other disasters can affect water quality as a result of damage to water system facilities. WAC 246-290-320 requires water utilities to follow specific procedures in the event coliform bacteria are detected in the water system. The City's Coliform Monitoring Plan in Appendix B summarizes increased sampling requirements in the month following coliform detection.

FIRES

The availability of adequate water supplies and pressure is an integral part of the City's ability to fight fires within its service area. When fires occur in the City's service area, the local fire authority will contact the City so that the water system components can be managed in such a way as to maximize the flow and pressure to the affected area.

It is the City's policy that fire hydrants that provide less than 500 gpm discharge are to be painted black to facilitate emergency services via color-coded hydrants.

OTHER CONSIDERATIONS

In addition to water quality notification, some water customers require immediate notification should their water service be interrupted for any reason. These customers include facilities such as nursing homes, elder care facilities, and kidney dialysis patients. It is recommended that the City maintain a list of all these customers so that in the event the City's water supply is to be interrupted because of an emergency situation these customers can be notified.

VULNERABILITY ANALYSIS

Identification of system facilities that may be adversely affected during an emergency situation is important in determining areas where redundant facilities may be needed. Types of emergencies include loss of power, severe weather, flooding, earthquake, major equipment failure, and vandalism.

LOSS OF POWER

The DOH 2020 Water System Design Manual identifies minimum criteria for consideration of the reduced need for alternative power at the source when the power grid is capable of providing service. These criteria include the occurrence of less than three outages per year in the previous three years and less than six outages in any given year. Also, the duration of the outages must have averaged less than four hours over the previous three years. As stated in Chapter 3, the City's power source appears to have met these criteria.

TABLE 2

Power Outage Vulnerability Assessment

Telemetry	*Low Risk*	The telemetry system requires electrical power supplied by Okanogan County PUD and communications via the local telephone service provider.
	Prevention	None.
	Mitigation	As the telemetry system is not functional during a power outage, the water levels in the reservoirs must be manually controlled. During a telephone outage, the well pumps must be operated manually depending on the water levels in the reservoirs.
Source	*Low Risk*	Power outages have not historically been an issue. The City has sufficient standby storage to supply water during minor outages.
	Prevention	Wells and the booster station could be equipped with manual transfer switches to accept a generator or equipped with alternative power sources.
	Mitigation	The City has sufficient standby storage to supply water during minor outages.
Storage	*No Risk*	The City's reservoirs are not vulnerable to power outages.
Distribution	*No Risk*	The City's distribution system is not vulnerable to power outages.

SEVERE WEATHER

Types of severe weather that may create problems for the water system are wind storms, freezing rain, cold temperatures, and snow storms.

TABLE 3

Severe Weather Vulnerability Assessment

Telemetry	*Moderate Risk*	The telephone lines that carry the communications signals for the telemetry system and the power source that powers the telemetry system have a moderate vulnerability to high winds and freezing rain.
	Prevention	Maintain telemetry equipment.
	Mitigation	Manual operation of the system may be needed to mitigate the effects of severe weather. Report telephone lines and power outages immediately to utility companies when the system is impacted.
Source	*No Risk*	The City's sources are not susceptible to severe weather.
Storage	*Moderate Risk*	Extreme cold weather could cause ice formations on the water level sensors inhibiting telemetry.
	Prevention	During extremely cold weather, check sensors and clean them temporarily if ice formation is a concern.
	Mitigation	Run the system manually if sensors freeze. If necessary, use the other reservoir while repairs are made.
Distribution	*No Risk*	The City's distribution system is not vulnerable to severe weather.

EARTHQUAKE

An earthquake could damage water system components and infrastructure. The City's service area is located in the Uniform Building Code Seismic Zone 2B. This zone contains a moderately low risk of earthquakes.

TABLE 4

Earthquake Vulnerability Assessment

Telemetry	*Low Risk*	There is a low risk of structural failure.
	Prevention	Perform emergency planning.
	Mitigation	Rely on manual operation of system components until the system can be repaired.
Source	*Low Risk*	There is a low risk that structural failure and aquifer shift would cause failure of all of the City's wells.
	Prevention	Perform emergency planning.
	Mitigation	Rely on other wells or provide trucked-in water until the City's wells can be repaired, or new wells can be drilled.
Storage	*Low Risk*	There is a low risk of structural failure during an earthquake. The transmission main connecting to the reservoirs may be at risk.
	Prevention	Perform emergency planning. Prepare a plan to operate the system as a closed system.
	Mitigation	Rely on remaining reservoirs. Provide trucked-in water until additional storage can be constructed or a closed system can be set up.
Distribution	*Low Risk*	The distribution system is at low risk for failure which would result in leaks and possible contamination.
	Prevention	Perform emergency planning. Install valves for main isolation.
	Mitigation	Depending on the severity of the damage, provide trucked-in water until repairs can be made.

VANDALISM

Vandalism is a concern because the quality of the water supply as well as the facility operation may be affected.

TABLE 5

Vandalism Vulnerability Assessment

Telemetry	*Low Risk*	The telemetry equipment is mostly enclosed in buildings and considered to be safe. A portion of the telemetry system located at the West Reservoirs is somewhat susceptible to vandalism.
	Prevention	The City checks facilities frequently to see that access is secure.
	Mitigation	Operate disabled components manually until repairs can be made.
Source	*Low Risk*	There is a low risk of damage to the wells. All wells are located in locked well houses or are behind fences.
	Prevention	The City checks facilities daily to see that access is secure.
	Mitigation	Use alternative sources until repairs are made and testing indicates water is potable.
Storage	*Low Risk*	The City has historically not had problems with exterior tank vandalism. The City restricts access to the roof of the reservoirs with difficult-to-reach ladders, locked hatches, and screened vents.
	Prevention	Consider fencing the reservoir sites to restrict site access.
	Mitigation	If a reservoir is suspected of contamination, isolate, drain, and clean it according to AWWA guidelines.
Distribution	*Low Risk*	The distribution system is at low risk for failure which would result in leaks and possible contamination.
	Prevention	Perform emergency planning. Install valves for main isolation.
	Mitigation	Depending on the severity of the damage, provide trucked-in water until repairs can be made.

APPENDIX M

WATER RIGHTS

CITY OF OKANOGAN

Ground Water Rights:

Ground Water Certificate (GWC) No. 5327: 650 gpm, 700 ac-ft per year, Well No. 3. The annual portion withdrawn under this water right certificate and GWC 265-C (relinquished), GWC 266-D, GWC 369-A, GWC 3410-A and SWC 592 (relinquished) is not to exceed 700 ac-ft/yr. The instantaneous quantity, 650 gpm, issued as additive.

GWC No. 266-D: 100 gpm, 29 ac-ft annually, Well No. 1. This certificate was initially withdrawn from a 25 ft deep, dug well located in Alma Park. The rights were transferred to be withdrawn from Well No. 1, located approximately 50 ft west of the Alma Park Well. The period of use is restricted to April 1 through October 31 each year as the use was originally for only park and swimming pool uses. The instantaneous quantity, 100 gpm, is additive. The annual quantity, 29 ac-ft/yr is non-additive (see GWC 5327).

GWC No. 369-A: 350 gpm, 200 ac-ft annually, Well No. 5. The instantaneous quantity, 350 gpm, is additive. The annual quantity, 200 ac-ft/yr is non-additive (see GWC 5327). This certificate initially authorized the City to withdraw 500 gpm, 200 ac-ft annually for municipal supply. However, on 8/23/1988, in a decision by the Department of Ecology, the withdrawal rate was reduced to 350 gpm as a condition of transferring this right from Well No. 1 to Well No. 3. Although the City did not appeal Ecology's decision, there remains a question as to whether this reduction was justified considering that this is a municipal water right.

GWC No. 3410-A: 200 gpm, 320 ac-ft annually, Well No. 2. This certificate was issued supplemental to certificates SWC 592 (relinquished), GWC 265 (relinquished), GWC 266-D and GWC 369; consequently, the annual quantity is non-additive. The instantaneous quantity, 200 gpm, is additive.

CG-4-23854C: 550 gpm, 400 ac-ft per year, Well No. 4. Both quantities are additive. The City filed for and received temporary authorization to transfer 300 gpm of these rights to Well No. 5 for one year, from August 7, 2006 to August 1, 2007 while the City completes its arsenic treatment project on Well No. 4.

GWC No. G4-29193: 300 gpm, 400 ac-ft annually, Well No. 5. The annual quantity of this water right issued non-additive to certificates GWC 266-D, GWC 369-D, GWC 3410-A, GWC 5327-A and G4-23854C and Water Right Claim No. 000052 (should a right be confirmed following adjudication). No water is allowed to be withdrawn under this authorization when the Okanogan River is below the minimum flows identified in the authorization. The instantaneous quantity was reduced from 650 gpm to 300 gpm when GWC No. 369-A was transferred to Well No. 5.

GWC No. G4-3838-A: 50 gpm, 39 ac-ft, Well No. 3. This certificate is being transferred from the Progressive Flats Water Association (PFWA) wells to City of Okanogan's Well No. 3. It appears that the City needs to file for an extension of the project development schedule. Both instantaneous and annual rights are additive.

GWC No. G4-30573-A: 20 gpm, 6.3 ac-ft, Well No. 3. This certificate is being transferred from the PFWA wells to City of Okanogan's Well No. 3. Both instantaneous and annual rights are additive. Ecology requested in a letter to the PFWA (2/16/07) that a request for an extension of the project development schedule be filed with the Department of Ecology (DOE). In the letter from Ecology, it is indicated that the authorized change to the water right required that construction begin by 10/1/06, which had apparently not begun as of 2/16/07.

SWR Certificate 592: In about 1930, the City completed a well about 500 feet from the bank of the Okanogan River at about 1st and Queen Streets to supplement the City's sole supply of water at the time, the Shull Springs supply on Salmon Creek. According to the remarks on the permit application, the City applied for the permit in 1931, one or two years after completing the well. A certificate issued in 1932 for 1.5 cfs (about 670 gpm). The City voluntarily relinquished the right in 1970.

Claim:

Surface Water Right (SWR) Claim 000052: This source is commonly referred to as "Watercress Springs", "Shull Springs", or simply "The Springs". On February 24, 1970, the City filed a water right claim for this source, listing the date of first of use to be 1908, in the amounts of 300 gpm and 484 ac-ft per year. It has been reported that the spring flow currently varies from 175 gpm to 300 gpm.

GWC – 05327

Johnson & Johnson
Attorneys at Law
Okanogan, Wash.

Report of Examination on Ground Water

Received date September 13, 1963 Date of exam. October 15, 1963 Appl. No. 6878

Name City of Okanogan Address Okanogan, Washington

Type of works a well Dimensions 12" x 117'

Progress of works Not started

Quantity applied for 650 g.p.m. acre-feet per year

Legal sub. Government Lot 2 (NW¼) Sec. 9 Twp. 33 N., Rge. 26 E., County Okanogan

Use Municipal water supply

Irrigation-acreage: Present Planned Feasible

Municipal: Population 2,500 as of 1968

Industrial

Time pump will be operated continuously

Other water rights appurtenant to this land S.W. Cert. 592; G.W. Certs. 369, 3410, 265-A & 266-A

Proximity to existing works, springs, wells, or streams Okanogan River, 800 feet southeasterly, approximately 60 feet above river level.

Area Sub-area Zone

RECOMMENDATIONS

Approved for 650 g.p.m. 700 acre-feet per year, subject to existing water rights. (1 acre-foot 325,850 gallons.)

The installation of an access port to well as described in attached Ground Water Bulletin No. 1 is recommended.

Use of the waters to be appropriated under this application will be for a public water supply. State Board of Health rules require every owner of a public water supply to obtain written approval from the State Director of Health prior to any new construction or alterations of a public water supply. The applicant is advised to contact the Washington State Department of Health, Fourth Floor, Public Health Building, Olympia, with regard to the need for compliance.

The water requirement for the Town of Okanogan is calculated on a per capita demand of 250 gallons per day or 700 acre-feet per year for an estimated population of 2,500 persons as of 1968.

The Town of Okanogan holds the following Certificates of Water Right:

G.W. No. 265-D for 164 acre-feet per year
No. 266-D for 29 acre-feet per year
No. 369-A for 200 acre-feet per year
No. 3410-A for 320 acre-feet per year
S.W. No. 592 for 1.50 cfs for a total of 713 acre-feet per year.

1425

(over)

[redacted]

Dated this 4th day of September, 1943.

[redacted]

Ernest C. Lavasseur

ERNEST C. LAVASSEUR, [redacted]

000052CL

STATE OF WASHINGTON
DEPARTMENT OF WATER RESOURCES
DIVISION OF WATER MANAGEMENT

WATER RIGHT CLAIM

RECEIVED
DEPT. OF WATER RESOURCES
FEB 24 70000076
CASH ___ OTHER ✓ NONE ___

1. NAME City of Okanogan

ADDRESS c/o City Clerk

Okanogan, Washington ZIP CODE 98840

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: Surface (SURFACE OR GROUND WATER)

W.R.I.A. 49 (LEAVE BLANK)

A. IF GROUND WATER, THE SOURCE IS

B. IF SURFACE WATER, THE SOURCE IS Springs ("Shull Springs")

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED 300 g.p.m. (All water) PRESENTLY USED 300 gp.m. (All water)
(CUBIC FEET PER SECOND OR GALLONS PER MINUTE)

B. ANNUAL QUANTITY CLAIMED 484 acre-feet per year PRESENTLY USED 484 acre-feet per year
(ACRE FEET PER YEAR)

C. IF FOR IRRIGATION, ACRES CLAIMED PRESENTLY IRRIGATED

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: Continuously

4. DATE OF FIRST PUTTING WATER TO USE MONTH Unknown YEAR 1908

5. LOCATION OF THE POINT(S) OF DIVERSION/WITHDRAWAL: Shull springs-located between a point 1200 ~~FEET~~ FEET ~~FROM THE~~ FROM THE ~~CORNER OF SECTION~~ CORNER OF SECTION feet west and 800 feet south from the center of Sec. 5 and a point located 100 feet west ~~FEET~~ FEET ~~FROM THE~~ FROM THE ~~CORNER OF SECTION~~ CORNER OF SECTION and 350 feet north of the south quarter corner of Sec. 5; Said points
BEING WITHIN ~~NE¼SW¼SE¼SW¼~~ NE¼SW¼SE¼SW¼ OF SECTION 5 T. 33 N. R. 26 (EAST) W.M.
See attached map
IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, LOT ___ BLOCK ___ OF

(GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED: Within the corporate limits of the City of Okanogan, Washington

COUNTY Okanogan

7. PURPOSE(S) FOR WHICH WATER IS USED: Municipal water supply

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: Appropriation

DO NOT USE THIS SPACE

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED REGISTRY NUMBER

THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO.
FEB 24 70000052

ASSISTANT DIRECTOR, DIVISION OF WATER MANAGEMENT—DEPARTMENT OF WATER RESOURCES

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

X R. E. Johnson

DATE February 24, 1970

IF CLAIM FILED BY DESIGNATED REPRESENTATIVE PRINT OR TYPE FULL NAME AND MAILING ADDRESS OF AGENT BELOW

R. E. Johnson, City Attorney
Okanogan, Washington 98840

☐ ADDITIONAL INFORMATION RELATING TO WATER QUALITY AND, OR WELL CONSTRUCTION IS AVAILABLE

A FEE OF $5.00 MUST ACCOMPANY THIS WATER RIGHT CLAIM

RETURN ALL THREE COPIES WITH CARBONS INTACT ALONG WITH YOUR FEE TO DEPARTMENT OF WATER RESOURCES, DIVISION OF WATER MANAGEMENT, UNION AVE. BUILDING, OLYMPIA, WASHINGTON 98504

ORIGINAL
DWR

CG4-GWC369-A

PROGRESS SHEET - APPLICATION FOR CHANGE ON

CHGWC 369-A

509 422 3600
R 6001C.

NAME: CITY OF OKANOGAN Phone: 206 284 0860

ADDRESS: PO BOX 752 OKANOGAN WA 98840
City State ZIP

PURPOSE OF APPLICATION: CHANGE POU

TARGET: 64-*00321 CWRIS

(00321/00341/00369) PROTESTED

APPLICATION received 7-20-87 (date) Initial $10 fee received (X) Yes ( ) No

Statement of additional exam fee $_____ Sent _____ (date) Rec'd _____ (date)

PUBLICATION:

Approved by: BP Date 7-29-87 Notice Sent AUG 4 1987 (date)

PROTESTS: 9-15-87 (date) By: Philip W. or Audrey W. Gum (Name)
9-18-87 (date) By: Lewis R. & Doris Sohes (Name)
9-21-87 (date) By: S.K. Graves (Name)

Affidavit rec'd: 8/24/87 (date) Checked by: BA P.P. time expires: 8/19/87 (date)

GWC369-A RESCIND 08-23-1988 DE 88-C409

Report written: 7-28-88 Date Report sent: 8/23/88 SA

DEVELOPMENT SCHEDULE

Beginning of Construction: Date sent _____ Date received _____
Extensions: _____

Completion of Construction: Date sent _____ Date received _____
Extensions: _____

Proof of Appropriation: Date sent _____ Date received _____
Extensions: _____

Well report received: _____ (date)

DATE APPROVED FOR CHANGE: _____ BY: _____

( ) Superseding permit
(X) Superseding certificate
( ) Certificate of change (claims & adj. rights) Vol. 1-4, Page _____.

Date certificate fees requested: _____ Date received: _____

DATE CHANGE ISSUED: _____

REMARKS: _____

Revised 9/84

file

BEFORE THE
DEPARTMENT OF ECOLOGY
STATE OF WASHINGTON

IN THE MATTER OF GROUND WATER)
CERTIFICATE NO. 369-A TO)
APPROPRIATE PUBLIC WATERS)

Rescinding Order
Docket No. DE 88-C409

TO: City of Okanogan
P.O. Box 752
Okanogan, Washington 98840

On July 27, 1946, Certificate of Ground Water Right No. 369-A issued to the Town of Okanogan authorizing the withdrawal of 500 gallons per minute, 200 acre-feet per year for municipal supply. The authorized point of withdrawal was a well located in Lot 66, Alma Park Block, Kahlows Second Addition to Okanogan. The authorized place of use is the Town of Okanogan, Okanogan County, Washington.

In conjunction with an application for change filed by the City of Okanogan for this certificate, it was determined that only 350 gallons per minute has been withdrawn from the authorized well. The authorized 500 gallons per minute has not been put to beneficial use.

Certificate of Ground Water Right No. 369-A is hereby rescinded and a Superseding Certificate shall issue for 350 gallons per minute, 200 acre-feet per year for municipal supply.

DATED this 23rd day of August, 1988.

Russell K. Taylor, P.E.
Regional Manager
State of Washington
Department of Ecology

ENGINEERING DATA
OK BJ

Application No. 321

CERTIFIED MAIL

BJ:ska
811rm8

file

State of Washington
Department of Ecology
Yakima, Washington

IN THE MATTER OF APPLICATION FOR CHANGE BY THE CITY OF OKANOGAN TO CHANGE THE POINT OF WITHDRAWAL UNDER GROUND WATER CERTIFICATE NO. 369-A	Findings of Fact and Decision

Background

On July 20, 1987, the City of Okanogan filed an application to change the point of withdrawal authorized by Ground Water Certificate No. 369-A. The application was accepted and public notice was made. During the 30 day protest period, which ended on September 19, 1987, letters of protest were received from Philip and Audrey Gum, Lewis and Doris Jones, and Jack Graves. Their concerns will be addressed later in this report.

Investigation

A field inspection was conducted relative to this application on October 30, 1987. Additionally, a pump test was conducted on the proposed new point of withdrawal in July of 1987. The following information was obtained from the inspection, pump test, conversation with Ron Cook of Gray and Osborne, and conversations last year with Audrey Gum.

Ground Water Certificate No. 369-A, with a priority date of July 27, 1946, issued to the Town of Okanogan and authorized the withdrawal of 500 gallons per minute (gpm); 200 acre-feet per year from a well for municipal supply. The well is located in Lot 66, Alma Park Block of Kahlows Second Addition to Okanogan, approximately 100 feet south and 600 feet west of the east quarter corner of Section 17, T. 33 N., R. 26 E.W.M. It is located approximately 120 feet from the Okanogan River.

The city refers to this well as well No. 1 and it is 8 inches in diameter and was originally constructed to 90 feet. According to department records a 25 horsepower turbine pump was installed in the well. The well still has a 25 horsepower pump installed in it. Over the years the well has experienced problems with silting and sand. The capacity of the well has declined due to this. The city has no records to support how much water has been pumped from the well. Analysis of the pump and delivery system indicates that up to 350 gpm may have been pumped from the well when it was first developed. This year the city has only been able to pump about 150 gpm from the well.

The instant application requests authorization to change the point of withdrawal under Certificate No. 369-A to a new well the city constructed (well No. 5) in Lot 17 of Shirley Garden Tracts, being approximately 1250 feet north and 1650 feet east of the southwest corner of Section 17 in the SE1/4SW1/4 of Section 17, T. 33 N., R. 26 E.W.M. The proposed new point of withdrawal is located 4,000 feet south and slightly west of the currently authorized well.

The new well is 18 inches in diameter and 110 feet deep. It is located approximately 750 feet from the Okanogan River. The well penetrated sands and gravels with interbedded silts. A 50 horsepower turbine pump has been installed in the well. A pump test was conducted by Gray & Osborne with department staff monitoring. Department analysis of the pump test revealed that the aquifer penetrated by this well has an extremely high transmissivity, which allows for withdrawal of large quantities of water with little effect on water levels in neighboring wells. The well penetrates a water table aquifer that is recharged from the Okanogan River. The well is near the edge of an old flood channel, which contains water year-round. Following analysis of the aquifer characteristics, it was determined that over 80 percent of the water withdrawn from the well would be Okanogan river water if the well was pumped only 30 days. If the well was pumped the entire year almost 95 percent of the water would be from the river.

Ground Water Permit No. G4-29193P, with a January 30, 1987, priority date, has issued to the City of Okanogan authorizing the use of well No. 5. It authorizes the withdrawal of 650 gpm, 400 acre-feet per year for municipal supply. Due to the wells close proximity to the Okanogan River and the aquifer characteristics, the permit is subject to the minimum flows that have been adopted for the Okanogan River in the Okanogan River Basin Plan, Chapter 173-549 of the Revised Code of Washington (RCW). Well No. 5 is located in the southerly part of the city's service area, where water delivery has been difficult in the past. Construction

of well No. 5 has eliminated the problem and the city wants to be able to use well No. 5 to some extent all year. The well is currently able to pump up to 600 gpm and the city's plans do not include changing the pump. Permit No. G4-29193P will be reduced by the quantity of water that is authorized to be withdrawn from well No. 5 under Certificate No. 369-A, if the instant application for change is approved. The city has installed an hydraulic valve on the well that operates under variable pressure to allow for reducing the volume of water being pumped.

Besides Ground Water Certificate No. 369-A and Ground Water Permit No. G4-29193P, the city holds the following water rights:

1. Ground Water Certificate No. 266-D: 100 gpm, 29 acre-feet per year for municipal supply at Alma Park. The authorized well is located within the SE1/4NE1/4 of Section 17, T. 33 N., R. 26 E.W.M., approximately 100 feet from the Okanogan River. This dug well has been abandoned and an application for change has been filed to change the point of withdrawal to the city's well No. 1.

2. Ground Water Certificate No. 3410-A: 200 gpm, 320 acre-feet per year for municipal supply. The certificate issued supplemental to existing rights, meaning that the total annual water use would not exceed 320 acre-feet per year under all rights. The authorized well is within the SE1/4NW1/4 of Section 16, T. 33 N. R. 26 E.W.M. This drilled well is referred to as well No. 2. A 25 horsepower pump is installed in the well and 180 to 200 gpm is currently being withdrawn.

3. Ground Water Certificate No. 5327-A: 650 gpm, 700 acre-feet per year for municipal supply. The certificate issued supplemental to existing rights, meaning that the total annual water use would not exceed 700 acre-feet per year under all rights. The authorized well is located in Government Lot 2 of Section 9, T. 33 N., R. 26 E.W.M. This drilled well is referred to as well No. 3. A 75 horsepower pump is installed in the well and the authorized 650 gpm is currently being withdrawn.

4. Ground Water Certificate No. G4-23854C: 550 gpm, 400 acre-feet per year for municipal supply. The authorized well is located in the SE1/4NE1/4 of Section 17, T. 33 N., R. 26 E.W.M. This drilled well is referred to as well No. 4. A 100 horsepower pump is installed in the well and approximately 500 gpm is currently being withdrawn.

5. Water Right Claim No. 000052: Claims a right to divert 300 gpm, 484 acre-feet per year from springs (now called Watercress Springs) for municipal supply. The date of first water use on the claim is 1908. The springs are located in the SW1/4 of Section 5, T. 33 N., R. 26 E.W.M. The springs flow seasonally varies from 175 gpm to the claimed 300 gpm. The city uses these springs to the extent that water is available.

The water right claim was filed as a result of Chapter 90.14 RCW, which required filing a water right claim for any use that was initiated prior to adoption of the State Surface and Ground Water Codes. The Surface Water Code was adopted in June 1917 and the Ground Water Code was adopted in June 1945. The determination of the validity and extent of a water right claim can be made only through a Superior Court general adjudication.

Consideration of Objections

Philip and Audrey Gum own property and have two wells to the north and west of well No. 5. They indicate that in 1986 one of their wells almost went dry and the Gums and their neighbors do not think that the aquifer can stand the pressure of a withdrawal the size proposed by the city.

Mr. Gum is the holder of three certificates. Ground Water Declaration Certificate No. 1075, with a priority date of 1922, and Ground Water Certificate No. G4-26085C, with a priority date of January 10, 1979, are appurtenant to the Gum property. They issued on a dug well 48 inches in diameter and 20 feet deep. The well is located approximately 900 feet from city well No. 5. The well is located within the E1/2NW1/4SW1/4 of Section 17, T. 33 N., R. 26 E.W.M. It is used to irrigate 19 acres within that parcel. An additional five acres are irrigated in the W1/2NW1/4SW1/4 of Section 17 from the same well. Under the two

certificates, a maximum of 300 gpm, 120.5 acre-feet per year for the irrigation of 24 acres is authorized. This is the well that almost went dry last year and is Mr. Gum's primary concern. Last year the well was deepened to 50 feet. Mrs. Gum recently called and reported that her well has gone dry. They have a second well, which is authorized for use by Certificate No. G4-27385C, with a priority date of March 19, 1981. It is located over 1,000 feet from the city well. Mr. Gum's second well is six inches in diameter and 135 feet deep.

Besides the Gum certificates, there are three other ground water certificates which authorize water use from wells within half a mile of the city's new well. The wells authorized by these three certificates are between 25 and 48 feet deep and are constructed in the alluvial materials of the Okanogan River valley floor. There are several homes constructed in this area, but outside the city limits, that presumably receive their domestic water from wells constructed at their homes. Water right claims have been filed for several domestic wells in the area, however, there are no water well reports for these domestic wells.

The other two protestants, Jack Graves and Lewis Jones are the owners of two of the domestic wells in the area. Mr. Graves is concerned that if the city starts pumping 600 gpm from well No. 5, his domestic well will go dry. He states that his well has only six inches of water in it and until the last three years, he had plenty of water in it. Mr. Graves has two wells that he uses for domestic supply and lawn and garden irrigation. One is reportedly 30 feet deep and the other is 86 feet deep. Water Right Claims No. 036619, 036620, 122943, and 122944 were filed by Mr. Graves documenting his use of the wells. Mr. Jones letter of protest basically states the same concerns. Well reports are not available for Mr. Graves wells or Mr. Jones well. The Graves wells are located approximately 400 feet from well No. 5 and the Jones well is located approximately 600 feet from well No. 5.

Well reports for deeper wells constructed along the Okanogan River indicate that the alluvial material in the valley floor is rather extensive, extending several hundred feet below land surface. Infiltration from the river into this material provides the water table aquifer that is utilized by both the shallow domestic and irrigation wells and the new well constructed by the city. The sands and gravels into which the wells are constructed are permeable, allowing for migration of water through the materials. Given the aquifer characteristics determined through the pump test, we can determine that the water level in a well 150 feet from the city well would drop only three feet if the city well were pumped at 650 gpm for an entire year.

As previously stated, the aquifer which the existing shallow wells utilize is considerably more extensive than the 20 to 48 feet they currently penetrate. Deepening of the wells would more fully penetrate the aquifer and eliminate the affect of minor fluctuations of water level. During the past three years, the annual precipitation has been well below normal, causing low flows in many of the rivers and streams in Okanogan County, including the Okanogan River. It is very likely that the fluctuations in the water table observed by the protestants is the result of the lower flow in the Okanogan River, and not the result of an over-allocated aquifer. Data collected by the department for wells adjacent to the Okanogan River indicates that they demonstrate regular cycles in water levels and that they are recharged annually by the spring freshet.

The Ground Water Code, Chapter 90.44 RCW, does provide that the prior appropriator shall as against subsequent appropriators from the same ground water body be entitled to the preferred use of such ground water to the extent of his appropriation and beneficial use, and shall enjoy the right to have any withdrawals by a subsequent appropriator of ground water limited to an amount that will maintain and provide a safe sustaining yield in the amount of prior appropriation. This does not mean that the prior appropriator is guaranteed his right to continue using a shallow well that has barely penetrated the aquifer. If he can obtain a safe sustaining yield in the amount of his prior appropriation by deepening the well, but still being within the same aquifer, subsequent appropriators would not be limited.

Section 90.44.100 RCW provides that the holder of a valid right to withdraw public ground waters may, without losing his priority of right, construct wells or other means of withdrawal at a new location in substitution for or in addition to those

at the original location provided that that substitute well taps the same body of public ground water as the original well, use of the original well is discontinued, the construction of the substitute well will not enlarge the right conveyed by the original certificate and other existing rights will not be impaired.

Conclusions

Based on the foregoing information, the following conclusions are made:

The City of Okanogan has a valid water right under Ground Water Certificate No. 369-A. However, it appears that the right was only perfected to the instantaneous quantity of 350 gpm, not the 500 gpm stated on the face of the certificate. The certificate shall be rescinded and reissued for the 250 gpm that was actually developed when the certificate issued. Well No. 5 penetrates the same aquifer as well No. 1, and although the well will produce in excess of 350 gpm, since the city already has a permit for the quantity above 250 gpm, the change will not enlarge the right. Due to the characteristics of the aquifer penetrated by well No. 5, the proposed change will not impair existing rights.

Recommendations

It is recommended that Ground Water Certificate No. 369-A be rescinded and reissued for the reduced quantity of 350 gallons per minute, 200 acre-feet per year. The authorized point of withdrawal will be a well located approximately 1700 feet east and 1200 feet north of the southwest corner of Section 17, being within the SE1/4SW1/4 of Section 17, T. 33 N., R. 26 E.W.M.

Ground Water Permit No. G4-29193P shall be reduced to 300 gpm upon issuance of the certificate of change under this authorization. During periods of regulation on Ground Water Permit No. G4-29193P the city shall reduce their withdrawal from well No. 5 to 350 gpm.

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 gage may be installed in addition to the access port.

REPORT BY: Becky Johnson DATE: 8/23/88
Becky Johnson

APPROVED BY: Doug Clausing DATE: 8/23/1988
Doug Clausing, Regional Supervisor

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G. P. No. 7211—10-27—120. 10530.

369

CERTIFICATE RECORD No. 1 PAGE No. 369-A

STATE OF WASHINGTON, COUNTY OF Okanogan

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and the rules and regulations of the State Supervisor of Hydraulics thereunder.

THIS IS TO CERTIFY That TOWN OF OKANOGAN

of Okanogan, Washington, has made proof to the satisfaction of the State Supervisor of Hydraulics of Washington, of a right to the use of the ground waters of a Well

located within Lot 66, Alma Park Block, Kahlows 2nd Addition to Okanogan

for the purpose of municipal supply

under Ground Water Permit No. 341 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 369-A; that the right hereby confirmed dates from July 27, 1946; 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 500 gallons per minute; 200 acre-feet per year

~~for irrigation of [illegible]~~.

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:

Town of Okanogan, Okanogan County, Washington.

CG4-GWC266-D

BEFORE THE POLLUTION CONTROL HEARINGS BOARD
OF THE STATE OF WASHINGTON

JACK & ORVILLA GRAVES, LEWIS R. JONES, and PHILIP & AUDREY GUM, Appellants, v. STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY and CITY OF OKANOGAN, Respondents.	PCHB Nos. 88-140, 141 & 144 ORDER AMENDING FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

On April 20, 1989, the Board entered its Final Findings of Fact, Conclusions of Law and Order.

Subsequently, counsel for respondent Department of Ecology, sought clarification of the standard applied to transfers of the point of groundwater withdrawal.

The clarification sought would change neither the reasoning or result of the decision. Moreover it does not appear to prejudice any party that such a clarification be made.

Therefore the Board sua sponte amends its decision by addition of the clarification at p. 6, lines 4 to 23. The attached Amended Findings, Conclusions and Order reflect this clarification.

DONE at Lacey, WA, this 10th day of May, 1989.

POLLUTION CONTROL HEARINGS BOARD

Wick Dufford
WICK DUFFORD, Chairman

Judith A. Bendor
JUDITH A. BENDOR, Member

William A. Harrison
WILLIAM A. HARRISON
Administrative Appeals Judge

FINDINGS OF FACT

I

This matter concerns allegations by senior appropriators of ground water that changes in the point of withdrawal granted by Department of Ecology (DOE) to the City of Okanogan would result in impairment of their rights of appropriation.

II

The City of Okanogan (City) is located generally on a north-south axis alongside the Okanogan River. Although the City maintains a municipal water supply system, the system has fallen short with regard to the south end of the City. During certain times of the year the City's water system has not provided the south end with enough water for all domestic purposes, and also has not provided sufficient pressure for fire protection.

III

In order to address these chronic water problems in the south end, the City developed a Comprehensive Water System Improvement Plan. The plan called for development of a new well (known as City No. 5) in the south end of the City. City No. 5 is 94 feet deep and draws its waters (650 gallons per minute) from an underground aquifer which is in hydraulic continuity with the surface waters of the Okanogan River. Therefore, in approving City No. 5, DOE required summertime curtailment of pumping when the River reaches its administrative minimum flow.

IV

In recognition of the summertime curtailment of pumping in City No. 5, and consistent with its Comprehensive Water System Improvement Plan, the City proposed to transfer to City No. 5 the City's existing water right (350 gallons per minute) from a north end well known as City No. 1. That existing right drew its waters from the same riverside aquifer as City No. 5. However, this existing City right is not subject to summertime curtailment in respect of administrative minimum flows in the River, since that right was prior in time to those minimum flows.

V

In June, 1987, DOE tested City No. 5 using generally accepted practices, including three observation wells. From such testing, the characteristics of the aquifer in question were determined. Those characteristics are not dependent upon the time of year in which the pump tests occurred. The DOE then used the aquifer characteristics (specific yield and transmissivity), pumping rates and duration of pumping to determine hypothetical cones of influence caused by pumping City No. 5. Using a withdrawal rate of 600 gallons per minute, the pumping of City No. 5 was determined by DOE to result in the following drawdowns of water level at the following radii from the well:

RADIUS	DRAWDOWN
50 feet	3.9 ft.
100 feet	3.3 ft.
200 feet	2.8 ft.
300 feet	2.5 ft.
500 feet	2.19 ft
1000 feet	1.7 ft

VI

Errors concerning the distance between City No. 5 and the test wells were made by DOE, but were not significant in assessing the drawdown effect set forth above.

VII

In August, 1988, DOE approved the transfer of existing rights at City No. 1 to City No. 5 (350 gallons per minute, Ground Water Certificate 369-A). In September, 1988, DOE also approved transfer of City water rights in another north end well to City No. 1 (100 gallons per minute, Ground Water Certificate No. 266-D).

VIII

During August, 1988, the City pumped from City No. 5 under the rights transferred there from City No. 1 (without the curtailment in respect to minimum flows to which the transferred right was not subject). We summarize the experiences of senior appropriators during August, 1988 as follows:

> 1. Lewis Jones - domestic water right. Mr. Jones' 20 foot well in the basement of his home went dry. He drove a sand point six feet into the bottom of his well. This provided the needed water for household use.

2. Jack Graves - domestic water right. Mr. Graves' 30 foot well, used for lawn watering, went dry. He used a seven foot pipe to recover water in the well.

3. Mildred Goff - domestic water right. Mrs. Goff's 20 foot well sustained a drop in water level of five to six feet. This left water in the well, but below the foot-valve of her pump system.

4. Dorothy Archer - domestic water right. Mrs. Archer's 20 foot well used for lawn watering sustained a drop in water level below the foot-valve but did have water in the well.

5. Geraldine Pickett - domestic water right. Mrs. Pckett's 25 foot well used for home and garden sustained a drop in water level below the foot-valve, leaving water in the well.

6. Phillip Gum - irrigation water right. Mr. Gum's 27 foot well is used to irrigate 32 acres of orchard. This well went dry. Mr. Gum has obtained an estimate in the amount of $12,468 from a well driller to drill a new 90-foot well and install a new pump to provide a constant supply of water.

All of the wells described above have been in operation for 30 years or more. None has previously gone dry in the summer. The lowering of water levels described above was caused by withdrawals at City No. 5 pursuant to the right transferred there from City No. 1. The actual drawdown attributable to City No. 5 was in the range of 2 - 4 feet.

IX

Mssrs. Graves, Jones and Gum appeal DOE's approval of the water right transfers for the City of Okanogan.

X

Any Conclusion of Law deemed to be a Finding of Fact is hereby

adopted as such. From these Findings of Fact, the Board makes these

CONCLUSIONS OF LAW

I

Changes of point of withdrawal and place of use for groundwater rights are explicity governed by RCW 90.44.100. The primary limitations on such transfers are: (1) the new withdrawal must be from the same aquifer; (2) the original right may not be enlarged; (3) existing rights shall not be impaired.

Here the first two of these propostions are not seriously questioned. The focus is on the third -- impairment of existing rights. We believe that this standard in the transfer context must be broadly construed, consistent with the statutory concerns for comprehensive state administration of water allocation expressed in Chapter 90.03, 90.44 and 90.54 RCW, read as a whole.

We do not believe the Legislature intended for a right to be moved to a new location where a right could not have been created originally. Thus, we conclude that such transfers must conform with the water availability, beneficial use and public interest criteria which apply to the granting of new rights. RCW 90.03.290; See Schuh v. Department of Ecology, 100 Wn.2d 180, 667 P.2d 64 (1983). In short, the only thing different about moving a right from creating a right is that in the former case the priority pre-dates the application.

II

With regard to the water right transferred from City No. 1 to City No. 5 (350 gallons per minute, Certificate 369-A), appellants question neither the availability of water nor that the City's use for it is beneficial. We conclude that water is available and the City's use is beneficial and perhaps imperative. The challenged transfer is consistent with RCW 90.03.290, as applied to groundwater by RCW 90.44.060, in so far as availability of water and beneficial use are concerned.

III

Appellants do challenge the consistency of the transfer, from City No. 1 to City No. 5, with the two additional requirements of RCW 90.03.290 that (1) there be no impairment of existing rights and (2) that there be no detriment to the public welfare. In considering these we must also consider RCW 90.44.070 which provides:

> No permit shall be granted for the development or withdrawal of public ground waters beyond the capacity of the underground bed or formation in a given basin, district, or locality to yield such water within a reasonable or feasible pumping lift in case of pumping developments.

and RCW 90.44.130 which provides:

> As between appropriators of public ground water, the prior appropriator shall as against subsequent appropriators from the same ground water body be entitled to the preferred use of such ground water to the extent of his appropriation and beneficial use, and shall enjoy the right to have any withdrawals by a subsequent appropriator of ground water limited to an amount

that will maintain and provide a safe sustaining yield in the amount of the prior appropriation... . (Emphasis added.)

In essence, the issue of statutory "impairment" or related "public welfare" questions turns on the statutory phrases "reasonable or feasible pumping lift" and "safe sustaining yield". Shinn v. DOE, PCHB No. 613 (1975); Heer Brothers v. DOE and Schell, PCHB No. 894 (1976); and Heer v. DOE and Schell, PCHB 1135 (1976).

IV

The meaning of these statutes when read together is that "impairment" of an exisiting right does not occur when a junior appropriator merely lowers the water level at the site of a senior appropriator's well. Rather, senior appropriators must pursue a safe sustaining yield by deepening their wells to the point where the water level is found, but never lower than a reasonable or feasible pumping lift. Were it not so, a senior appropriator with a shallow well could deprive all others from using the available groundwater. However, we observe that where a senior appropriator, in order to obtain water, would exceed a reasonable or feasible pump lift, the senior appropriator who still is affected by a junior appropriator is then impaired. The senior appropriator would then be entitled to regulation of the junior appropriation, (or possibly an agreement by which the junior appropriator might make the senior appropriator whole, acquire the senior right or otherwise settle the matter amicably).

V

Upon the totality of the evidence before us we cannot conclude that the City's right impairs existing water rights. From the DOE estimates and actual experience of the appellants and others it appears that the drawdown effect of City No. 5 would not cause existing appropriators to deepen their wells beyond a reasonable or feasible pumping lift. The transfer from City No. 1 to City No. 5 of a water right for 350 gallons per minute (Certificate 369-A) should therefore be affirmed.

VI

There is need in this case for a determination of what the reasonable or feasible pumping lift is, for domestic and irrigation use, in this locality to serve as a guide for the future relationship of the parties and subsequent well developers. We have held that RCW 90.44.070 requires DOE to determine a range within which pumping lifts would be reasonable for domestic pumping developments before issuing a ground water permit which could affect a prior water right. Heer Brothers, supra, p. 8. In this case, however, we are persuaded that the instant municipal development will not place appellants close to the limit of such a range. Therefore, a condition should be added to DOE's approval of the transfer (Certificate 369-A) requiring that:

> This approval shall be subject to permittee's submitting evidence sufficient for DOE's determination of reasonable or feasible pumping lifts for existing domestic and irrigation

rights. Such a determination shall be made for the locality concerned by the issuance of a regulatory order within a reasonable time after this approval.

We conclude that such a condition and determination by DOE would establish with necessary clarity the line between the rights of senior and junior appropriators in the locality in question, and that such a condition is required to conform this approval with RCW 90.44.070 and the public welfare clause of RCW 90.03.290. Such a determination should be made by reference to the criteria of DOE's rule regarding reasonable or feasible pumping lift, WAC 173-150-040.

VII

Any Finding of Fact deemed to be a Conclusion of Law is hereby adopted as such. From these Conclusions of Law, the Board enters this

ORDER

The transfer of water right to City well No. 1 (Certificate 266-D) is hereby affirmed. The transfer of water right to City well No. 5 is hereby remanded for addition of the condition set out in Conclusion of Law VI, above, but is in all other respects affirmed.

DONE at Lacey, Washington, this 10th day of May, 1989.

POLLUTION CONTROL HEARINGS BOARD

Wick Dufford
WICK DUFFORD, Chairman

Judith A. Bendor
JUDITH A. BENDOR, Member

William A. Harrison
WILLIAM A. HARRISON
Administrative Appeals Judge

file

State of Washington
Department of Ecology
Yakima, Washington

IN THE MATTER OF APPLICATION FOR CHANGE BY CITY OF OKANOGAN TO CHANGE THE POINT OF WITHDRAWAL AND CHANGE THE PURPOSE AND PLACE OF USE UNDER GROUND WATER CERTIFICATE NO. 266-D	Findings of Fact and Decision

Background

On July 20, 1987, the City of Okanogan filed an application to change the point of withdrawal authorized by Ground Water Certificate No. 266-D. The application was accepted and public notice was made. During the 30 day protest period, which ended on September 19, 1987, letters of protest were received from Philip and Audrey Gum, Lewis and Doris Jones, and Jack Graves. Their concerns will be addressed later in this report.

Investigation

A field inspection was conducted relative to this application on October 30, 1987. The following information was obtained from the inspection, conversation with Ron Cook of Gray and Osborne, and conversations last year with Audrey Gum.

Ground Water Certificate No. 266-D issued to the Town of Okanogan and authorized the withdrawal of 100 gallons per minute (gpm); 29 acre-feet per year from a well for municipal swimming pool and park irrigation. The authorized place of use is Alma Park, Town of Okanogan, Washington. The authorized well location is in Alma Park, Tax Lot 66, Town of Okanogan. It was located approximately 300 feet west and 100 feet north of the east quarter corner of Section 17, being within the SE1/4NE1/4 of Section 17, T. 33 N., R. 26 E.W.M.

The well was constructed in the 1920's. It was reportedly a dug well approximately 25 feet deep. The well was located about 50 feet from the Okanogan River. In the late 1960's or early 1970's the well was abandoned and water delivery to the park was continued from the municipal system. The instant application requests after the fact authorization to change the point of withdrawal to the city's well No. 1, which is located about 50 feet west of the well authorized by the certificate. Well No. 1 is part of the municipal system. It is 12 inches in diameter and was originally constructed to 110 feet. The well has reportedly had problems with sand and silt and may not be that deep at this time. A 25 horsepower pump is installed in the well. The city intends to replace the pump this fall and if this application for change is approved will install a pump that is capable of withdrawing 100 gpm. Ground Water Certificate No. 369-A issued on well No. 1. The department has recently approved an application for change to move this certificate to the newly constructed well No. 5.

The instant application requests authorization to change the purpose of use to municipal supply since supplying water for the park is generally considered a municipal water use and water that is delivered to the park is through the municipal system. The applicant also wants to change the place of use to the City of Okanogan, again because water from well No. 1 is pumped into the municipal system for distribution. Since water was originally only used for the park and swimming pool, the well was pumped only during irrigation season.

Section 90.44.100 of the Revised Code of Washington (RCW) provides that the holder of a valid right to withdraw public ground waters may, without losing his priority of right, construct wells or other means of withdrawal at a new location in substitution for or in addition to those at the original location provided that the substitute well withdraws from the same body of public ground water as the original well, use of the original well is discontinued, the construction of the substitute well will not enlarge the right conveyed by the original certificate and other existing rights will not be impaired. If the season of use remains the normal irrigation season of April 1 to October 31, there will be no enlargement of the right.

Chapter 90.14 RCW provides that a right that goes unused for five or more consecutive years relinquishes to the state due to nonuse. Section 90.14.140 provides, however, that there is no relinquishment if the use claimed is municipal supply. A further consideration is whether the use has in fact been ongoing but from a different point of withdrawal.

Consideration of Objections

All of the protestants express the same concern. They fear that the proposed change in point of withdrawal will affect their wells. The protestants' property and wells lie in the S1/2SW1/4 of Section 17 approximately 4,000 feet from the city's well No. 1, which is the proposed point of withdrawal. The protestants appear to mistakenly believe that the instant application for change seeks authorization to change the point of withdrawal to the city's well No. 5, which is located in the SE1/4SE1/4 of Section 17, within 1,000 feet or less of each of their wells. This is not the case.

Conclusions

Based on the foregoing information, the following conclusions are made:

The proposed change in point of withdrawal will not impair existing rights due to the close proximity of the originally authorized well to the proposed new well and the extensive nature of the aquifer being utilized. The proposed change in purpose of use and place of use does not represent an enhancement since the city is still restricted to withdrawing only 100 gpm, 29 acre-feet per year from the well and the use originally authorized is normally considered municipal supply. It will however, be necessary to restrict the period of use to the season normally required for park and swimming pool uses or from April 1 through October 31 each year. Use of the well during the winter will have to be under a separate authorization.

Recommendations

It is recommended that a superseding certificate issue authorizing the withdrawal of 100 gallons per minute, 29 acre-feet per year for municipal supply from April 1 to October 31 within the City of Okanogan. The authorized point of withdrawal will be a well located approximately 100 feet north and 350 feet west of the east quarter corner of Section 17, being within the SE1/4NE1/4 of Section 17, T. 33 N., R. 26 E.W.M.

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 gage may be installed in addition to the access port.

REPORT BY: Becky Johnson DATE: 9/6/88
Becky Johnson

APPROVED BY: Doug Clausing DATE: 9/6/1988
Doug Clausing, Regional Supervisor

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State of Washington
Department of Ecology
Yakima, Washington

IN THE MATTER OF APPLICATION FOR CHANGE)
BY CITY OF OKANOGAN TO CHANGE THE POINT)
OF WITHDRAWAL AND CHANGE THE PURPOSE)
AND PLACE OF USE UNDER GROUND WATER)
CERTIFICATE NO. 266-D)

Findings of Fact
and Decision

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The well was constructed in the 1920's. It was reportedly a dug well approximately 25 feet deep. The well was located about 50 feet from the Okanogan River. In the late 1960's or early 1970's the well was abandoned and water delivery to the park was continued from the municipal system. The instant application requests after the fact authorization to change the point of withdrawal to the city's well No. 1, which is located about 50 feet west of the well authorized by the certificate. Well No. 1 is part of the municipal system. It is 12 inches in diameter and was originally constructed to 110 feet. The well has reportedly had problems with sand and silt and may not be that deep at this time. A 25 horsepower pump is installed in the well. The city intends to replace the pump this fall and if this application for change is approved will install a pump that is capable of withdrawing 100 gpm. Ground Water Certificate No. 369-A issued on well No. 1. The department has recently approved an application for change to move this certificate to the newly constructed well No. 5.

The instant application requests authorization to change the purpose of use to municipal supply since supplying water for the park is generally considered a municipal water use and water that is delivered to the park is through the municipal system. The applicant also wants to change the place of use to the City of Okanogan, again because water from well No. 1 is pumped into the municipal system for distribution. Since water was originally only used for the park and swimming pool, the well was pumped only during irrigation season.

Section 90.44.100 of the Revised Code of Washington (RCW) provides that the holder of a valid right to withdraw public ground waters may, without losing his priority of right, construct wells or other means of withdrawal at a new location in substitution for or in addition to those at the original location provided that the substitute well withdraws from the same body of public ground water as the original well, use of the original well is discontinued, the construction of the substitute well will not enlarge the right conveyed by the original certificate and other existing rights will not be impaired. If the season of use remains the normal irrigation season of April 1 to October 31, there will be no enlargement of the right.

Chapter 90.14 RCW provides that a right that goes unused for five or more consecutive years relinquishes to the state due to nonuse. Section 90.14.140 provides, however, that there is no relinquishment if the use claimed is municipal supply. A further consideration is whether the use has in fact been ongoing but from a different point of withdrawal.

Consideration of Objections

All of the protestants express the same concern. They fear that the proposed change in point of withdrawal will affect their wells. The protestants' property and wells lie in the S1/2SW1/4 of Section 17 approximately 4,000 feet from the city's well No. 1, which is the proposed point of withdrawal. The protestants appear to mistakenly believe that the instant application for change seeks authorization to change the point of withdrawal to the city's well No. 5, which is located in the SE1/4SE1/4 of Section 17, within 1,000 feet or less of each of their wells. This is not the case.

Conclusions

Based on the foregoing information, the following conclusions are made:

The proposed change in point of withdrawal will not impair existing rights due to the close proximity of the originally authorized well to the proposed new well and the extensive nature of the aquifer being utilized. The proposed change in purpose of use and place of use does not represent an enhancement since the city is still restricted to withdrawing only 100 gpm, 29 acre-feet per year from the well and the use originally authorized is normally considered municipal supply. It will however, be necessary to restrict the period of use to the season normally required for park and swimming pool uses or from April 1 through October 31 each year. Use of the well during the winter will have to be under a separate authorization.

Recommendations

It is recommended that a superseding certificate issue authorizing the withdrawal of 100 gallons per minute, 29 acre-feet per year for municipal supply from April 1 to October 31 within the City of Okanogan. The authorized point of withdrawal will be a well located approximately 100 feet north and 350 feet west of the east quarter corner of Section 17, being within the SE1/4NE1/4 of Section 17, T. 33 N., R. 26 E.W.M.

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 gage may be installed in addition to the access port.

REPORT BY: Becky Johnson DATE: 9/6/88
Becky Johnson

APPROVED BY: Doug Clausing DATE: 9/6/1988
Doug Clausing, Regional Supervisor

815rm8
ska

CG4 – 23854C

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
15 West Yakima Avenue, Suite 200 • Yakima, Washington 98902-3452 • (509) 575-2490

August 17, 2006
CERTIFIED MAIL

City of Okanogan
PO Box 752
Okanogan WA 98840-0752

RE: Application for Temporary Change Authorization No. CG4-23854C

On August 9, 2006, Change Application No. for G4-23854C was submitted to the Department of Ecology (Ecology). The application was accepted and assigned Ground Water Change No. CG4-23854C. The City of Okanogan (Okanogan/City) is seeking a Temporary Change Authorization to establish a second point of withdrawal under Water Right No. G4-23854C, with a priority date of December 24, 1975. The water will be used for municipal supply as authorized under the original Certificate.

Certificate No. G4-23854C authorizes water withdrawal from Well No. 4. Okanogan is temporarily suspending use of Well No. 4 to make improvements needed to satisfy new EPA arsenic standards. The temporary suspension leaves Okanogan with a significant deficit in their sources available to meet water supply needs for the City.

The temporary change request is to allow use of Well No. 5 as an additional point of withdrawal for the period while Well No. 4 is removed from service, to get the City through the impending low flow period for the 2006/2007 period.

Well No. 5 has two water rights associated with it:

1. The first is GWC 369-A. It authorizes withdrawal from the well at an instantaneous rate of 350 gallons per minute, 200 acre-feet per year, for municipal supply.
2. The second water right is G4-29193P which authorizes withdrawal from the well at an instantaneous rate of 650 gpm, 400 acre-feet per year, for municipal supply. The 400 acre feet per year allocation, including foreseeable growth, was the recognized total of all the City's rights in existence when this permit issued. The water right is interruptible whenever the flow of the Okanogan River falls below the minimum flows as set by Chapter 173-549 WAC. WAC 173-549, the Okanogan River Basin Plan, established minimum instream flows in the Okanogan and Similkameen Rivers as well as seasonally closing all tributary perennial streams to further consumptive appropriation and establishing guidelines for further appropriation from lakes and ponds.

FILE COPY

- Well No. 4 is located 450 feet north and 375 feet west from the east quarter corner of section 17, being within the SE¼NE¼ of Section 17, T. 33 N., R. 26 E.W.M. It is 525 feet west of the Okanogan River.
- Well No. 5 is located 1250 feet north and 1650 feet east of the southwest corner of Section 17, being within the SE¼SW¼ of Section 17, T. 33N., R. 26 E.W.M. Well No. 5. It is 875 feet west of the Okanogan River and 3700 feet southwest from Well No. 4.

Okanogan wishes to continue withdrawal from Well No. 5 at a rate not to exceed 650 gallons per minute. That amount is equal to the existing 350 gpm authorized under GWC 369-A and an additional 300 gallons per minute of the instantaneous rate authorized for withdrawal from Well No. 4 under G4-23854C.

Conclusion:

1. Since the requested authorization from Well No. 5 is less than the authorized rate when the level of the Okanogan River is above the established minimum flow, there will be no impairment of existing rights.
2. Withdrawal from the well is limited to a total of 650 gallons per minute of non-interruptible instantaneous rate.
3. The short term change in source is processed prior to competing applications because it is determined that immediate action is necessary to maintain options for the highest quality potable water supply for the patrons of the City water system (WAC 173-152-050 (2)(a).
4. This Temporary Change Authorization is granted in accordance with RCW 90.03.390.

Provisions:

No well construction or well modification is anticipated with this temporary authorization.

The operator of the system under this authorization shall:

- Have a copy of this Temporary Change Authorization at or near the wells when pumping water;
- Provide said copy as evidence of this authorization upon request by Department of Ecology or Department of Fish and Wildlife staff;
- Be aware of the parameters and provisions and operate accordingly;
- An up to date record of water use for this project shall be maintained.
- The second source of water for Ground Water Certificate G4-23854C is a well (Well No. 5), located 1250 feet north and 1650 feet east of the southwest corner of Section 17, being within the SE¼SW¼ of Section 17, T. 33 N., R. 26 E.W.M.
- Withdrawal from Well No. 5 under this authorization is limited to a total of 650 gallons per minute (at a non-interruptible rate). The total annual quantity from all sources shall not exceed 400 acre-feet per year.

Withdrawal of water under this temporary authorization may take place for one year, from August 7, 2006, to August 1, 2007.

This authorization shall in no way excuse the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations including those administered by other programs of the Department of Ecology and those administered by local and state health departments for public water supplies.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded daily. The recorded daily records, the maximum monthly rate of withdrawal and the monthly total volume shall be submitted to Ecology by January 1, 2007 and August 31, 2007. Ecology is requiring recording of daily meter readings to collect seasonal information for water resource planning, management and compliance.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA 49, all certificate and permit numbers including TEMPORARY Change no. CG4-23854C, source name, annual quantity used including units of measurement, maximum rate of withdrawal, *monthly meter readings including units of measurement, peak monthly flow including units of measurement, Department of Health WFI water system number and source number(s), purpose of use, well tag number,* and period of use. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Chapter 173-173 WAC 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. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements".

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

You have the right to appeal this decision to the Pollution Control Hearings Board. Pursuant to Chapter 43.21B RCW, your appeal must be filed with the Pollution Control Hearings Board, and served on the Department of Ecology, within thirty (30) days of the date of your receipt of this document.

To appeal this decision, your notice of appeal must contain a copy of the Ecology decision you are appealing.

Your appeal must be filed with:

The Pollution Control Hearings Board
4224 - 6th Avenue SE Rowe Six Bldg 2
PO Box 40903
Lacey WA 98504-0903

Your appeal must also be served on:

The Department of Ecology
Appeals Coordinator
PO Box 47608
Olympia WA 98504-7608

In addition, please send a copy of your appeal to:

G. Thomas Tebb, L.E.G.
Department of Ecology
15 W Yakima Ave Ste 200
Yakima WA 98902-3452

Sincerely,

Mark C. Schuppe For

G. Thomas Tebb, L.E.G.
Section Manager
Water Resources Program

MS:CM:gg
060821

Enclosure: Water Measurement Device Installation and Operation Requirements
Your Right To Be Heard

cc: Philip Rigdon, Deputy Director, Natural Resources Division, Yakama Nation

G4 – 29193

file

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
January 30, 1987	G4-29193		

NAME
City of Okanogan

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P.O. Box 752	Okanogan,	Washington	98840

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
A well (Well No. 5)

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	650	400

QUANTITY, TYPE OF USE, PERIOD OF USE
To be used continuously for municipal supply.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
1250 feet north and 1650 feet east of the southwest corner of Section 17

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SE¼SW¼	17	33	26 E	49	Okanogan

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
17		Shirley Garden Tracts

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

City of Okanogan municipal service area

DESCRIPTION OF PROPOSED WORKS

An 18-inch diameter well 110 feet deep. Pump size to be determined.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Begun	October 1, 1988	October 1, 1990

REPORT

Background

On January 30, 1987, the City of Okanogan filed an application to appropriate public ground waters. The application was accepted, assigned number G4-29193, and public notice was made. The 30 day protest period expired on March 21, 1987. During that time a letter of protest was received from Philip W. Gum. Mr. Gum's letter had attached to it a petition signed by 26 people expressing concern over the water use proposed by the city. Three additional letters were received from Lewis Jones, Mildred Goff, and Jack and Orvilla Graves objecting to the city's application. These three letters were received two to three weeks following the end of the protest period and could not be accepted as formal protests. Their concerns are much the same as those expressed by Philip Gum and his concerns will be addressed later in this report.

Investigation

The following information was obtained from a pump test of the proposed well, site inspection by Don Abbott a Department of Ecology Geologist, review of office records, conversations with Mrs. Philip Gum, and conversations with Ron Cook of Gray and Osborne, consultant for the City of Okanogan.

The instant application requests authorization to construct a new well (well No. 5) and withdraw up to 650 gallons per minute (gpm) from the well for continuous municipal supply.

The city currently receives its municipal supply from four wells and Watercress Springs. The existing distribution system includes five reservoirs, one near the springs, two west of the central business district, one in the Elmway area and one east of the Okanogan River. The total storage capacity is 1,831,000 gallons. The system has two inline booster stations, each having two booster pumps (two 15 horsepower boosters are at the Highland Drive station and two 5 horsepower boosters are at the Murray Street station). The city is experiencing problems with delivering water to the southwest part of the city since none of the water sources or reservoirs are located in this area and the mainlines are undersized. In order to deal with this problem it was recommended to the city by their consulting engineers that they construct a well in the southwest area of town.

The city holds the following water rights:

1. Ground Water Certificate No. 266-D: 100 gpm, 29 acre-feet per year for municipal supply at Alma Park. The authorized well is located within the SE1/4NE1/4 of Section 17, T. 33 N., R. 26 E.W.M., approximately 100 feet from the Okanogan River. This dug well has been abandoned and an application for change has been filed to change the point of withdrawal to the city's well No. 1.

2. Ground Water Certificate No. 369-A: 500 gpm, 200 acre-feet per year for municipal supply. The authorized well is located in the SE1/4NE1/4 of Section 17, T. 33 N., R. 26 E.W.M., approximately 50 feet from the well described in Certificate No. 266-D. This drilled well is referred to as Well No. 1. Currently a 25 horsepower pump is installed in the well and 250 gpm is being withdrawn. Reportedly 350 gpm may be the maximum that has been withdrawn from the well.

3. Ground Water Certificate No. 3410-A: 200 gpm, 320 acre-feet per year for municipal supply. The certificate issued supplemental to existing rights, meaning that the total annual water use would not exceed 320 acre-feet per year under all rights. The authorized well is within the SE1/4NW1/4 Section 16, T. 33 N. R. 26 E.W.M. This drilled well is referred to as Well No. 2. A 25 horsepower pump is installed in the well and 180 to 200 gpm is currently being withdrawn.

4. Ground Water Certificate No. 5327-A: 650 gpm, 700 acre-feet per year for municipal supply. The certificate issued supplemental to existing rights, meaning that the total annual water use would not exceed 700 acre-feet per year under all rights. The authorized well is located in Government Lot 2 in Section 9, T. 33 N., R. 26 E.W.M. This drilled well is referred to as Well No. 3. A 75 horsepower pump is installed in the well and the authorized 650 gpm is currently being withdrawn.

5. Ground Water Certificate No. G4-23854C: 550 gpm, 400 acre-feet per year for municipal supply. The authorized well is located in the SE1/4NE1/4 Section 17, T. 33 N., R. 26 E.W.M. This drilled well is referred to as Well No. 4. A 100 horsepower pump is installed in the well and approximately 500 gpm is currently being withdrawn.

6. Water Right Claim No. 000052: Claims a right to divert 300 gpm, 484 acre-feet per year from springs (now called Watercress Springs) for municipal supply. The date of first water use on the claim is 1908. The springs are located in the SW1/4 Section 5, T. 33 N., R. 26 E.W.M. The springs flow seasonally varies from 175 gpm to the claimed 300 gpm.

The water right claim was filed as a result of Chapter 90.14 of the Revised Code of Washington (RCW), which required filing a water right claim for any use that was initiated prior to adoption of the State Surface and Ground Water Codes. The Surface Water Code was adopted in June 1917 and the Ground Water Code was adopted in June 1945. The determination of the validity and extent of a water right claim can be made only through a Superior Court general adjudication.

The existing ground water certificates authorize the use of a total of 2,000 gpm, 1,100 acre-feet per year. An additional 484 acre-feet per year is claimed from the springs, for a total annual water quantity of 1,584 acre-feet per year. According to the city's Water System Comprehensive Plan and Engineering Report, prepared in August 1986 by Gray & Osborne, Inc., the city's current population is approximately 2,337 and has a per capita water demand of 240 gallons per day. The city projects their population to be between 2,554 and 3,283 by the year 2010, which would require between 687 and 883 acre-feet per year. The existing water rights clearly allocate a sufficient annual quantity of water to meet the population needs well into the future. However, the city is in need of an additional instantaneous source of water in the south end of their service area in order to compensate for system deficiencies and peak daily demands.

The well proposed in the instant application has been constructed and is the city's Well No. 5. It is 18 inches in diameter and 110 feet deep. The well penetrates sands and gravels with interbedded silts. The well is located approximately 1,250 feet north and 1,650 feet east of the southwest corner of Section 17, being within the SE1/4SW1/4 Section 17, T. 33 N., R. 26 E.W.M. A pump test was conducted by Gray & Osborne with department staff monitoring. Department analysis of the pump test revealed that the aquifer penetrated by this well has an extremely high transmissivity, which allows for withdrawal of large quantities of water with little effect on water levels in neighboring wells. The well penetrates a water table aquifer that is recharged from the Okanogan River. The well is approximately 750 feet from the river, but is near the edge of an old flood channel, which contains water year-round. Following analysis of the aquifer characteristics, it was determined that over 80 percent of the water withdrawn from the well would be Okanogan River water if the well was pumped only 30 days. If the well was pumped the entire year almost 95 percent of the water would be from the river.

Under authority of, and in response to, the Water Resources Act of 1971, Chapter 90.54 RCW, the Department of Ecology was required to formulate a management and use program for the waters of the State of Washington. With the help of the Okanogan River Basin Advisory Group, the program for the Okanogan Basin was drafted and in July of 1976 was adopted as Chapter 173-549 of the Washington Administrative Code (WAC). It was revised effective July 19, 1984.

WAC 173-549, the Okanogan River Basin Plan, established minimum instream flows in the Okanogan and Similkameen Rivers as well as seasonally closing all tributary perennial streams to further consumptive appropriation and establishing guidelines for further appropriation from lakes and ponds. The basin plan provides that if development of ground water affects surface waters subject to the provisions of WAC 173-549, then rights to said ground water shall be subject to the same conditions as the affected surface water.

The City of Okanogan has filed an application for change to change the point of withdrawal for Certificate No. 369-A from their Well No. 1 in Alma Park to the new well. If the department is able to approve that request, the request under the instant application would be reduced to the difference between 650 gpm (capacity of well) and the quantity we approve for transfer under Certificate No. 369.

Consideration of Objections

Mr. Gum owns property and has two wells to the north and west of the newly constructed city well. He indicates that last year one of his wells almost went dry and he and his neighbors do not think that the aquifer can stand the pressure of a withdrawal the size proposed by the city. A petition signed by 26 neighboring landowners was attached to his letter. The petition also expresses concern over the proposed withdrawal by the City of Okanogan.

Mr. Gum is the holder of three certificates. Ground Water Certificate No. 1075, with a priority date of 1922, and Certificate No. G4-26085C, with a priority date of January 10, 1979, are appurtenant to the Gum property. They issued on a dug well 48 inches in diameter and 20 feet deep. The well is located approximately 900 feet from city well No. 5. The well is located within the E1/2NW1/4SW1/4 of Section 17, T. 33 N., R. 26 E.W.M. It is used to irrigate 19 acres within that parcel. An additional five acres are irrigated in the W1/2NW1/4SW1/4 Section 17 from the same well. Under the two certificates, a maximum of 300 gpm, 120.5 acre-feet per year for the irrigation of 24 acres is authorized. This is the well that almost went dry last year and is Mr. Gum's primary concern. He has a second well, which is authorized for use by Certificate No. G4-27385C, with a priority date of March 19, 1981. It is located over 1,000 feet from the city well. Mr. Gum's second well is six inches in diameter and 135 feet deep.

Besides the Gum certificates, there are three other ground water certificates with wells within half a mile of the city's new well. The wells authorized by these three certificates are between 25 and 48 feet deep and are constructed in the alluvial materials of the Okanogan River valley floor. There are several homes constructed in this area, but outside the city limits, that presumably receive their domestic water from wells constructed at their homes. Water right claims have been filed for several domestic wells in this neighborhood, however, there are no water well reports for these domestic wells. The authors of two of the three letters received after the protest period state that their source of water is a shallow well (30 feet deep). Considering that the wells in the valley floor that we have construction information for are very shallow, it is reasonable to assume that many of the unrecorded domestic wells are also shallow.

Well reports for deeper wells constructed along the Okanogan River indicate that the alluvial material in the valley floor is rather extensive, extending several hundred feet below land surface. Infiltration from the river into this material provides the water table aquifer that is utilized by both the shallow domestic and irrigation wells and the new well constructed by the city. The sands and gravels into which the wells are constructed are permeable, allowing for migration of water through the materials. Given the aquifer characteristics determined through the pump test, we can determine that the water level in a well 150 feet from the city well would drop only three feet if the city well were pumped at 650 gpm for an entire year.

As previously stated, the aquifer which the existing shallow wells utilize is considerably more extensive than the 20 to 48 feet they currently penetrate. Deepening of the wells would more fully penetrate the aquifer and eliminate the effect of minor fluctuations of water level. During the past three years, the annual precipitation has been well below normal, causing low flows in many of the rivers and streams in Okanogan County, including the Okanogan River. It is very likely that the fluctuations in the water table observed by Mr. Gum and his neighbors is the result of the lower flow in the Okanogan River, and not the result of an over allocated aquifer. Data collected by the department for wells adjacent to the Okanogan River indicates that they demonstrate regular cycles in water levels and that they are recharged annually by the spring freshet.

The Ground Water Code, Chapter 90.44 RCW, does provide that the prior appropriator shall as against subsequent appropriators from the same ground water body be entitled to the preferred use of such ground water to the extent of his appropriation and beneficial use, and shall enjoy the right to have any withdrawals by a subsequent appropriator of ground water limited to an amount that will maintain and provide a safe sustaining yield in the amount of prior appropriation. This does not mean that the prior appropriator is guaranteed his right to continue using a shallow well that has barely penetrated the aquifer. If he can obtain a safe sustaining yield in the amount of his prior appropriation by deepening the well, but still being within the same aquifer, subsequent appropriators would not be limited.

Conclusions

Based on the foregoing information, the following conclusions are made:

Subject to the provisions of WAC 173-549, water is available for the proposed beneficial use. Due to the extremely high transmissivity of the aquifer, the proposed water use should not be detrimental to existing rights. Granting a permit is not contrary to the public interest.

Recommendations

It is recommended that a permit issue for 650 gpm, 400 acre-feet per year for continuous municipal supply.

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 gage may be installed in addition to the access port.

A totalizing flow meter shall be installed on the well distribution system.

If the application for change which has been filed to change the point of withdrawal under Certificate No. 369-A is approved, the instantaneous quantity herein authorized shall be reduced by whatever quantity is approved.

During periods when the minimum flows for the lower reach of the Okanogan River are being violated, the city shall cease their pumping from well No. 5, under this authorization.

The annual quantity herein authorized is not in addition to the annual quantities authorized by Ground Water Certificates No. 266-D, No. 369-D, No. 3410-A, No. 5327-A and No. G4-23854C and claimed by Water Right Claim No. 000052, should a right be confirmed following an adjudication.

This authorization is subject to the provisions of Chapter 173-549 WAC as adopted in Olympia, Washington, August 14, 1976, and revised effective July 19, 1984, and the general rules of the Department of Ecology as specified under Chapter 173-500 WAC.

Instream flows as established at monitoring station 12.4472.00 at river mile 17, Section 9, T. 32 N., R. 25 E.W.M. and as presented in the table below shall be maintained by regulation of diversions as set forth in said WAC 173-549.

Instream flow hydrographs, as represented in WAC 173-549-900, shall be used for definition of instream flows on those days not specifically identified in WAC 173-549-020(2).
Instream flows at Station 12.4472.00.

G4-29193

Month	Day	Instream Flow (cfs)	Month	Day	Instream Flow (cfs)
Jan.	1	860	Jul.	1	2100
	15	830		15	1200
Feb.	1	820	Aug.	1	800
	15	850		15	600
Mar.	1	880	Sep.	1	620
	15	900		15	700
Apr.	1	925	Oct.	1	750
	15	1100		15	960
May	1	1750	Nov.	1	950
	15	3800		15	950
Jun.	1	3800	Dec.	1	930
	15	3800		15	900

No diversion of water under this authorization shall take place when the flow of the river falls below the above flows.

REPORT BY: Becky Johnson DATE: 9/14/87
Becky Johnson

APPROVED BY: Doug Clausing DATE: 9/14/1987
Doug Clausing, Regional Supervisor

ska
4x18

GWC – 3838

Report of Examination on Ground Water

Received date 8-12-60 Date of exam 9-21-60 No. 5702

Name Progressive Flat Water Assn. Address c/o Charles Rappe, Secy., Okanogan

Type of works well Dimensions 30"x27'

Progress of works well dug to depth of 30 feet, may be deepened later.

Quantity claimed or applied for 150 g.p.m. acre-feet per year

Legal sub. NW¼NW¼ Sec. 4 Twp. 33 N. Rge. 26 E. County Okanogan

Use community domestic supply

Irrigation-acreage: Present Planned Feasible

Municipal: Population 87-100 as of the present

Industrial

Time pump will be operated continuously

Other water rights appurtenant to this land none

Proximity to existing works, springs, wells, or streams Okanogan Valley Golf Club ENE 3/16 mi.

Area Sub-area Zone

RECOMMENDATIONS

Approved for 150 g.p.m. 39 acre-feet per year, subject to existing water rights. (1 acre-foot 325,850 gallons.) The installation of an access port to well as described in attached Ground Water Bulletin No. 1 is recommended.

The water requirement for this application is calculated on a per capita use of 350 gallons per day or 39 acre-feet annually for a population of 100 persons.

Signed this 28th day of October, 1960.
Division of Water Resources

ERNEST E. LeVASSEUR, Engineer

GWC – 03410

Report of Examination on Ground Water

Received date 2-21-48 Date of exam 5-14-59 Appl. No. 782

Name City of Okanogan Address Okanogan, Wash.

Type of works well Dimensions 12"x95'

Progress of works well completed (march 1948)

Quantity applied for 200 g.p.m. acre-feet per year

Legal sub. SW NE Sec. 16 Twp. 33 N. Rge. 26 E. County Okanogan

Use municipal supply

Irrigation-acreage: Present Planned Feasible

Municipal: Population 2500 as of 1970

Industrial

Time pump will be operated continuously

Other water rights appurtenant to this land SW Cert 592, G.W. Certificates 265 & 266-B and 369-A.

Proximity to existing works, springs, wells, or streams Okanogan River to the west

Area Sub-area Zone

RECOMMENDATIONS

Approved for 200 g.p.m. 320 acre-feet per year, subject to existing water rights. (1 acre-foot 325,850 gallons.)

The City of Okanogan has the four certificates of water right listed above issued for a total withdrawal rate of 1675 gallons per minute and for an annual quantity of 1488 acre feet per year.

Therefore, permit will issue for a continuous withdrawal rate of 200 g.p.m. or 320 acre-feet per year which will be supplemental to the above listed certificates.

The applicant will furnish information to this office as to the size and type of equipment installed and the gallons per minute furnished. The size of hole openings and number of sprinklers operated, if such be the case, will give this information.

Signed this 19th day of May, 1959.

Stuart E. Shumway

STUART E. SHUMWAY, Watermaster
Division of Water Resources

REPORT OF FINDINGS ON GROUND WATER Appli. 742

NAME City of Okanogan

TYPE OF WORKS: Well Date of Examination March 9, 1948

Dimensions: 12" x 95' Progress of Works well in - no pump

QUANTITY ~~Claimed~~ Applied for: 200 g.p.m. acre feet per year

LOCATION NE¼ of NW¼ of 16-33-26 E.W.M.

USE: municipal

Irrigation- acreage: Present Planned Feasible

Municipal: Population 2150 as of --

Industrial:

Time Pump Will be Operated:

Other Water Rights of Applicant:

Proximity to existing works, springs or streams: 500 feet West to Okanogan River

Water Bearing Zone:

RECOMMENDATIONS

Approved for 200 g.p.m. 162 acre-feet per year, subject to existing water rights. (1 acre-foot = 325,850 gallons)

This well for the City of Okanogan is located across the bridge in the Eastern part of town which is part of the Colville Indian Reservation.

The present plan is to use it at 200 g.p.m. for 6 months in the summer so that 162 acre-feet a year will be produced.

Ground Water Application #321, Permit #341 will probably be cancelled as soon as this well is put into satisfactory operation.

Signed this 17th day of March, 1948

Fred B. Roberts

FRED B. ROBERTS
Ground Water Geologist

CG4 – GWC3838-A

GWC 3838-a

Report of Examination on Ground Water

Received date 8-12-60 Date of exam 9-21-60 No. 5702

Name Progressive Flat Water Assn. Address c/o Charles Rappo, Secy., Okanogan

Type of works well Dimensions 30"x27'

Progress of works well dug to depth of 30 feet, may be deepened later.

Quantity claimed or applied for 150 g.p.m. acre-feet per year

Legal sub. NW¼NW¼ Sec. 4 Twp. 33 N. Rge. 26 E. County Okanogan

Use community domestic supply

Irrigation-acreage: Present Planned Feasible

Municipal: Community of Progressive Flat Population 87-100 as of the present

Industrial

Time pump will be operated continuously

Other water rights appurtenant to this land none

Proximity to existing works, springs, wells, or streams Okanogan Valley Golf Club ENE 3/16 mi.

Area Sub-area Zone

RECOMMENDATIONS

Approved for 150 g.p.m. 39 acre-feet per year, subject to existing water rights. (1 acre-foot 325,850 gallons.) The installation of an access port to well as described in attached Ground Water Bulletin No. 1 is recommended.

The water requirement for this application is calculated on a per capita use of 350 gallons per day or 39 acre-feet annually for a population of 100 persons.

Signed this 18th day of October, 1960.
Division of Water Resources

Ernest E. LeVasseur

ERNEST E. LeVASSEUR, Engineer

CG4 – GWC3838-A@2

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION FOR CHANGE
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	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
August 12, 1960	CG4-GWC3838-A@2		

NAME
Progressive Flat(s) Water Association (contact: Wayne Dezellem)

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
7 Cherry Lane Road	Okanogan	WA	98840-8226

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
A well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	50	39

QUANTITY, TYPE OF USE, PERIOD OF USE
50 gallons per minute and 39 acre-feet per year for municipal water supply and stockwatering.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION–WITHDRAWAL
Approximately 1350 feet south and 2080 feet west from the NE corner of Section 9, T. 33 N., R. 26 E.W.M.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼NE¼	9	33	26 E.	49	Okanogan

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The place of use of this water right is the more recently approved of the following: (1) the legal description below, OR (2) the service area described in the most recent Water System Plan approved by the Washington State Department of Health after September 9, 2003, so long as the water right holder is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

Section 4, 5, and 9, T. 33 N., R. 26 E.W.M.

FILE COPY

DESCRIPTION OF PROPOSED WORKS

Change the point of withdrawal for Ground Water Certificate No. 3838-A because of high uranium content and a severe decline in water production.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
June 30, 2006	December 31, 2006	In good standing

REPORT

On January 27, 2006, Progressive Flat(s) Water Association of Okanogan, Washington, applied to change the point of withdrawal under Ground Water Certificate No. 3838-A to be used for continuous domestic supply. The application was accepted and assigned identifier No. CG4-GWC3838-A@2. RCW 90.44.100 allows changing the point of withdrawal for ground water certificates. Public Notice of the application was given in the Omak-Okanogan County Chronicle on February 15 and 22, 2006. There were no letters of protest or concern received during the 30-day protest period. This water right change application is categorically exempt under SEPA WAC 197-11-305 and WAC 197-11-800(4).

WAC 173-152-050(1)(c) Criteria for Priority Processing of Competing Applications states, "an application may be processed prior to competing applications if the application resolves or alleviates a public health or safety emergency caused by a failing public water supply system currently providing potable water to existing users." And, "a change in source is required to meet drinking water quality standards and avoid unreasonable treatment costs, or the State Department of Health determines that the existing source of supply is unacceptable for human use." Department of Health sent a letter to expedite the processing of associated Emergency Drought Authorization No. CG4-GWC3838-A@1 on November 5, 2005, because of a severe decline in water production and high uranium content. The letter to expedite the Emergency Drought Authorization also applies to this permanent change.

Attributes of Ground Water Certificate No. 3838-A

Name on Certificate:	Progressive Flat Water Association
Priority Date:	August 12, 1960
Instantaneous Quantity:	50 gallons per minute (gpm)
Source:	A well
Annual Quantity:	39 acre-feet per year (acre-ft/yr)
Point of Withdrawal:	NW¼NW¼ Section 4, T. 33 N., R. 26 E.W.M.
Period and Purpose of Use:	Continuous community domestic supply and stockwatering
Place of Use:	Area served by Progressive Flat Water Association

Proposed Change for Ground Water Certificate No. 3838A

Name of Applicant:	Progressive Flat(s) Water Association
Date of Application for Change:	January 27, 2006
Instantaneous Quantity:	50 gpm
Annual Quantity:	39 acre-ft/yr
Source:	A well
Point of Withdrawal:	SW¼NE¼ Section 9, T. 33 N., R. 26 E.W.M.
Period and Purpose of Use:	Continuous municipal supply and stockwatering
Place of Use:	Section 4, 5, and 9, T. 33 N., R. 26 E.W.M.

INVESTIGATION

To evaluate the change application for Water Ground Water Certificate No. G4-3838-A, the author conducted research of office records, maps and documents including, but not limited to the following: letter from the Department of Health (DOH), drought files, and the City of Okanogan Water System Plan. A summary of pertinent facts resulting from the research, investigations, and consultations follows.

History of Water Use

Ground Water Certificate No. 3838-A was issued to Progressive Flat Water Association (PFWA) with an August 12, 1960 priority date for community domestic supply and livestock. The original permit included 32 residences. Wayne Dezellum mentioned that water from this system is used for stockwatering during the winter. Irrigation water provides stockwater during the irrigation season.

Ground Water Change Authorization No. CG4-GWC3838-A was issued on April 10, 1994 to add a point of withdrawal (well) to an existing Certificate, for a total of two points of withdrawal. The original point of withdrawal is a shallow well with perforated casing that has had problems with the perforations becoming obstructed. The approved change application increased the number of residences that PFWA serves to 48 residences and 25 seasonal cabins for agricultural workers, but did not enlarge the water right. The file for the 1994 change application did not contain data for water use. The applicant also submitted a new application for additional water which was assigned identifier No. G4-30573 (see table below for water right information). The Department of Ecology (Ecology) approved this new application and issued a permit for 20 gpm and 6.3 acre-ft/yr for livestock and domestic use on March 11, 1994. Both Reports of Examination signed in 1994 mentioned that the well was dependant on irrigation water seeping into the aquifer.

During the summer of 2004, PFWA had problems with leaks in their system, which decreased water availability. Although the leaks were worked on, water production still diminished. During the winter of 2004-2005, water levels of the second well declined because of a mild winter and low snow pack that did not meet PFWA needs. Well water levels from March to October 2005 were critical. PFWA submitted a drought application on November 1, 2005 that was assigned identifier No. CG4-GWC3838-A@1 to withdraw water from the City of Okanogan Well No. 3. Ecology issued an Emergency Drought Authorization on November 4, 2005, that expired on December 31, 2005.

PFWA submitted metering information from their wells. The data is incomplete because of metering problems. From April through October 2004, water use varied from 14,000 to 28,434 gallons per day. PFWA water use has been less than what their authorized water rights because of low well yields. PFWA has not completed a water system plan. With the combination of incomplete metering information and no water system plan, the precise water use is uncertain. The City of Okanagan Water System Plan (issued in October 2000) estimates the daily per capita metered consumption at 222 gallons per day. Assuming an average occupancy of 2.5 people in each of the 73 residences, PFWA requires 45.38 acre-ft/yr. PFWA has two water rights (Ground Water Certificate No. 3838 and Permit No. G4-30573) that add up to 45.3 acre-ft/yr.

In Ground Water Application No. CG4-GWC3838-A@2, the applicant requests to transfer their points of withdrawal to existing City of Okanogan Well No. 3. In the application, the proposed gpm was included for City of Okanogan Well No. 3 instead of the amount of water to be transferred from the existing Progressive Flats Ground Water Certificate No. 3838-A. A phone conversation with Joe Mitschelen from the Rural Community Assistance Corporation clarified the transfer was for same quantity as Ground Water Certificate No. 3838-A.

Associated Water Rights

The City of Okanogan Well No. 3 is being proposed to serve the following Water Right Certificates and Permit (see table below). PFWA also applied to change the point of withdrawal for Ground Water Permit No. G4-30573P. The change application has a priority date of April 20, 2006 and was assigned identifier No. CG4-30573P. Ecology will process this application after receiving the affidavit of publication. The hydrogeology analysis for this report includes the change for Ground Water Permit No. G4-30573P, because it is part of the same overall project.

Table 1. Water Rights Held for Progressive Flat Water Association and City of Okanogan Well No. 3

Water Right No.	Name on Water Right	Priority Date	Qi (gpm)	Qa (acre-ft/yr)	Point of Withdrawal
GWC-3838A	Progressive Flat Water Association	08/12/1960	50	39	NW¼NW¼ Section 4, T. 33 N., R. 26 E.W.M.
G4-30573P	Progressive Flat Water Association	01/22/1991	20	6.3	NW¼NW¼ Section 4, T. 33 N., R. 26 E.W.M.
GWC-5327A	City of Okanogan	09/13/1963	650	700	SW¼ NE¼ Section 9, T. 33 N., R. 26 E.W.M

Other Ground Water Rights in the Vicinity

Ground Water Certificate No. 4738A issued to Columbia Concrete Pipe Company on August 14, 1963 for 200 gpm and 320 acre-ft/yr. Ray Clements, a public works employee for the City of Okanogan, said when the Concrete Pipe Company pumps its well at 200 gpm, it does not lower the water level at City Well No. 3. There are approximately 17 ground water exempt wells with ½ mile radius of City of Okanogan Well No. 3.

Table 2. Ground Water Rights Near Okanogan Well No. 3

Water Right No.	Name on Water Right	Priority Date	Qi (gpm)	Qa (acre-ft/yr)	Point of Withdrawal
GWC-4738	Columbia Concrete Pipe Co.	08/14/1963	200	320	NW¼SW¼ Section 04, T. 33 N., R. 26 E.W.M.

HYDROGEOLOGIC SETTING

A licensed Ecology staff hydrogeologist reviewed and stamped a separate technical memorandum which discusses the hydrogeologic analysis of this application. The hydrogeologic interpretations provided below are extracted from this memorandum.

This section describes the general geology and hydrogeology in the vicinity of the PFWA wells located within the NW¼NW¼, Section 4, T. 33 N., R. 26 E.W.M. and the City of Okanogan's Well No. 3, located within the NW¼SW¼NE¼, Section 9, T. 33 N., R. 26 E.W.M. In the subject area, the Okanogan River flows in an overall southwesterly direction past the towns of Omak and Okanogan, and bedrock hills rising to the west. To the south-southwest, Salmon Creek, and the Salmon Creek Fault border the area of interest along the creek's lower reach near its confluence with the mainstem Okanogan. To the north-northeast, an unnamed intermittent creek drains the terraced highland in the direction of the Okanogan River Valley that lies below (details in hydrogeology report in file).

Here, as it also does to the north, the Okanogan River Valley runs generally coincident with the fault trace that defines the western edge of the Okanogan Metamorphic Core Complex. To the east of the Okanogan River Valley and the fault trace, mixed metamorphic rocks of the core complex form the eastern bedrock basement and walls of the main valley. To the west, igneous Pouge Mountain quartz monzonite and granite forms the western main valley walls and valley basement. The Pouge Mountain unit underlies the majority of the subject area, while minor occurrences of dacitic volcanic flows outcrop immediately to the north near the un-named creek drainage. Together, the metamorphic, igneous and volcanic units can be regarded as the bedrock floor or the lower boundary of the overlying unconsolidated sedimentary aquifer.

The overlying unconsolidated sediments were, for the most part, deposited during the most recent continental glaciation when the entire Okanogan drainage was overridden by the Okanogan Lobe of the Cordilleran ice sheet. As the ice melted and receded, deposits of cobbles, gravel, sand, till, silt and clay were left behind thinly lapping up onto and over bedrock surfaces, in terraces along the valley walls and as valley fill. More recently, the modern Okanogan River and its tributaries have re-worked much of the glacial materials and re-deposited them along with sands and gravels scoured from bedrock in the form of thin mantling, additional terraces and flood plains. Consequently, sediment thickness varies greatly with location from zero to more than 400 feet. Thickness variation is particularly apparent along the valley edges where ice marginal glacial sediments were deposited over valley fill sediments and onto an extremely irregular bedrock surface. Sediments within the mainstem valley more generally follow a pattern of greatest thickness in the vicinity of the valley axis.

Distribution of sediment packages transitions west to east from unsorted glacial drift to stratified ice marginal sediments to reworked glacial and alluvial sediments. The drift may contain till, outwash and glaciolacustrine silt and clay. Ice marginal sediments, having been washed of fines by glacial meltwater streams tend to consist of sands and gravels with negligible silt or clay content. Discontinuous lenses of silt and clay interfingered with the more dominant sands and gravels are common in the reworked glacial and alluvial valley fill sediments. A few well logs from this area record penetration of silt/clay in thicknesses from a few feet to some tens of feet; however, they do not suggest any vertical and horizontal prevalence of fine sediments as is observed father north in the Okanogan River Valley above Ellisford.

Saturated thickness likewise transitions from west to east with the least saturated thickness occurring along the western sediment-bedrock boundary. Some perched lenses may occur within the terrace sediments with the main water table occurring just above the sediment-bedrock interface. Within the valley fill sediments, ground water levels range from about 80 feet to near land surface depending on location. Sediments here are assumed to be saturated from the water table surface to the bedrock base. Altogether, the saturated portion of the unconsolidated glacial and alluvial sediments form the aquifer that modern wells in this area draw ground water from today.

Recharge to the western and middle region of the aquifer is from precipitation and from imported recharge from irrigation conveyance losses, reclamation pond leakage and irrigation return flow. Discharge from this region of the aquifer is to wells, springs and to the lower portion of the aquifer to the east. Recharge to the lower portion of the aquifer of the aquifer is from precipitation, surface water exchange and discharge from the upper region. Discharge from the lower region is to wells, springs and to surface water when head relationships facilitate.

Impairment, Qualifying Ground Water Withdrawal Facilities, and Well Interference

There are three concepts that are important when considering whether a withdrawal of water from a well would impair another existing water right. The concepts are defined as follows:

Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection (i.e. a water right).

Qualifying ground water withdrawal facilities are defined as those wells, which in the opinion of Ecology, are adequately constructed. An adequately constructed well is one that: (a) is constructed in compliance with well construction requirements; (b) fully penetrates the saturated thickness of an aquifer or withdraws water from a reasonable and feasible pumping lift (WAC 173-150); (c) the withdrawal facilities must be able to accommodate a reasonable variation in seasonal pumping water levels; and (d) the withdrawal facilities including pumping facilities must be properly sized to the ability of the aquifer to produce water.

Well interference may occur when several wells penetrate and withdraw ground water from the same aquifer. Each pumping well creates a drawdown cone. When several wells pump from the same aquifer, well density, aquifer characteristics and pumping demand, may result in individual drawdown cones that intersect and form a composite drawdown cone. At any point in an aquifer, the composite drawdown caused by pumping wells will be greatly influenced by the transmissivity (T) of the aquifer. In aquifers with high Ts, composite drawdown will generally be much less than in aquifers with similar properties but with low Ts. Transmissivity is related to hydraulic conductivity (K) and the saturated thickness (b) of an aquifer by the relationship T=Kb.

An aquifer's hydraulic conductivity (K) is derived from the physical properties of both the fluid and geologic materials that form an aquifer. Once formed, an aquifer's saturated thickness (b) becomes important in evaluating its Transmissivity. For regions of similar K in an aquifer, a large saturated thickness will result in a much higher T than a small saturated thickness. As a result, regions of similar K in an aquifer with a large saturated thickness will experience less composite drawdown or well interference than with a small saturated thickness.

Some conditions, however, will increase or steepen composite drawdown in an aquifer. For instance, where characteristics (such as very fine, clay rich, or poorly sorted sediments) of an unconfined aquifer cause significant drawdown relative to the saturated thickness, the composite drawdown will increase as the saturated thickness is reduced and the T becomes smaller. Additionally, in regions where negative or no-flow boundaries occur, such as near the edges of a valley fill aquifer where it is bounded by bedrock, composite drawdown will be steeper than in the central part (generally the greatest thickness region) of the aquifer. Consequently, it is commonly understood that the greatest composite drawdown or well interference is more likely to occur in regions of low transmissivities, thin saturated thicknesses and near negative or no-flow boundaries than in regions of high transmissivities, large saturated thicknesses, and away from negative or no-flow boundaries.

Aquifer Characteristics in the Vicinity of tne PFWA Wells

Ecology's well database contains three well logs for the PFWA. The original well, a 48-inch diameter dug well was constructed in 1960 and is located approximately 550 feet SE of the NW corner of Section 4, T. 33 N., R. 26 E.W.M. Two steel casings were later installed inside the original concrete casing and were noted by Ecology field staff during a site visit in 1994. A second well, drilled in 1987, was constructed approximately 45 feet NW of the original well and to a depth of 60 feet although it encounters bedrock at a depth of only 34 feet. The second well is screened into the sediments from 25 to 35 feet and was reportedly constructed to remedy chronic fouling of the original well's perforations. A third well was constructed in 2003, Well ID Tag No. AGM-015. Wayne Dezellem, contact for the water system, indicates this well is not approved by DOH and is not used by the system.

The PFWA wells are located in an outlying boundary region of the subject unconsolidated sediment aquifer. Bedrock outcrops suggest this area of the aquifer is limited by no-flow boundaries on two and possibly three sides. In addition, the aquifer here is limited by thickness and sediment characteristics. Locally, sediment thickness ranges from zero to perhaps 60 feet at the most and consists of poorly sorted gravel, sand, silt, hardpan, sandy clay, clay and broken rock. The broken rock tends to be present only at the sediment-bedrock interface.

Natural recharge to the aquifer in this area is limited to precipitation. Data collected at the Omak 2 NW Climate Station indicates precipitation here averages approximately 12 inches annually, only part of which is available as recharge to the aquifer. Imported recharge from irrigation conveyance losses, reclamation pond leakage and irrigation return flow appears to supplement aquifer recharge in this area and has been cited as a recharge source for this and other area systems in Ecology site investigations.

Construction of the PFWA wells demonstrated that the aquifer's saturated thickness measured only 16 to 24 feet locally. A pump test on the PFWA's well drilled in 1987 by CCT Well Drilling illustrates the aquifer's limitations in this specific area: Pumping at a rate of 45 to 120 gpm, it took only 12 minutes to draw ground water levels from 18 feet down to the top of the well screens at 25 feet. At 70 minutes, the driller began incremental reductions in the pumping rate to prevent water levels from dropping below the pump intake set at 32 feet. At 140 minutes, the pump rate had been dropped to 70 gpm when water levels had dropped to within 7 inches of the pump intake. Reduction of the pump rate to 52 gpm appeared to stabilize water levels briefly between 183 minutes to 240 minutes when the test was stopped. Recovery data indicates that at 25 minutes water levels had recovered to only 65% of the pre-test level.

The sediment type, thin saturated thickness, aquifer boundary conditions and the test performance all suggest this area of the aquifer may be characterized with a relatively low transmissivity. Further, as the aquifer is locally dewatered by either pumping or below average precipitation or both, transmissivity will decrease and well performance will deteriorate. This characterization appears to be consistent with declining water level data and system response reported by Gray & Osborne in a November 7, 2005, letter to Ecology requesting relief assistance.

Additionally, samples analyzed for RAD-RADIONUCLIDES from individual PFWA wells and collectively from the system indicate the presence of uranium and exceedances of Maximum Contaminant Levels (mcls) for gross alpha (minus uranium) in the ground water here. Samples taken over the period 1982 to the present confirm the condition is persistent and chronic. Although such conditions can vary widely from season to season, in this area they are directly related to the underlying rock type and possibly to the proximity of bedrock faults. While the condition can be successfully treated by coagulation/filtration, lime softening, reverse osmosis and ion exchange, the contaminants are naturally occurring and will continue to persist.

The PFWA wells are located at an elevation of approximately 1250 feet mean sea level (msl) and about 1800 feet horizontally from the un-named creek which discharges to the Okanogan River Valley below. From the well locations, bedrock boundaries are visible to the northwest and southeast. A bedrock boundary is also suspected to occur to the southwest below glacial drift materials, connecting the exposed NW and SE bedrock bodies. As a result, the ground water pathway to the lower portion of the aquifer likely reflects the influence of sub-surface bedrock boundaries. Ground water flow likely discharges from this area to the NE around the bedrock obstructions, toward the unnamed drainage, where it ultimately discharges to creek flow, the lower portion of the terrace sediments and to the river valley sediments.

Aquifer Characteristics in the Vicinity of Okanogan City Well No. 3

City of Okanogan Well No. 3 is located approximately 1350 feet south and 2080 feet west of the NE corner of Section 9, T. 33 N., R. 26 E.W.M., at an elevation of approximately 900 feet msl. At this location, City Well No. 3 is approximately 6950 feet southeast horizontally of the PFWA wells. The 12-inch well was drilled in September of 1963 to a depth of 117 feet and exhibited a static water level of 75 feet on September 4, 1963. The well penetrates predominately coarse sands and gravels with only negligible occurrences of clay. The well's casing was perforated between 80 and 117 feet. A four hour pump test was performed, resulting in an estimated yield of approximately 1150 gpm with only 20 feet of drawdown.

A later test was conducted by the City in 1965 in response to reports of well interference at nearby shallow (16 to 30 feet) wells due to pumping at Well No. 3. The test monitored several neighboring wells while pumping Well No. 3 at a rate of 610 gpm for a period of four to five days. Results indicated that shallow wells at distances of up to 875 feet were affected with at least three wells reported to have gone dry. While the shallow wells clearly did not meet qualifying ground water withdrawal facilities requirements, lack of complaints in the file after July 2, 1965 suggest a satisfactory settlement was likely negotiated between the City and the affected parties.

Well No. 3 is positioned at the base of an ice marginal glacial terrace on the western edge of the mainstem valley floor. Between the PFWA wells and City Well No. 3, sediment thickness increases rapidly west to east reflecting both ice marginal and valley fill processes that deposited the sediment framework of the subject aquifer. For instance, while sediment thickness

at the PFWA wells is less than 60 feet, a well near the same elevation (~1250 feet msl), identified by Well ID Tag No. ALC512 and located approximately halfway between the PFWUA wells and City Well No. 3, encountered approximately 425 feet of sediments overlaying the apparent steeply sloping bedrock basement. By contrast, wells drilled into lower elevation (~900 to 810 feet msl) valley fill sediments generally do not penetrate the full saturated thickness of the aquifer since they tend to encounter sufficient water for their needs at relatively shallow depths. As a result, while well logs demonstrate valley floor sediment thicknesses of at least 138 feet, the total thickness in the valley area of the aquifer has not been established.

In contrast to the PFWA wells, sample history for City Well No. 3 suggests that only secondary (esthetic) contaminant exceedances, such as manganese, are related to the local geology. Sustainable capacity at City Well No. 3, in the range of 1000 gpm likewise contrasts with the comparatively poor yield of the PFWA wells (although well interference may be an issue). City Well No. 3 also has additional aquifer thickness that could be explored if necessary while the PFWUA wells have no additional aquifer thickness to exploit.

Hydrogeologic Analysis

Currently, City of Okanogan Well No. 3 is authorized to pump a maximum of 650 gpm and 700 acre-ft/yr under authorization No. G4-*06878C (Ground Water Certificate No. 5327A). If approved for transfer, the authorization from Change Application No. CG4-GWC3838-A@2 will add a maximum of 50 gpm and 39 acre-ft/yr to the pumping rate at City Well No. 3 for a total of 700 gpm and 739 acre-ft/yr. If Permit No. G4-30573P is likewise transferred to City Well No. 3, another 20 gpm and 6.3 acre-ft/yr will also be added and result in a total maximum pumping rate of 720 gpm and 745.3 acre-ft/yr.

The pump tests discussed earlier and ground water literature suggest that aquifer transmissivity (T) is likely in the range of 65,000 to 100,000 gallons per day per foot (gpd/ft) in the vicinity of Well No. 3. Using T values within this range, evaluation by the Theis non-equilibrium equation for the additional 50 to 70 gpm suggests that additional drawdown as a result of the change approximately 50 feet from the well will be in the range of a foot or less. Consequently, effects due to the proposed change are expected to be largely unnoticed at nearby wells, which are also qualifying ground water withdrawal facilities. With the closest known well associated with a water right claim or certificate located approximately 300 feet from the subject well, composite drawdown/well interference which may be observed is not expected to be significant.

Relationship Between the Original Source and Proposed Source

In order to transfer or add a well to a water right, "the additional or replacement well or wells shall tap the same body of public ground water as the original well or wells," as stated in chapter 90.44.100(2a) RWC. The subject PFWA wells tap the same unconsolidated glacial/alluvial sediment aquifer as City of Okanogan Well No. 3 and do not appear to be separated by any continuous hydraulic barrier. Therefore, City of Okanogan Well No. 3 is considered to utilize the same body of ground water as the original PFWA wells.

FINDINGS AND RECOMMENDATION

The Legislature recently clarified the definition of municipal water supply (RCW 90.03.015). Under the authority of RCW 90.03.560, the purpose of use under this permit is now municipal supply since over 15 residences are served. The unperfected portion of this water right is not relinquished because it is a municipal water right.

In accordance with chapters 90.03 and 90.44 RCW, the author makes a tentative determination that Ground Water Certificate No. 3838-A is a valid right and is eligible for change.

Approval of this change as provisioned below will not cause impairment of existing water rights nor enlarge the water right.

Exercising this beneficial use of water at the new source will not be contrary to the public interest.

The proposed well taps the same body of ground water as the original well.

Based on the above investigation and findings, I recommend that the request to change a point of withdrawal to Omak Well No. 3 be authorized, subject to the provisions listed below.

Purpose of Use and Authorized Quantities

50 gpm for a maximum of 39 acre-ft/yr for municipal water supply.

Point of Withdrawal

Approximately 1350 feet south and 2080 feet west from the NE corner of Section 9, T. 33 N., R. 26 E.W.M.

Place of Use

Section 4, 5, and 9, T. 33 N., R. 26 E.W.M.

Construction Schedule

Begin construction by:	June 30, 2006
Complete construction by:	December 31, 2006
Apply water to full beneficial use by:	In good standing

Provisions

If the criteria in RCW 90.03.386(2) are not met, the place of use of this water right reverts to the service area described in the Water System Plan/Small Water System Management Program most recently approved after September 9, 2003. If the criteria in RCW 90.03.386(2) are not met and no WSP/SWSMP has been approved after September 9, 2003, the place of use reverts to the last place of use described by Ecology in a water right authorization.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded weekly. The maximum rate of withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

Chapter 173-173 WAC 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. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements".

The following information, including appropriate units of measure, shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA No., Permit No., source name, annual quantity used, maximum rate of withdrawal, Department of Health WFI water system number and source number(s), purpose of use, well tag number, and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

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 gage may be installed in addition to the access port.

Report by: Virginia Stone — 6/7/06
Virginia Stone, Water Resources Program — Date

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER the requested changes for point of withdrawal and purpose of use under Ground Water Application No. CG4-GWC3838-A@2, be approved subject to existing rights and provisions specified in the foregoing report.

Signed at Yakima, Washington, this 2th day of June 2006.

Mark C. Schuppe For
G. Thomas Tebb, L.E.G.
Section Manager
Water Resources Program
Central Region Office

CG4 – 30573P

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION FOR CHANGE
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	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
January 22, 1991	CG4-30573		

NAME
Progressive Flat(s) Water Association (contact: Wayne Dezellem)

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
7 Cherry Lane Road	Okanogan	WA	98840-8226

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
A well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE -FEET PER YEAR
	20	6.3

QUANTITY, TYPE OF USE, PERIOD OF USE
20 gallons per minute and 6.3 acre-feet per year for municipal water supply and stockwatering.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION–WITHDRAWAL
Approximately 1350 feet south and 2080 feet west from the NE corner of Section 9, T. 33 N., R. 26 E.W.M.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼NE¼	9	33 N.	26 E.	49	Okanogan

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The place of use of this water right is the more recently approved of the following: (1) the legal description below; OR (2) the service area described in the most recent Water System Plan approved by the Washington State Department of Health after September 9, 2003, so long as the water right holder is and remains in compliance with the criteria in RCW 90.03.386(2). RCW.90.03.386 may have the effect of revising the place of use of this water right.

Sections 4, 5, and 9, T. 33 N., R. 26 E.W.M.

FILE COPY

DESCRIPTION OF PROPOSED WORKS

Change the point of withdrawal for Ground Water Permit No. G4-30573 because of high uranium content and a severe decline in water production.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
October 1, 2006	December 31, 2006	December 31, 2007

REPORT

On April 20, 2006, Progressive Flat(s) Water Association of Okanogan, Washington, applied to change the point of withdrawal under Ground Water Permit No. G4-30573P to be used for continuous community supply. The application was accepted and assigned identifier No. CG4-30573. RCW 90.44.100 allows changing the point of withdrawal for ground water permits. Public Notice of the application was given in the Omak-Okanogan County Chronicle on April 26 and May 3, 2006. There were no letters of protest or concern received during the 30-day protest period. This water right change application is categorically exempt under SEPA WAC 197-11-305 and WAC 197-11-800(4).

WAC 173-152-050(1)(c) Criteria for Priority Processing of Competing Applications states, "an application may be processed prior to competing applications if the application resolves or alleviates a public health or safety emergency caused by a failing public water supply system currently providing potable water to existing users." And, "a change in source is required to meet drinking water quality standards and avoid unreasonable treatment costs, or the State Department of Health determines that the existing source of supply is unacceptable for human use." Department of Health (DOH) sent a letter to expedite the processing of application No. CG4-30573 on April 12, 2006, because of a severe decline in water production and high uranium content.

Attributes of Water Right

Name on Permit:	Progressive Flat Water Association
Priority Date:	January 22, 1991
Instantaneous Quantity:	20 gallons per minute (gpm)
Source:	2 wells
Annual Quantity:	6.3 acre-feet per year (acre-ft/yr)
Point of Withdrawal:	NW¼NW¼ Section 4, T. 33 N., R. 26 E.W.M
Period and Purpose of Use:	Continuous community domestic supply and stockwater
Place of Use:	Sections 4, 5, and 9, T. 33 N., R. 26 E.W.M.

Proposed Change for Change Application No. G4-30573

Name of Applicant:	Progressive Flat(s) Water Association
Date of Application for Change:	January 27, 2006
Instantaneous Quantity:	20 gpm
Annual Quantity:	6.3 acre-ft/yr
Source:	A well
Point of Withdrawal:	SW¼NE¼ Section 9, T. 33 N., R. 26 E.W.M.
Period and Purpose of Use:	Continuous municipal supply and stockwater
Place of Use:	Area served by Progressive Flat Water Association

INVESTIGATION

To evaluate the change application for Ground Water Permit No. G4-30573P, the author conducted research of office records, maps and documents including, but not limited to the following: letter from the DOH, drought files, and the City of Okanogan Water System Plan. A summary of pertinent facts resulting from the research, investigations, and consultations follows.

History of Water Use and Associated Water Rights

Department of Ecology (Ecology) issued Ground Water Permit No. G4-30573 to Progressive Flat Water Association (PFWA) with a January 22, 1991 priority date for community domestic supply and stockwater. The permit included 18 full time residences and 25 seasonal cabins. Wayne Dezellum mentioned that water from this system is used for stockwatering during the winter. Irrigation water provides stockwater during the irrigation season.

PFWA also has Ground Water Certificate No. 3838 for 50 gpm and 39 acre-ft/yr. PFWA submitted a change application to add a point of withdrawal and Ecology issued it on April 10, 1994. The approved change application increased the number of residences that PFWA serves to 48 residences and 25 seasonal cabins for agricultural workers. The file for the 1994 change application did not contain data for water use. Both PFWA Reports of Examination signed in 1994, including the original approval for Ground Water Permit No. G4-30573P, mentioned that the well was dependant on irrigation water seeping into the aquifer.

During the summer of 2004, PFWA had problems with leaks in their system which decreased water availability. Although the leaks were worked on, water production still diminished. During the winter of 2004-2005, water levels of the second well declined because of a mild winter and low snow pack that did not meet PFWA needs. Well water levels from March to October 2005 were below low/critical. PFWA submitted a drought application on November 1, 2005 that was assigned identifier No. CG4-GWC3838-A@1 to withdraw water from the City of Okanogan well. Ecology issued an Emergency Drought Authorization on November 4, 2005, that expired on December 31, 2005.

PFWA submitted metering information from their wells. The data is incomplete because of metering problems. From April through October 2004, water use varied from 14,000 to 28,434 gallons per day. PFWA water use has been less than what their water rights because of low well yields. PFWA has not completed a water system plan. With the combination of incomplete metering information and no water system plan, the precise water use is uncertain. The City of Okanagan Water System Plan (issued in October 2000) estimates the daily per capita metered consumption at 222 gallons per day. Assuming an average occupancy of 2.5 people in each of the 73 residences, PFWA requires 45.38 acre-ft/yr. PFWA has two water rights (Ground Water Certificate No. 3838A and Permit No. G4-30573P) that add up to 45.3 acre-ft/yr.

In Ground Water Application No. CG4-30573, the applicant requests to transfer their points of withdrawal to existing City of Okanogan Well No. 3. The City of Okanogan Well No. 3 is being proposed to serve the following Water Right Certificates and Permit (see table below). PFWA also applied to change the point of withdrawal for Ground Water Certificate No. 3838. The change application was assigned identifier No. CG4-GWC3838-A@2 and Ecology issued the Report of Examination (ROE) in June 2006. The hydrogeology analysis for this report includes the change for Ground Water Certificate No. CG4-GWC3838-A@2, because it is part of the same overall project.

Table 1. Water Rights Held for Progressive Flat Water Association and City of Okanogan Well No. 3

Water Right No.	Name on Water Right	Priority Date	Qi (gpm)	Qa (acre-ft/yr)	Point of Withdrawal
GWC-3838A	Progressive Flat Water Assn	08/12/1960	50	39	NW¼NW¼ Section 4, T. 33 N., R. 26 E.W.M.
G4-30573P	Progressive Flat Water Assn	01/22/1991	20	6.3	NW¼NW¼ Section 4, T. 33 N., R. 26 E.W.M.
GWC-5327	City of Okanogan	09/13/1963	650	700	SW¼ NE¼ Section 9, T. 33 N., R. 26 E.W.M

Other Ground Water Rights

Ground Water Certificate No. 4738A issued to Columbia Concrete Pipe Company on August 14, 1963 for 200 gpm and 320 acre-ft/yr. Ray Clements, a public works employee for the City of Okanogan, said when Concrete Pipe Company pumps its well at 200 gpm, that it does not lower the water level at City Well No. 3. There are approximately 17 ground water exempt wells with ½-mile radius of City of Okanogan Well No. 3.

Table 2. Ground Water Rights near Okanogan Well No. 3

Water Right No.	Name on Water Right	Priority Date	Qi (gpm)	Qa (acre-ft/yr)	Point of Withdrawal
GWC-4738A	Columbia Concrete Pipe Co	08/14/1963	200	320	NW¼SW¼ Section 4, T. 33 N., R. 26 E.W.M.

HYDROGEOLOGIC SETTING

A licensed Ecology staff hydrogeologist reviewed and stamped a separate technical memorandum which discusses the hydrogeologic analysis of this application. The hydrogeologic interpretations provided below are extracted from this memorandum.

This section describes the general geology and hydrogeology in the vicinity of the PFWA wells located within the NW¼NW¼, Section 4, T. 33 N., R. 26 E.W.M., and the City of Okanogan's Well No. 3, located within the NW¼SW¼NE¼, Section 9, T. 33 N., R. 26 E.W.M. In the subject area, the Okanogan River flows in an overall southwesterly direction past the towns of Omak, Okanogan, and bedrock hills rising to the west. To the south-southwest, Salmon Creek, and the Salmon Creek Fault border the area of interest along the creek's lower reach near its confluence with the mainstem Okanogan. To the north-northeast, an unnamed intermittent creek drains the terraced highland in the direction of the Okanogan River Valley that lies below (details in hydrogeology report in file).

Here, as it also does to the north, the Okanogan River Valley runs generally coincident with the fault trace that defines the western edge of the Okanogan Metamorphic Core Complex. To the east of the Okanogan River Valley and the fault trace, mixed metamorphic rocks of the core complex form the eastern bedrock basement and walls of the main valley. To the west, igneous Pouge Mountain quartz monzonite and granite forms the western main valley walls and valley basement. The Pouge Mountain unit underlies the majority of the subject area, while minor occurrences of dacitic volcanic flows outcrop immediately to the north near the un-named creek drainage. Together, the metamorphic, igneous and volcanic units can be regarded as the bedrock floor or the lower boundary of the overlying unconsolidated sedimentary aquifer.

The overlying unconsolidated sediments were, for the most part, deposited during the most recent continental glaciation when the entire Okanogan drainage was overridden by the Okanogan Lobe of the Cordilleran ice sheet. As the ice melted and receded, deposits of cobbles, gravel, sand, till, silt and clay were left behind thinly lapping up onto and over bedrock surfaces, in terraces along the valley walls and as valley fill. More recently, the modern Okanogan River and its tributaries have re-worked much of the glacial materials and re-deposited them along with sands and gravels scoured from bedrock in the form of thin mantling, additional terraces and flood plains. Consequently, sediment thickness varies greatly with location from zero to more than 400 feet. Thickness variation is particularly apparent along the valley edges where ice marginal glacial sediments were deposited over valley fill sediments and onto an extremely irregular bedrock surface. Sediments within the mainstem valley more generally follow a pattern of greatest thickness in the vicinity of the valley axis.

Distribution of sediment packages transitions west to east from unsorted glacial drift to stratified ice marginal sediments to reworked glacial and alluvial sediments. The drift may contain till, outwash and glaciolacustrine silt and clay. Ice marginal sediments, having been washed of fines by glacial meltwater streams tend to consist of sands and gravels with negligible silt or clay content. Discontinuous lenses of silt and clay interfingered with the more dominant sands and gravels are common in the reworked glacial and alluvial valley fill sediments. A few well logs from this area record penetration of silt/clay in thicknesses from a few feet to some tens of feet; however, they do not suggest any vertical and horizontal prevalence of fine sediments as is observed father north in the Okanogan River Valley above Ellisford.

Saturated thickness likewise transitions from west to east with the least saturated thickness occurring along the western sediment-bedrock boundary. Some perched lenses may occur within the terrace sediments with the main water table occurring just above the sediment-bedrock interface. Within the valley fill sediments, ground water levels range from about 80 feet to near land surface depending on location. Sediments here are assumed to be saturated from the water table surface to the bedrock base. Altogether, the saturated portion of the unconsolidated glacial and alluvial sediments form the aquifer that modern wells in this area draw ground water from today.

Recharge to the western and middle region of the aquifer is from precipitation and from imported recharge from irrigation conveyance losses, reclamation pond leakage and irrigation return flow. Discharge from this region of the aquifer is to wells, springs and to the lower portion of the aquifer to the east. Recharge to the lower portion of the aquifer of the aquifer is from precipitation, surface water exchange and discharge from the upper region. Discharge from the lower region is to wells, springs and to surface water when head relationships facilitate.

Impairment, Qualifying Ground Water Withdrawal Facilities, and Well Interference
There are three concepts that are important when considering whether a withdrawal of water from a well would impair another existing water right. The concepts are defined as follows:

Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection (i.e. a water right).

Qualifying ground water withdrawal facilities are defined as those wells which in the opinion of the Department are adequately constructed. An adequately constructed well is one that (a) is constructed in compliance with well construction requirements; (b) fully penetrates the saturated thickness of an aquifer or withdraws water from a reasonable and feasible pumping lift (WAC 173-150); (c) the withdrawal facilities must be able to accommodate a reasonable variation in seasonal pumping water levels; and (d) the withdrawal facilities including pumping facilities must be properly sized to the ability of the aquifer to produce water.

Well interference may occur when several wells penetrate and withdraw ground water from the same aquifer. Each pumping well creates a drawdown cone. When several wells pump from the same aquifer, well density, aquifer characteristics and pumping demand, may result in individual drawdown cones that intersect and form a composite drawdown cone. At any point in an aquifer, the composite drawdown caused by pumping wells will be greatly influenced by the transmissivity (T) of the aquifer. In aquifers with high Ts, composite drawdown will generally be much less than in aquifers with similar properties but with low Ts. Transmissivity is related to hydraulic conductivity (K) and the saturated thickness (b) of an aquifer by the relationship T=Kb.

An aquifer's hydraulic conductivity (K) is derived from the physical properties of both the fluid and geologic materials that form an aquifer. Once formed, an aquifer's saturated thickness (b) becomes important in evaluating its Transmissivity. For regions of similar K in an aquifer, a large saturated thickness will result in a much higher T than a small saturated thickness. As a result, regions of similar K in an aquifer with a large saturated thickness will experience less composite drawdown or well interference than with a small saturated thickness.

Some conditions, however, will increase or steepen composite drawdown in an aquifer. For instance, where characteristics (such as very fine, clay rich, or poorly sorted sediments) of an unconfined aquifer cause significant drawdown relative to the saturated thickness, the composite drawdown will increase as the saturated thickness is reduced and the T becomes smaller. Additionally, in regions where negative or no-flow boundaries occur, such as near the edges of a valley fill aquifer where it is bounded by bedrock, composite drawdown will be steeper than in the central part (generally the greatest thickness region) of the aquifer. Consequently, it is commonly understood that the greatest composite drawdown or well interference is more likely to occur in regions of low transmissivities, thin saturated thicknesses and near negative or no-flow boundaries than in regions of high transmissivities, large saturated thicknesses, and away from negative or no-flow boundaries.

Aquifer Characteristics in the Vicinity of the PFWA Wells

Ecology's well database contains three well logs for the PFWA. The original well, a 48-inch diameter dug well was constructed in 1960 and is located approximately 550 feet SE of the NW corner of Section 4, T. 33 N., R. 26 E.W.M. Two steel casings were later installed inside the original concrete casing and were noted by Ecology field staff during a site visit in 1994. A second well, drilled in 1987, was constructed approximately 45 feet NW of the original well and to a depth of 60 feet although it encounters bedrock at a depth of only 34 feet. The second well is screened into the sediments from 25 to 35 feet and was reportedly constructed to remedy chronic fouling of the original well's perforations. A third well was constructed in 2003, Well ID Tag No. AGM-015. Wayne Dezellem, contact for the water system, indicates this well is not approved by DOH and is not used by the system.

The PFWA wells are located in an outlying boundary region of the subject unconsolidated sediment aquifer. Bedrock outcrops suggest this area of the aquifer is limited by no-flow boundaries on two and possibly three sides. In addition, the aquifer here is limited by thickness and sediment characteristics. Locally, sediment thickness ranges from zero to perhaps 60 feet at the most and consists of poorly sorted gravel, sand, silt, hardpan, sandy clay, clay and broken rock. The broken rock tends to be present only at the sediment-bedrock interface.

Natural recharge to the aquifer in this area is limited to precipitation. Data collected at the Omak 2 NW Climate Station indicates precipitation here averages approximately 12 inches annually, only part of which is available as recharge to the aquifer. Imported recharge from irrigation conveyance losses, reclamation pond leakage and irrigation return flow appears to supplement aquifer recharge in this area and has been cited as a recharge source for this and other area systems in Ecology site investigations.

Construction of the PFWA wells demonstrated that the aquifer's saturated thickness measured only 16 to 24 feet locally. A pump test on the PFWA's well drilled in 1987 by CCT Well Drilling illustrates the aquifer's limitations in this specific area: Pumping at a rate of 45 to 120 gpm, it took only 12 minutes to draw ground water levels from 18 feet down to the top of the well screens at 25 feet. At 70 minutes, the driller began incremental reductions in the pumping rate to prevent water levels from dropping below the pump intake set at 32 feet. At 140 minutes, the pump rate had been dropped to 70 gpm when water levels had dropped to within 7 inches of the pump intake. Reduction of the pump rate to 52 gpm appeared to stabilize water levels briefly between 183 minutes to 240 minutes when the test was stopped. Recovery data indicates that at 25 minutes water levels had recovered to only 65% of the pre-test level.

The sediment type, thin saturated thickness, aquifer boundary conditions and the test performance all suggest this area of the aquifer may be characterized with a relatively low transmissivity. Further, as the aquifer is locally dewatered by either pumping or below average precipitation or both, transmissivity will decrease and well performance will deteriorate. This characterization appears to be consistent with declining water level data and system response reported by Gray & Osborne in a November 7, 2005, letter to Ecology requesting relief assistance.

Additionally, samples analyzed for RAD-RADIONUCLIDES from individual PFWA wells and collectively from the system indicate the presence of uranium and exceedances of Maximum Contaminant Levels (mcls) for gross alpha (minus uranium) in the ground water here. Samples taken over the period 1982 to the present confirm that the condition is persistent and chronic. Although such conditions can vary widely from season to season, in this area they are directly related to the underlying rock type and possibly to the proximity of bedrock faults. While the condition can be successfully treated by coagulation/filtration, lime softening, reverse osmosis and ion exchange, the contaminants are naturally occurring and will continue to persist.

The PFWA wells are located at an elevation of approximately 1250 feet mean sea level (msl) and about 1800 feet horizontally from the un-named creek which discharges to the Okanogan River Valley below. From the well locations, bedrock boundaries are visible to the northwest and southeast. A bedrock boundary is also suspected to occur to the southwest below glacial drift materials, connecting the exposed NW and SE bedrock bodies. As a result, the ground water pathway to the lower portion of the aquifer likely reflects the influence of sub-surface bedrock boundaries. Ground water flow likely discharges from this area to the NE around the bedrock obstructions, toward the unnamed drainage, where it ultimately discharges to creek flow, the lower portion of the terrace sediments and to the river valley sediments.

Aquifer Characteristics in the Vicinity of Okanogan City Well No. 3

City of Okanogan Well No. 3 is located approximately 1350 feet south and 2080 feet west of the NE corner of Section 9, T. 33 N., R. 26 E.W.M., at an elevation of approximately 900 feet msl. At this location, City Well No. 3 is approximately 6950 feet southeast horizontally of the PFWA wells. The 12-inch well was drilled in September of 1963 to a depth of 117 feet and exhibited a static water level of 75 feet on September 4, 1963. The well penetrates predominately coarse sands and gravels with only negligible occurrences of clay. The well's casing was perforated between 80 and 117 feet. A four hour pump test was performed, resulting in an estimated yield of approximately 1150 gpm with only 20 feet of drawdown.

A later test was conducted by the City in 1965 in response to reports of well interference at nearby shallow (16 to 30 feet) wells due to pumping at Well No. 3. The test monitored several neighboring wells while pumping Well No. 3 at a rate of 610 gpm for a period of four to five days. Results indicated that shallow wells at distances of up to 875 feet were affected with at least three wells reported to have gone dry. While the shallow wells clearly did not meet qualifying ground water withdrawal facilities requirements, lack of complaints in the file after July 2, 1965 suggest a satisfactory settlement was likely negotiated between the City and the affected parties.

Well No. 3 is positioned at the base of an ice marginal glacial terrace on the western edge of the mainstem valley floor. Between the PFWA wells and City Well No. 3, sediment thickness increases rapidly west to east reflecting both ice marginal and valley fill processes that deposited the sediment framework of the subject aquifer. For instance, while sediment thickness

at the PFWA wells is less than 60 feet, a well near the same elevation (~1250 feet msl), identified by Well ID Tag No. ALC512 and located approximately halfway between the PFWA wells and City Well No. 3, encountered approximately 425 feet of sediments overlaying the apparent steeply sloping bedrock basement. By contrast, wells drilled into lower elevation (~900 to 810 feet msl) valley fill sediments generally do not penetrate the full saturated thickness of the aquifer since they tend to encounter sufficient water for their needs at relatively shallow depths. As a result, while well logs demonstrate valley floor sediment thicknesses of at least 138 feet, the total thickness in the valley area of the aquifer has not been established.

In contrast to the PFWA wells, sample history for City Well No. 3 suggests that only secondary (esthetic) contaminant exceedances, such as manganese, are related to the local geology. Sustainable capacity at City Well No. 3, in the range of 1000 gpm likewise contrasts with the comparatively poor yield of the PFWA wells (although well interference may be an issue). City Well No. 3 also has additional aquifer thickness that could be explored if necessary while the PFWUA wells have no additional aquifer thickness to exploit.

Hydrogeologic Analysis

Currently, City of Okanogan Well No. 3 is authorized to pump a maximum of 650 gpm and 700 acre-ft/yr under authorization No. G4-*06878C (Ground Water Certificate No. 5327). The approval of Change Application No. CG4-GWC3838-A@2 added 50 gpm and 39 acre-ft/yr to the pumping rate at City Well No. 3. If Ground Water Permit No. G4-30573P is also transferred to City Well No. 3, an additional 20 gpm and 6.3 acre-ft/yr will be added and result in a total maximum pumping rate of 720 gpm and 745.3 acre-ft/yr.

The pump tests discussed earlier and ground water literature suggest that aquifer transmissivity (T) is likely in the range of 65,000 to 100,000 gallons per day per foot (gpd/ft) in the vicinity of Well No. 3. Using T values within this range, evaluation by the Theis non-equilibrium equation for the additional 50 to 70 gpm suggests that additional drawdown as a result of the change approximately 50 feet from the well will be in the range of a foot or less. Consequently, effects due to the proposed change are expected to be largely unnoticed at nearby wells which are also qualifying ground water withdrawal facilities. With the closest known well associated with a water right claim or certificate located approximately 300 feet from the subject well, composite drawdown/well interference which may be observed is not expected to be significant.

Relationship Between the Original Source and Proposed Source

In order to transfer or add a well to a water right, "the additional or replacement well or wells shall tap the same body of public ground water as the original well or wells," as stated in chapter 90.44.100(2a) RWC. The subject PFWA wells tap the same unconsolidated glacial/alluvial sediment aquifer as City of Okanogan Well No. 3 and do not appear to be separated by any continuous hydraulic barrier. Therefore, City of Okanogan Well No. 3 is considered to utilize the same body of ground water as the original PFWA wells.

FINDINGS AND RECOMMENDATION

The Legislature recently clarified the definition of municipal water supply (RCW 90.03.015). Under the authority of RCW 90.03.560, the purpose of use under this permit is now municipal supply since over 15 residences are served. The unperfected portion of this water right is not relinquished because it is a municipal water right.

In accordance with chapters 90.03 and 90.44 RCW, the author makes a tentative determination that Ground Water Permit No. G4-30573P is a valid right and is eligible for change.

Approval of this change as provisioned below will not cause impairment of existing water rights nor enlarge the water right.

Exercising this beneficial use of water at the new source will not be contrary to the public interest.

The proposed well taps the same body of ground water as the original well.

Water is available in the aquifer at the new source.

Based on the above investigation and findings, I recommend that the request to change a point of withdrawal to City of Okanogan Well No. 3 be authorized, subject to the provisions listed below.

Purpose of Use and Authorized Quantities

20 gpm for a maximum of 6.3 acre-ft/yr for municipal water supply.

Point of Withdrawal

Approximately 1350 feet south and 2080 feet west from the NE corner of Section 9, T. 33 N., R. 26 E.W.M.

Place of Use

Sections 4, 5, and 9, T. 33 N., R. 26 E.W.M.

Construction Schedule

Begin construction by:	October 1, 2006
Complete construction by:	December 31, 2006
Apply water to full beneficial use by:	December 31, 2007

Provisions

If the criteria in RCW 90.03.386(2) are not met, the place of use of this water right reverts to the service area described in the Water System Plan/Small Water System Management Program most recently approved after September 9, 2003. If the criteria in RCW 90.03.386(2) are not met and no WSP/SWSMP has been approved after September 9, 2003, the place of use reverts to the last place of use described by Ecology in a water right authorization.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

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The following information, including appropriate units of measure, shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA No., Permit No., source name, annual quantity used, maximum rate of withdrawal, Department of Health WFI water system number and source number(s), purpose of use, well tag number, and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

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 gage may be installed in addition to the access port.

Report by: Virginia Stone
Virginia Stone, Water Resources Program

7/5/06
Date

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject change application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER the requested changes for point of withdrawal and purpose of use under Ground Water Application No. CG4-30273, be approved subject to existing rights and provisions specified in the foregoing report.

Signed at Yakima, Washington, this 10th day of July 2006.

G. Thomas Tebb, L.E.G.
Section Manager
Water Resources Program
Central Region Office

G4 – 30573

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

jelo

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	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
January 22, 1991	G4-30573		

NAME
Progressive Flat Water Users Association

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box 581	Okanogan	Washington	98840-0581

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
two wells

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	20	6.3

QUANTITY, TYPE OF USE, PERIOD OF USE

6.3 acre-feet per year for continuous community domestic supply to 18 full time residences, 25 seasonal cabins, and stockwater.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION–WITHDRAWAL

502.55 feet southeast from the northwest corner of Section 4;
550 feet southeast from the northwest corner of Section 4.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NW¼NW¼	4	33	26 E.	49	Okanogan

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Sections 4, 5, and 9 of T. 33 N., R. 26 E.W.M., Okanogan County, Washington.

DESCRIPTION OF PROPOSED WORKS

A well 8 inches in diameter and 60 feet deep and an older well 30 feet deep, both with 5 horsepower submersible pumps.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Begun	July 1, 1995	July 1, 1996

REPORT

Background

On January 22, 1991, Progressive Flat Water Users Association of Okanogan, Washington filed an application to appropriate public waters from two wells in the amount of 20 gallons per minute (gpm) each year for continuous multiple domestic supply and stockwater. The application was accepted, assigned number G4-30573, and public notice was made. There was one protest received from the Okanogan Irrigation District during the 30 day protest period and later withdrawn.

The Progressive Flat Water Users Association (PFWUA) under Ground Water Certificate No. 3838-A is authorized the withdrawal of 50 gpm and 39 acre-feet per year to provide community domestic water for up to 32 rural residences. Even though the Certificate did not mention a specific number of residences, this number is derived from the underlying Report of Examination and Permit. The State Department of Health has approved the PFWUA for 41 hook ups. Applicant also submitted an application for change under Certificate No. 3838-A which has been recommended for approval to add a point of withdrawal.

Site Inspection

The following information was obtained from a site inspection conducted by Philip Kerr on January 10, 1994, research of department records, and conversations with the PFWUA president Ray Moon, other members of the association, and department staff.

The applicant requests authorization for 20 gpm to provide water to 18 additional full time residences, 25 seasonal temporary cabins and stockwater for approximately 10 animals. The requested 20 gpm was to be in addition to the 50 gpm already authorized under Certificate No. 3838-A for a total of 70 gpm.

The place of use is located approximately ½ mile northwest of Okanogan, Washington. The PFWUA has approximately 42 active hook ups with plans for expansion to 50 hook ups within Sections 4, 5, and 9, T. 33 N., R. 26 E.W.M. Some of these hook ups also serve cabins for farm workers which are only used a few months a year. There are a total of 25 cabins.

The points of withdrawal are located approximately 502.55 feet southeast of the northwest corner of Section 4 within the NW¼NW¼ of Section 4, T. 33 N., R. 26 E.W.M. The new well is reported to be 8 inches in diameter and 60 feet deep with a static water level of 18 feet below the top of the well in July 1987. The static water level on January 10, 1994 was 12 feet below the ground surface. The well report shows that the well penetrates top soil to 3 feet, sandy clay to 14 feet, brown clay to 21 feet; broken rock, silt and water to 34 feet and granite to 60 feet.

The new well was constructed because the old well located approximately 45 feet southeast from the new well was having problems with the well casing perforations sealing off. The old well located inside the pump house was reported to be a 30 foot deep dug well which now has two steel casings inside. Only one casing has a pump installed. The static water level during the inspection was 14 feet below the top of the well casing. Both wells appear to be getting water from the same aquifer and each well has a 5 horsepower submersible pump connected to a common pressure tank and distribution system.

Water Quantities

Ground Water Certificate No. 3838-A authorized the withdrawal of 50 gpm and 39 acre-feet per year for continuous community domestic supply for 32 homes. With improved water conservation measures and the requirement for in-house use only of 800 gallons per day for each house, a total of 44.8 acre-feet of water would be needed for 50 full time residences. The 25 seasonal temporary cabins, each cabin using 50 gallons per day for 90 days, would only require .35 acre-feet of water per year. The stockwater requirement of 15 gallons per day for 10 animals would require .17 acre-feet of water per year. This would require a total of 45.3 acre-feet of water per year. This means only an additional 20 gpm and 6.9 acre-feet of water is required under instant application in addition to the 50 gpm and 39 acre-feet authorized under Certificate No. 3838-A.

Water Availability

The aquifer penetrated by the subject wells appears to be a shallow aquifer lying over granite. There are numerous wells within 1 mile of the subject well with well logs showing penetration of soil, sand and gravel to about 20 feet, then clay and some sand and gravel to about 60 feet, then soft granite or bedrock. Most wells show a static water level of 11 to 36 feet. The aquifer is thought to be recharged from seepage out of an Okanogan Irrigation District reclamation pond, local precipitation, and irrigation water return flows.

There is an Okanogan Irrigation District (OID) irrigation ditch which is located approximately ¼ mile west and upslope from applicants property. The ditch is concrete lined and diverts water from Salmon Creek to Duck Lake. There is also a reclamation pond within ½ mile of subject well which the OID keeps full from the ditch. The author believes water is seeping from the reclamation pond and significantly contributing to the aquifer from which water is being withdrawn by the subject wells and other wells in the vicinity. The shallow depth to water in the wells suggests a water table aquifer which is directly continuous with the OID pond. Should the pond go dry or action be taken to reduce its leakage, many wells in the area may go dry or at least their yields significantly reduced.

Impairment of Existing Rights

There are numerous Water Right Certificates and Claims within 1 mile of the subject well. These rights are primarily for single domestic and small irrigation projects. The additional withdrawal of 20 gpm and 6.3 acre-feet per year should not impair existing rights. The addition of 18 full time residences and the other uses to the Progressive Flat Water Users Association community domestic supply system would be more advantageous to the aquifer than additional exempt wells being drilled to meet the demand.

Conclusions

Based on the foregoing information, the following conclusions are made:

Continuous community domestic supply and stockwater are beneficial uses. Water is physically available at the site for the proposed beneficial uses.

The water availability at this setting could change drastically should the OID reclamation pond use be discontinued or the pond sealed to prevent seepage. The department could not preclude OID improvements to cut water loss from the pond even if it is the primary reason this aquifer system exists.

Granting a permit for multiple domestic supply and stockwater is not contrary to the public interest.

Recommendations

Based on the above facts and conclusions a continued instantaneous quantity of 20 gpm and 6.3 acre-feet per year are recommended for approval in addition to that authorized under Certificate No. 3838-A for continuous multiple domestic use to 18 full time residences, 25 seasonal temporary cabins, and stockwater. The following provisions apply:

Water pumped from the old well or the new well or both wells at the same time must not exceed 70 gpm and 45.3 acre-feet per year.

The water sources and/or water transmission facilities may not be located entirely upon the land owned by the applicant. Therefore, the applicant is advised that issuance of a permit by this department for appropriation of the waters in question does not convey a right of access to, or other right to use, land which the applicant does not legally possess.

This authorization shall in no way excuse the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations including those administered by other programs of the Department of Ecology and those administered by local and state health departments for public water supplies (2 or more service units). Increasing the number of hook ups may require additional storage capacity.

A suitable measuring device approved by the Department of Ecology shall be installed and maintained in accordance with WAC 508-64-020 through WAC 508-64-040. (Installation, operation and maintenance requirements attached hereto.)

Whenever water is being diverted, bi-weekly (every two weeks) readings of the measuring device shall be recorded and maintained by the permittee. These records shall be made available to the Department of Ecology upon request.

A proof inspection will be conducted prior to final certificate issuance. The certificate will reflect the extent of the project perfected within the limitations of the permit. Aspects will include as appropriate the source(s), system instantaneous capacity, beneficial use(s), annual quantity, home services designed, place of use, and satisfaction of provisions.

REPORT BY: Philip N. Kerr DATE: March 9, 1994

Philip N. Kerr

APPROVED BY: Doug Clausing DATE: 3/11/1994

Doug Clausing, Section Manager

6x114 ska

at the PFWA wells is less than 60 feet, a well near the same elevation (~1250 feet msl), identified by Well ID Tag No. ALC512 and located approximately halfway between the PFWA wells and City Well No. 3, encountered approximately 425 feet of sediments overlaying the apparent steeply sloping bedrock basement. By contrast, wells drilled into lower elevation (~900 to 810 feet msl) valley fill sediments generally do not penetrate the full saturated thickness of the aquifer since they tend to encounter sufficient water for their needs at relatively shallow depths. As a result, while well logs demonstrate valley floor sediment thicknesses of at least 138 feet, the total thickness in the valley area of the aquifer has not been established.

In contrast to the PFWA wells, sample history for City Well No. 3 suggests that only secondary (esthetic) contaminant exceedances, such as manganese, are related to the local geology. Sustainable capacity at City Well No. 3, in the range of 1000 gpm likewise contrasts with the comparatively poor yield of the PFWA wells (although well interference may be an issue). City Well No. 3 also has additional aquifer thickness that could be explored if necessary while the PFWUA wells have no additional aquifer thickness to exploit.

Hydrogeologic Analysis

Currently, City of Okanogan Well No. 3 is authorized to pump a maximum of 650 gpm and 700 acre-ft/yr under authorization No. G4-*06878C (Ground Water Certificate No. 5327). The approval of Change Application No. CG4-GWC3838-A@2 added 50 gpm and 39 acre-ft/yr to the pumping rate at City Well No. 3. If Ground Water Permit No. G4-30573P is also transferred to City Well No. 3, an additional 20 gpm and 6.3 acre-ft/yr will be added and result in a total maximum pumping rate of 720 gpm and 745.3 acre-ft/yr.

The pump tests discussed earlier and ground water literature suggest that aquifer transmissivity (T) is likely in the range of 65,000 to 100,000 gallons per day per foot (gpd/ft) in the vicinity of Well No. 3. Using T values within this range, evaluation by the Theis non-equilibrium equation for the additional 50 to 70 gpm suggests that additional drawdown as a result of the change approximately 50 feet from the well will be in the range of a foot or less. Consequently, effects due to the proposed change are expected to be largely unnoticed at nearby wells which are also qualifying ground water withdrawal facilities. With the closest known well associated with a water right claim or certificate located approximately 300 feet from the subject well, composite drawdown/well interference which may be observed is not expected to be significant.

Relationship Between the Original Source and Proposed Source

In order to transfer or add a well to a water right, "the additional or replacement well or wells shall tap the same body of public ground water as the original well or wells," as stated in chapter 90.44.100(2a) RWC. The subject PFWA wells tap the same unconsolidated glacial/alluvial sediment aquifer as City of Okanogan Well No. 3 and do not appear to be separated by any continuous hydraulic barrier. Therefore, City of Okanogan Well No. 3 is considered to utilize the same body of ground water as the original PFWA wells.

FINDINGS AND RECOMMENDATION

The Legislature recently clarified the definition of municipal water supply (RCW 90.03.015). Under the authority of RCW 90.03.560, the purpose of use under this permit is now municipal supply since over 15 residences are served. The unperfected portion of this water right is not relinquished because it is a municipal water right.

In accordance with chapters 90.03 and 90.44 RCW, the author makes a tentative determination that Ground Water Permit No. G4-30573P is a valid right and is eligible for change.

Approval of this change as provisioned below will not cause impairment of existing water rights nor enlarge the water right.

Exercising this beneficial use of water at the new source will not be contrary to the public interest.

The proposed well taps the same body of ground water as the original well.

Water is available in the aquifer at the new source.

Based on the above investigation and findings, I recommend that the request to change a point of withdrawal to City of Okanogan Well No. 3 be authorized, subject to the provisions listed below.

Purpose of Use and Authorized Quantities

20 gpm for a maximum of 6.3 acre-ft/yr for municipal water supply.

Point of Withdrawal

Approximately 1350 feet south and 2080 feet west from the NE corner of Section 9, T. 33 N., R. 26 E.W.M.

Place of Use

Sections 4, 5, and 9, T. 33 N., R. 26 E.W.M.

Construction Schedule

Begin construction by:	October 1, 2006
Complete construction by:	December 31, 2006
Apply water to full beneficial use by:	December 31, 2007

Provisions

If the criteria in RCW 90.03.386(2) are not met, the place of use of this water right reverts to the service area described in the Water System Plan/Small Water System Management Program most recently approved after September 9, 2003. If the criteria in RCW 90.03.386(2) are not met and no WSP/SWSMP has been approved after September 9, 2003, the place of use reverts to the last place of use described by Ecology in a water right authorization.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded weekly. The maximum rate of withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

Chapter 173-173 WAC 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. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements".

The following information, including appropriate units of measure, shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA No., Permit No., source name, annual quantity used, maximum rate of withdrawal, Department of Health WFI water system number and source number(s), purpose of use, well tag number, and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

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 gage may be installed in addition to the access port.

Report by: Virginia Stone
Virginia Stone, Water Resources Program

7/5/06
Date

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject change application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER the requested changes for point of withdrawal and purpose of use under Ground Water Application No. CG4-30273, be approved subject to existing rights and provisions specified in the foregoing report.

Signed at Yakima, Washington, this 10th day of July 2006.

G. Thomas Tebb, L.E.G.
Section Manager
Water Resources Program
Central Region Office

000052CL

STATE OF WASHINGTON
DEPARTMENT OF WATER RESOURCES
DIVISION OF WATER MANAGEMENT

WATER RIGHT CLAIM

RECEIVED
DEPT. OF WATER RESOURCES
FEB 24 70000076
CASH ___ OTHER ✓ NONE ___

1. NAME City of Okanogan

ADDRESS c/o City Clerk

Okanogan, Washington ZIP CODE 98840

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: Surface (SURFACE OR GROUND WATER)

W.R.I.A. 49 (LEAVE BLANK)

A. IF GROUND WATER, THE SOURCE IS

B. IF SURFACE WATER, THE SOURCE IS Springs ("Shull Springs")

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED 300 g.p.m. (All water) PRESENTLY USED 300 gp.m. (All water)
(CUBIC FEET PER SECOND OR GALLONS PER MINUTE)

B. ANNUAL QUANTITY CLAIMED 484 acre-feet per year PRESENTLY USED 484 acre-feet per year
(ACRE FEET PER YEAR)

C. IF FOR IRRIGATION, ACRES CLAIMED PRESENTLY IRRIGATED

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: Continuously

4. DATE OF FIRST PUTTING WATER TO USE. MONTH Unknown YEAR 1908

5. LOCATION OF THE POINT(S) OF DIVERSION/WITHDRAWAL: Shull springs-located between a point 1200 feet west and 800 feet south from the center of Sec. 5 and a point located 100 feet west ~~FEET~~ ~~FROM THE~~ ~~CORNER OF SECTION~~ and 350 feet north of the south quarter corner of Sec. 5; Said points BEING WITHIN NE¼SW¼SE¼SW¼ OF SECTION 5 T. 33 N R. 26 (~~EAST~~) W.M.
See attached map
IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, LOT ___ BLOCK ___ OF

(GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED: Within the corporate limits of the City of Okanogan, Washington

COUNTY Okanogan

7. PURPOSE(S) FOR WHICH WATER IS USED: Municipal water supply

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: Appropriation

DO NOT USE THIS SPACE
FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGMENT CONSTITUTES RECEIPT FOR FILING FEE.
DATE RETURNED REGISTRY NUMBER
FEB 24 0000052 < THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO.
ASSISTANT DIRECTOR, DIVISION OF WATER MANAGEMENT, DEPARTMENT OF WATER RESOURCES

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF
X R. E. Johnson
DATE February 24, 1970
IF CLAIM FILED BY DESIGNATED REPRESENTATIVE PRINT OR TYPE FULL NAME AND MAILING ADDRESS OF AGENT BELOW
R. E. Johnson, City Attorney
Okanogan, Washington 98840

☐ ADDITIONAL INFORMATION RELATING TO WATER QUALITY AND OF WELL CONSTRUCTION IS AVAILABLE

A FEE OF $10.00 MUST ACCOMPANY THIS WATER RIGHT CLAIM

RETURN ALL THREE COPIES WITH CARBONS INTACT ALONG WITH YOUR FEE TO
DEPARTMENT OF WATER RESOURCES
DIVISION OF WATER MANAGEMENT
UNION AVE. BUILDING OLYMPIA, WASHINGTON 98501

ORIGINAL
DWR

GWC-03410

as Lemester PROGRESS SHEET - GROUND WATER APPLICATION

NAME: Mr. Ray Stephan, City Clerk
City of Okanogan
Okanogan Washington

Assigned to:

G.W. APPLI. NO. 742 PERMIT NO. 4842 CERT. NO. 3410 A

AMENDED

CANCELLED

Appli. received 2-21-48 Initial $5.00 fee received 2-21-48
Statement of Additional Examination Fee ($) Sent
Received

Application returned for completion or correction
Received

TEMPORARY PERMIT: Approved by Issued

PUBLICATION:
O.K'd by [illegible] Date Feb 25-48 Notice sent 2-25-48
Protests filed none 3-15-58 new notice sent 5-31-57

Affidavit received and checked 5-18-57 Time Expires 5-11-57

GAME REPORT:

EXAMINATION:
Made 5-14-57 by [illegible]
O.K'd for Permit 6-5-57 by [illegible]

Statement of Permit Fee sent 5-20-57 Amount $20.00
Received 6-8-57

PERMIT NO. 4842 Issued 6-11-57

BEGINNING OF CONSTRUCTION: Notice sent started Filed
Extension fee $ Extended to
Extended to

WELL DRILLER'S REPORT: Sent 9-26-57 Filed received

COMPLETION OF CONSTRUCTION: Notice sent completed Filed
Time extended to

~~COMPLETE APPLICATION OF WATER: Notice sent Filed~~
~~Time extended to~~

PROOF OF APPROPRIATION: Sent 6-11-57 Filed 8-7-57

Statement of Certificate Fee sent 6-11-57 Received 8-11-57

CERTIFICATE OF GROUND WATER RIGHT NO. 3410 A Issued 8-13-57

CERTIFICATE RECORD NO. 7 PAGE NO. 3A10-A

STATE OF WASHINGTON, COUNTY OF Okanogan

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

THIS IS TO CERTIFY THAT CITY OF OKANOGAN, WASHINGTON

a municipal corporation, has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the ground waters of a well located within SE¼NW¼ Sec. 16, Twp. 33 N., R. 26 E.W.M. for the purpose of municipal supply under and subject to provisions contained in Ground Water Permit No. 4642 issued by the State Supervisor of Water Resources 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 Water Resources of Washington and entered of record in Volume 7 at page 3A10-A; that the right hereby confirmed dates from February 21, 1948; 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 200 gallons per minute; 320 acre-feet per year for municipal supply.

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:

City of Okanogan, Okanogan 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 1945.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this 13th day of August, 19 52.

State Supervisor of Water Resources

ENGINEERING DATA

O.K. 26

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

Permit to Appropriate Public Ground Waters of the State of Washington

Book No. 10 of Ground Water Permits, on page 4843 under Application No. 782

CITY OF OKANOGAN, WASHINGTON

a/k _____

is hereby granted a permit to appropriate the following described public ground waters of the State of Washington, subject to existing rights, and to the limitations and provisions set out herein.

Priority date of this permit is February 21, 1946

Source of the proposed ground water appropriation is a well

within _____ area, _____ sub-area

_____ zone. Name or number of works is _____

Quantity of water appropriated shall be limited to the amount which can be beneficially applied and not to exceed 200 gallons per minute; 320 acre-feet per year, to be used for the following purposes: municipal supply

as more definitely set out below.

Location of the well, tunnel, or infiltration trench is 1050 feet west and 550 feet north of center of sec.16

being within SE¼NW¼, sec.16, T.33 N., R.26 E.W.M.

county of Okanogan

Use, or uses to which water is to be applied:

For municipal supply: 200 gallons per minute; 320 acre-feet per year, to supply City of Okanogan.

For irrigation: _____ gallons per minute; _____ acre-feet per year, for the irrigation of _____ acres.

For miscellaneous uses: _____ gallons per minute; _____ acre-feet per year, for _____

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

City of Okanogan, Okanogan County, Washington.

DESCRIPTION OF WORKS FROM WHICH WATER IS TO BE WITHDRAWN

The well will be drilled (dug or driven) and have a diameter of 12 inches, and depth of 95 feet.

Description of tunnel or infiltration trench:

(Please read carefully provisions below)

Particular specifications required by the Supervisor of Water Resources for the purpose of preventing waste of public waters:

Construction work shall begin on or before Started

and shall thereafter be prosecuted with reasonable diligence and completed on or before Completed

and complete application of water to proposed use shall be made on or before June 1, 1950

Given under my hand and the seal of this office at Olympia, Washington, this 11th day of June, 19 49.

M. A. Stuart

State Supervisor of Water Resources

Report of Examination on Ground Water

Received date 2-21-48 Date of exam 5-14-59 Appl. No. 762

Name City of Okanogan Address Okanogan, Wash.

Type of works well Dimensions 12"x95'

Progress of works well completed (march 1948)

Quantity applied for 200 g.p.m. acre-feet per year

Legal sub. SW¼NE¼ Sec. 16 Twp. 33 N. Rge. 26 E. County Okanogan

Use municipal supply

Irrigation-acreage: Present Planned Feasible

Municipal: Population 2500 as of 1970

Industrial

Time pump will be operated continuously

Other water rights appurtenant to this land SW Cert 592, G.W. Certificates 265 & 266-B and 369-A.

Proximity to existing works, springs, wells, or streams Okanogan River to the west

Area Sub-area Zone

RECOMMENDATIONS

Approved for 200 g.p.m. 320 acre-feet per year, subject to existing water rights. (1 acre-foot 325,850 gallons.)

The City of Okanogan has the four certificates of water right listed above issued for a total withdrawal rate of 1675 gallons per minute and for an annual quantity of 1,488 acre feet per year.

Therefore, permit will issue for a continuous withdrawal rate of 200 g.p.m. or 320 acre-feet per year which will be supplemental to the above listed certificates.

The applicant will furnish information to this office as to the size and type of equipment installed and the gallons per minute furnished. The size of hole openings and number of sprinklers operated, if such be the case, will give this information.

Signed this 19th day of May, 1959.

STUART E. SHUMWAY, Water Right Engineer
Division of Water Resources

REPORT OF FINDINGS ON GROUND WATER Appli. 742

NAME City of Okanogan

TYPE OF WORKS: Well Date of Examination March 9, 1948

Dimensions: 12" x 95' Progress of Works well in - no pump

QUANTITY Applied for: 200 g.p.m. acre feet per year

LOCATION NE¼ of NW¼ of 16-33-26 E.W.M.

USE: municipal

Irrigation- acreage: Present Planned Feasible

Municipal: Population 2150 as of --

Industrial:

Time Pump Will be Operated:

Other Water Rights of Applicant:

Proximity to existing works, springs or streams: 500 feet West to Okanogan River

Water Bearing Zone:

RECOMMENDATIONS

Approved for 200 g.p.m. 162 acre-feet per year, subject to existing water rights. (1 acre-foot = 325,850 gallons)

This well for the City of Okanogan is located across the bridge in the Eastern part of town which is part of the Colville Indian Reservation.

The present plan is to use it at 200 g.p.m. for 6 months in the summer so that 162 acre-feet a year will be produced.

Ground Water Application #321, Permit #341 will probably be cancelled as soon as this well is put into satisfactory operation.

Signed this 17th day of March, 1948

Fred B. Roberts

FRED B. ROBERTS
Ground Water Geologist

SPORTS COMPLEX WELL PERMIT

Confederated Tribes of the Colville Reservation

P.O. Box 150, Nespelem, WA 99155

(509)634-2200
FAX: (509)634-4116

March 8, 2000

RECEIVED

APR 07 2000

CITY OF OKANOGAN
P.O. BOX 752
OKANOGAN, WA 98840

X	MAYOR	
X	C/TREAS.	
X	CITY SUPT.	
X	F. CHIEF	
X	BLD. INS.	
	PLAN. COM.	
X	COUNCIL	
X	CHRONICLE	
X	THOMAS	
X	VANNOY	

Ella Schreckengost, Mayor
City of Okanogan
P.O. Box 750
Okanogan, WA. 98840

Re: Permit number 99-06-04-11G.

Dear Mayor,

This letter serves as notice that your pending application to use water on the reservation has been approved.

Within the "Located At" section of your approved permit you will see that I wrote "Notify Water Administrator". To this I would like to add that I will want a copy of the well drillers report when the new well is drilled.

Your application was brought to the Natural Resources Committee on March 6, 2000. If I may assist you with information in the future in regard to water issues of the Colville Tribes, please do not hesitate to contact me. My office number is 634-2200, extension 7212. The Environmental Trust fax number is 634-2427.

Sincerely,

Lois M. Trevino, Water Administrator
Colville Confederated Tribes

cc: file

NOV-27-2007 15:16 OKANOGAN*CITY*PW 4224337 P.03/10

SERIAL NUMBER 99-06-04-11 G

PERMIT TO USE WATERS OF THE COLVILLE INDIAN RESERVATION

WHEREAS THE APPLICANT, Ella Schreckengost, Mayor, City of Okanogan
OF P.O. Box 750,
(Route, Street, or P.O. Box Number)
Okanogan, Wa. 98840 HAS
(City or Town) (State and Zip Code)
REQUESTED PERMISSION TO USE THE WATERS OF THE COLVILLE INDIAN RESERVATION; & WHEREAS THE APPLICANT HAS COMPLIED SATISFACTORILY WITH THE REGULATIONS OF THE COLVILLE WATER ADMINISTRATOR AND COLVILLE WATER COMMITTEE AS SET FORTH IN CHAPTER 6 OF THE COLVILLE WATER CODE; AND WHEREAS, THE COLVILLE WATER COMMITTEE HAS APPROVED THIS PERMIT APPLICATION, THIS PERMIT NUMBER 99-06-04-11 G
THE APPLICANT IS HEREBY GRANTED PERMISSION TO USE 92.31 ACRE-FEET
OF WATER AT A RATE OF 270 gpm WHICH WILL BE WITHDRAWN/DIVERTED
FROM a well LOCATED AT Notify Water Administrator
BY METHOD OF Electric Pump

FOR THE PURPOSE (S) OF Irrigating sports fields.

TO BE USED ON 1650 ft. West, 350 ft. North, Southeast corner of Sec 9, SW 4, SE 4, Section 9, T. 33 N, R. 26 E.
DURING THE PERIOD OF TIME Annually
WITH THE FOLLOWING PROVISIONS Permit may be revoked if found necessary to protect Okanogan River Fishery.

THIS PERMIT CONSTITUTES TRIBAL PERMISSION TO USE WATERS OF THE COLVILLE INDIAN RESERVATION

THIS WATER PERMIT, NUMBER 99-06-04-11 G, WAS PRESENTED TO THE NATURAL RESOURCES COMMITTEE AND Approved ON March 6, 2000
BY A VOTE OF Four FOR AND Zero AGAINST.

ATTEST:

Lois M. Trevino

Lois M. Trevino, Water Administrator

REMARKS: Approved by Water Administrator per 37.6.3 of the Colville Water Code. Per 37.7.4 applicant consents to entry upon land for purposes relating to Colville Water Code.

Water use unauthorized without permittee's consent to Department officials to enter upon land for the purposes set forth in the Water Code (CTC 37.7.4).

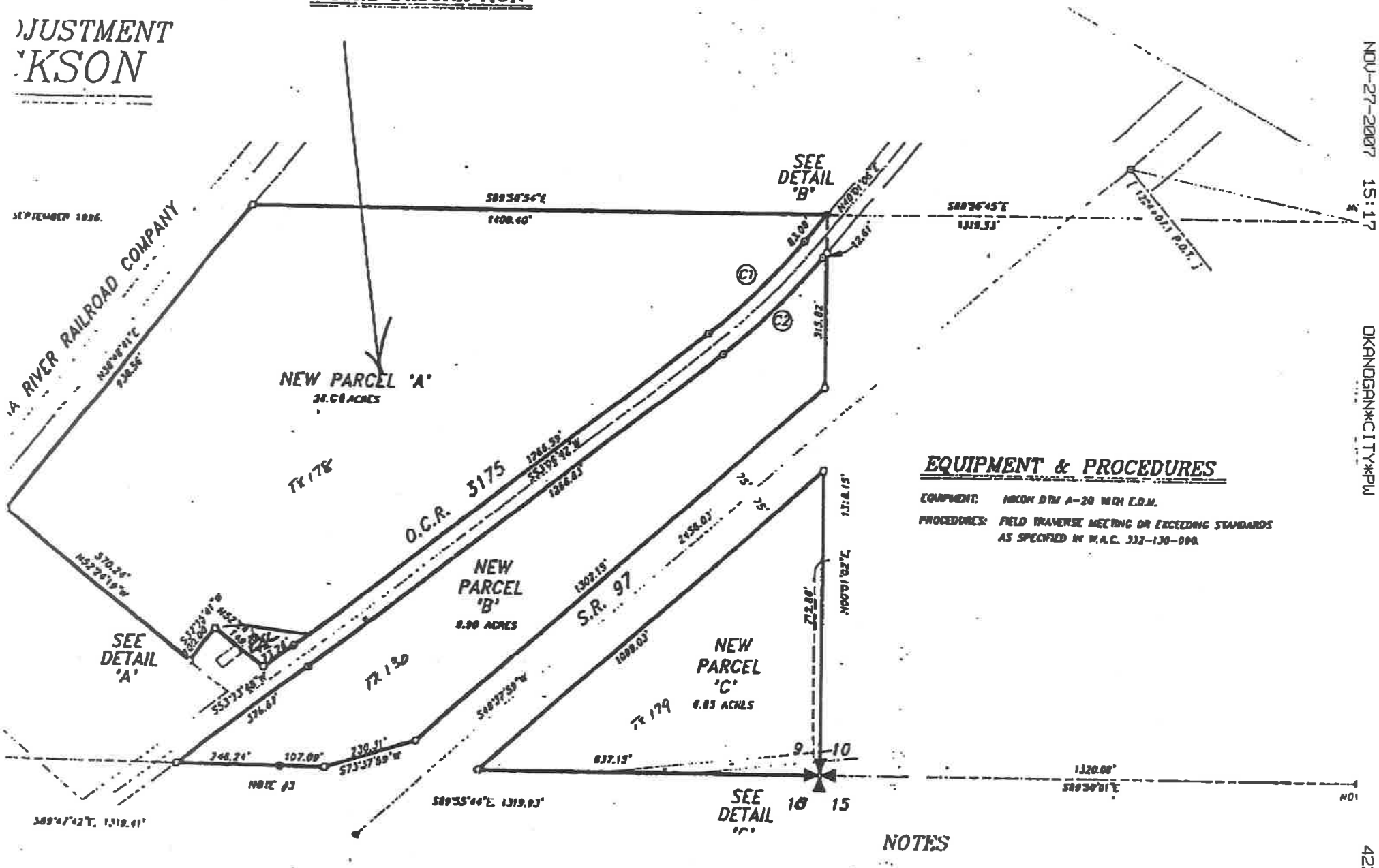
COLVILLE CONFEDERATED TRIBES
Environmental Trust Department
P.O. Box 150
Nespelem, WA 99155-0150

(509) 634-2425 (office)
(509) 634-2427 (fax)
lmerita@televar.com

NOV-27-2007 15:17 OKANOGAN*CITY*PW 4224337 P.05/10

LEGAL DESCRIPTION

)JUSTMENT
:KSON



EQUIPMENT & PROCEDURES

EQUIPMENT: NIKON DTM A-20 WITH E.D.M.

PROCEDURES: FIELD TRAVERSE MEETING OR EXCEEDING STANDARDS AS SPECIFIED IN W.A.C. 332-130-090.

NOTES

This Sketch is provided, without charge, for your information. It is not intended to show all matters related to the property including, but not limited to, area 3 dimensions, easements, encroachments, or location of boundaries. It is not a part of, nor does it modify, the commitment or policy to which it is attached. The Company assumes NO LIABILITY for any matters related to this sketch. Reference should be made to an accurate survey for further information.

COLVILLE CONFEDERATED TRIBES
Nespelem, Washington

TO: COLVILLE BUSINESS COUNCIL

March 6, 2000

FROM: Natural Resource Committee

SUBJECT: Approve application number 99-06-04-11G.

Initiated by: _____ Program: _____

Committee Recommendations

Approve Serial Number 99-06-04-11G, Permit To Use Waters Of The Colville Indian Reservation with the following provision: This water will not be co-mingled with the City of Okanogan municipal water system.

The Tribes reserves the right to restrict this withdrawal of water to protect the Okanogan fishery in the event "minimum instream flows" are not being met.

The minimum flows for the lower Okanogan as measured at the state guage near Mallot shall apply to this permit as minimum instream flows until such time as they are revised as required to protect the fishery.

Approve the amount of water use to be set at 85 acre feet.

COMMITTEE MEMBERS	VOTE CAST (YES)	(NO)	COMMITTEE MEMBERS	VOTE CAST (YES)	(NO)
Dell Loine	X				
Gene Joseph	X				
Gretchen Arnold	X				
Margie Hutchinson	X				

Business Council Actions: Seconded by: _____

___ FOR _____ Signed: Dell Loine
Committee Chairperson

___ NAY _____ Signed: _____
CBC Chairperson

___ ABSTAINED _____ Date Enacted: _____

NOV-27-2007 15:17 OKANOGAN*CITY*PW 4224337 P.07/10

Amendments: _____

_____

_____

Emergency (10 Affirmative Signatures): Rationale attached: _____

FOR DEPARTMENT USE ONLY
Serial No. 990604 v1G

APPLICATION FOR PERMIT TO USE WATER OF THE COLVILLE INDIAN RESERVATION

1. (Print or Type) I, Ella Schreckengost, Mayor, City of Okanogan, Box of 750, Okanogan, WA 98840, (509) 422-3600
(Address - Street #, Box #, City or Town, State, Zip Code, & Telephone) Apply for a permit to use waters of the Colville Indian Reservation, as hereinafter stated. (If applicant is a corporation, give date and place of incorporation; if a co-partnership or association give names of members.) City of Okanogan is a municipal corporation organized under the laws of the State of Washington.

2. The source of water is (name of stream, lake, spring, groundwater or other source.) Okanogan River - and ground water in hydraulic continuity therewith.

3. The quantity of water which is to be diverted from surface water or withdrawn as ground water: up to 100 acre feet per year

4. Peak use expected (gallons/minute or cubic feet/second): up to 600 gallons per minute

5. Total volume of water used per year in acre-feet (one acre foot = 43560 cubic foot) up to 100 acre feet per year

6. Use will begin about (day/month) April 1 annually
and end about (day/month) October 31 annually

7. If stored in a reservoir or large tank give number of acre-feet or gallons N/A

8. The purpose(s) for which the water is to be used is (see instructions): Irrigation of park land and athletic fields and ultimate incorporation into City's municipal water system.

9. Describe the works to be used in diverting and/or withdrawing, transmitting and applying water. (State manner in which water is to be diverted, whether by dam or other works, whether through pipes, ditches flumes, etc. and type and HP of pumps, if used; and type of sprinkling, drip, furrow or other irrigation used. Attach maps, plans, & diagrams if necessary). Applicant requests change of point of diversion of surface water to point of withdrawal from existing well on subject property. Existing well has not yet been tested.

CCT ENROLLMENT #
TRUST LAND / FEE LAND
LEASED: YES / NO
LEASE EXPIRATION DATE:

Colville Confederated Tribes
Environmental Trust (509)634-8844
Post Office 150
Nespelem, WA 99155

10. The water is to be diverted or withdrawn from the above source at the following point (Describe as being within the smallest legal subdivision of public survey, and by direction and distance to a section corner):

Legal Description	SEC	TWP	RGE
SW¼ of SE¼	9	33	26

1650 ft. N S E (W) and 350 ft. (N) S E W of the ~~N S E W~~
(Circle One) (Circle One) (Circle One)

~~quarter corner or~~ NE NW (SE) SW corner of SEC 9 TWP 33
RGE 26 (whichever location applies).

11. The legal description of the property on which the water is to be used is (Describe as being within the smallest legal subdivision):

Legal Description	SEC	TWP	RGE
See attached Exhibit A			

(Attach additional pages if necessary)

12. Construction of water diversion, transmission, and/or withdrawal works will commence on or about August, 1999, and end on or about March 31, 2000. Use of water will begin on or about October, 1999.

13. Include remarks below or on additional sheets as required for the following: If a use is an existing use describe the history of the use, including the names of any predecessors in title and the dates of their ownership, if known, and their uses of water. If any pre-existing right is claimed, describe any documents or records upon which it is based, any statute or statutes or legal doctrine upon which the claim is based, and any pertinent litigation creating or affecting the claim. If a pre-existing use or uses are described, indicate any problems of water levels and supply or problems of declining quality that have been encountered in the past. REMARKS: The property was acquired by the applicant from Warren Dickson in 1998, together with a portion of federally reserved water right. Water has historically been used continuously for irrigation since land came out of trust status (former Allotment S-240). See attachments.

14. Describe your plans for future development of your water use or uses and related activities. Water is to be used for irrigation of park land and athletic fields initially, ultimately to be integrated into the City's municipal water system.

Ella Schwartz 6-1-99

File Original with
Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent _____

UNIQUE WELL I.D. # _____

Water Right Permit No. Colville Tribal Permit

(1) OWNER: Name Central Valley Sports Address _____

(2) LOCATION OF WELL: County Okanogan SE 1/4 SE 1/4 Sec 9 T 33 N.R. 26 WM

(2a) STREET ADDRESS OF WELL: (or nearest address) Rodeo Trail Rd.

TAX PARCEL NO.: _____

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☒ Irrigation ☐ Test Well ☐ Other ☐ DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one) _____

☒ New Well Method: ☐ Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☒ Rotary ☐ Jetted ☐ Decommission

(5) DIMENSIONS: Diameter of well 8 inches Drilled 160 feet. Depth of completed well 160 ft.

(6) CONSTRUCTION DETAILS

Casing Installed: ☒ Welded 8 " Diam. from +2 ft. to 140 ft. ☐ Liner installed " Diam. from ft. to ft. ☐ Threaded " Diam. from ft. to ft.

Perforations: ☐ Yes ☒ No

Type of perforator used _____

SIZE of perforations _____ in. by _____ in.

_____ perforations from _____ ft. to _____ ft.

Screens: ☒ Yes ☐ No ☐ K-Pac Location 138

Manufacturer's Name Johnson

Type Stainless Steel Model No. Telescoping

Diam. 8" Slot Size 50 from 140 ft. to 150 ft.

Diam. 8" Slot Size 40 from 150 ft. to 155 ft.

Gravel/Filter packed: ☐ Yes ☒ No ☐ Size of gravel/sand _____

Material placed from _____ ft. to _____ ft.

Surface seal: ☒ Yes ☐ No To what depth? 25 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 56 ft. below top of well Date _____

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? _____

Yield: 300+ gal./min. with _____ ft. drawdown after _____ hrs.

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

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

Date of test _____

Baller test _____ gal./min. with _____ ft. drawdown after _____ hrs.

Airtest 300+ gal./min. with _____ ft. drawdown after _____ hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water _____ Was a chemical analysis made? ☐ Yes ☐ No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL	FROM	TO
Top Soil	0	4
Brown Clay	4	12
Sand, Gravel & Boulders	12	65
Sand Gravel--water	65	75
Gray Sand with Water	75	115
Course Sand some Gravel	115	125
Sand Gravel--Water	125	155
Gray Sandy Clay	155	160

Well Designed for 445 GPM

Note: tail piece on well screen 155' to 160'
4½" API pin at bottom of tail piece

Work Started 4/11/2001 Completed 4/18/2001

WELL CONSTRUCTION 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.

Type or Print Name Joseph L. Booth License No. 0564

(Licensed Driller/Engineer)

Trainee Name _____ License No. _____

Drilling Company Okanogan Drilling

(Signed) Joseph L. Booth License No. 0564

(Licensed Driller/Engineer)

Address 48 Rodeo Trail Rd. Okanogan, Wash.

Contractor's Registration No. OKANODD119LT Date 4/20/01

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20 (11/98)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006.

APPENDIX N

SEPA DOCUMENTS

SEPA[1] Environmental Checklist

Purpose of checklist

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization, or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. **You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown.** You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to **all parts of your proposal**, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for lead agencies

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B, plus the Supplemental Sheet for Nonproject Actions (Part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in "Part B: Environmental Elements" that do not contribute meaningfully to the analysis of the proposal.

[1] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/Checklist-guidance

Background

Find help answering background questions[2]

1. **Name of proposed project, if applicable:**

   City of Okanogan 2025 Comprehensive Water System Plan

2. **Name of applicant:**

   Shawn Davisson, Public Works Superintendent

3. **Address and phone number of applicant and contact person:**

   City of Okanogan

   P O Box 752

   Okanogan, WA 98840

   (509) 422-3600

4. **Date checklist prepared:**

   August 15, 2025

5. **Agency requesting checklist:**

   Washington State Department of Health

6. **Proposed timing of schedule (including phasing, if applicable):**

   The City of Okanogan is in the process of completing a comprehensive update of our Water System Plan. The previous update was completed in 2016. This checklist has been prepared based on the draft plan submitted to the City by Gray and Osborne in January of 2025. The prepared draft presents information on ownership and management of the water system, system background data, an inventory of existing system components, water rights, related planning documents, existing and future service areas and characteristics, and service area agreements and policies.

7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

[2] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-A-Background

The Water System Plan is updated at least once each decade to capture changes in system needs to meet anticipated growth, respond to regulatory changes, and provide priorities for investment and restoration of existing facilities.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

The City has solicited agency and public input in all prior water system plans. This checklist has been prepared to ensure that public review on proposed changes is available to all agencies and potential stakeholders.

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.

No.

10. List any government approvals or permits that will be needed for your proposal, if known.

Review and adoption of the Comprehensive Water System Plan will be completed by the Okanogan City Council through a public hearing process. The Water System Plan will need to be approved by the Washington State Department of Health.

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 2025 Water System Plan (WSP) update has been prepared by the City's consulting engineers (Gray and Osborne, Inc.) to comply with WAC 246-290-100 requirements. The WSP provides a description of how the system will address present and future needs in manner consistent with other relevant plans and local, state, and federal laws, including applicable land use plans and includes detailed descriptions of the water system, including:

(i) Ownership and management, including the current names, addresses, and telephone numbers of the owners, operators, and emergency contact persons for the system;

(ii) System history and background;

(iii) Related plans, such as coordinated water system plans, abbreviated coordinated water system plans, local land use plans, groundwater management plans, and basin plans;

(iv) Service area maps, including retail service area and future service area, if applicable, and areas where wholesale water is provided to other public water systems.

(v) Service area characteristics, agreements, and policies;

(vi) Satellite management, if applicable;

(vii) Basic planning data, including:

- Current population, service connections;
- Water use, and equivalent residential units; and sufficient water production and consumption data to identify existing and projected needs;
- Designated land use, zoning, population, and water demand within the water system's service area for the plan approval period, and at least a 20-year planning period.
- Demand forecasts, developed under WAC 246-290-221, for the plan approval period, and at least a 20-year planning period. These must show future use with and without savings expected from the system's water use efficiency program.

The WSP does not propose any new regulations or controls.

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 Okanogan, as shown in Figure 1-1, is located in north-central Washington on the banks of the Okanogan River, which forms the western boundary of the Colville Indian Reservation. The city of Okanogan is located in north-central Washington State, specifically within Okanogan County. It is located about 50 miles south of the Canadian border, 140 miles east of Seattle, and 100 miles northwest of Spokane. The City sits on a narrow river plain with steeply rising side slopes. Okanogan began as a trading post established by Frank J. Cummings in 1886, located near the mouth of Salmon Creek. As settlement near the post grew, it became the first City in the Okanogan Valley, known then as Alma, a name that is still borne by Alma Park.

The Okanogan River and area springs were the earliest water sources used by City residents. As the City grew, the City first started to use Salmon Creek Springs as a municipal supply source, and a rudimentary concrete distribution system was developed. The City continued to use Salmon Creek Springs as the sole municipal supply until the late 1920s when the Alma Park Well was developed. Major source, storage, and distribution system improvements continue to the present day. The Okanogan water system consists of five groundwater wells, one surface water source,

six reservoirs, two booster pump stations, a transfer station, and approximately 22 miles of transmission and distribution piping. A map of the water system is shown in Figure 1-2.

Environmental Elements

1. Earth

Find help answering earth questions[3]

a. General description of the site:

The City Water System Plan covers facilities throughout the city distribution and storage area depicted in Figure 1.2. The City sits on a narrow river plain with steeply rising side slopes that rise to broader plateaus above the city. The central area of the city flanks the Okanogan River at an average elevation of approximately 833 feet. The highest area of the city on the western slopes is within the Chukar Ridge neighborhood at an elevation of approximately 1,168 feet. The highest area to the east is at the Okanogan airport at an elevation of approximately 1066 feet.

Circle or highlight one: Flat, rolling, hilly, steep slopes, mountainous, other:

The City is defined by a relatively steep valley that parallels the Okanogan River, flowing north to south. The valley walls rise to older plateaus 300 feet +/- above the valley floor. Several west to east drainages flow into the Okanogan River within the city, creating side valley's with associated steep slopes.

b. What is the steepest slope on the site (approximate percent slope)?

The steepest side slopes are generally between 20-30%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them, and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The Okanogan soils are characterized by deep, well drained soils formed in alluvium of mixed mineralogy. These soils are found on flood plains, low stream terraces, and broad alluvial fans. With slopes that are generally 0 to 5 percent. Soils on the upper terraces and transitional slopes are characterized as very deep, somewhat excessively drained soils. They are defined by a coarse-loamy texture over sandy or gravelly materials that include glacial outwash.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

There are no surface indications or history of unstable soils in the immediate vicinity.

[3] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-earth

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

None proposed

f. Could erosion occur because of clearing, construction, or use? If so, generally describe.

Non-project action - The WSP does not address any clearing or construction activities proposed related to the continued operation or upgrading of the water system. Erosion concerns would be addressed through routine permitting.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Non-project action - The WSP does not provide details on a specific site.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any.

Non-project action - Erosion concerns would be addressed through routine permitting.

2. Air

Find help answering air questions[4]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Non-Project Action. The Water System Plan does not address any potential emissions related to future construction activities related to the continued operation or upgrading of the water system.

The WSP identifies a number of water system deficiencies and their associated improvements are identified in Chapter 3. A schedule for implementing these improvements is provided in Table 8-1. Air emissions from construction can be expected for items that require ground disturbance (water main and reservoir upgrades, etc.). Emissions concerns would be addressed through routine permitting.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

This is a non-project action that will not be affected by any other off-site emissions / odors

[4] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-Air

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Non Project Action - Emissions concerns would be addressed through routine permitting.

3. Water

Find help answering water questions[5]

a. Surface:

Find help answering surface water questions[6]

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.

Yes, The Okanogan River flows through the Okanogan Central Business District, within the water system service area. The Okanogan River periodically floods the developed areas within the floodplain and poses a health risk to non-municipal water wells in those areas. The City water system has been designed to provide protection from periodic flooding.

Salmon Creek is a tributary to the Okanogan River that flows through the southern central region of the water system area in Okanogan. Salmon Creek flooding is infrequent and the City maintains several water sources within the Salmon Creek drainage. Elgin Creek is a smaller tributary located at the northern edge of the water system area. Egin Creek has no identified floodplain and has not presented any risk to the water system.

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.

Non Project Action. The water system plan update does not trigger any construction work within 200 feet of any of the described waters. Routine maintenance and operation of the system will occur within 200 feet of each of the water bodies.

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.

4. Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.

[5] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water
[6] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Surface-water

Non Project Action. The City maintains a senior water right claim to Salmon Creek as a source of domestic supply, however the source is not in current use.

5. **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

   Portions of the water system distribution and supply system are located within the 100-year floodplain for the Okanogan River.

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.**

   Non-Project Action. System operation and maintenance activities associated with fire hydrant testing, reservoir inspections, and other repairs may result in discharges of ground water into the Okanogan River through storm water collection or surface discharge. Waters discharged are not likely to include any waste materials.

b. Ground:

Find help answering ground water questions[7]

1. **Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.**

   Yes, Okanogan's water system consists of four active groundwater wells, Well #2 has a capacity of 200gpm, Well #3 has a capacity of 650 gpm, Well #4 has a capacity of 550gpm, and Well #5 has a capacity of 350 gpm, for a combined capacity of 1,750 gpm. The WSP Provides detailed information on each facility. The locations of each of the wells are shown on Figure 1-2. Relative depths and pumping rates are provided on Figure 1-3.

2. **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (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.**

   This is a Non Project Action and no waste will be discharged into the ground.

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.**

[7] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Groundwater

Non-Project Action. The City of Okanogan's Storm Water Plan focuses on managing stormwater runoff, particularly in relation to new developments and fire hydrant requirements. Some of the older storm water collection facilities discharge directly to the Okanogan River, while others utilize catch basins, to disperse it back into the soil. City development codes include regulations regarding development within 50 feet of the Ordinary High Water Mark (OHWM) of the Okanogan River.

2. **Could waste materials enter ground or surface waters? If so, generally describe.**

   Non Project Action - The WSP does include wellhead protection areas for each of the city wells (Figure 5-1). The WSP also includes a table of defined and potential sources of contamination being identified in Table 5 -3.

3. **Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.**

   Non Project Action - However, the WSP does not identify any action that would alter or otherwise affect drainage patterns.

d. **Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:**

   Appropriate measures to reduce or control surface, ground, and runoff water impacts will be addressed through routine permitting processes.

4. Plants

Find help answering plants questions

The WSP does not provide details on a plants within the distribution area. The area is not untypical for incorporated areas within North Central WA. Native vegetation is common on hillslopes and other undeveloped areas, but has been replaced with typical residential plants supported by active irrigation.

a. **Check the types of vegetation found on the site:**

   ☒ **deciduous tree: alder, maple, aspen, other**

   ☒ **evergreen tree: fir, cedar, pine, other**

   ☒ **shrubs**

   ☒ **grass**

   ☒ **pasture**

   ☐ **crop or grain**

   ☒ **orchards, vineyards, or other permanent crops.**

   ☒ **wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other**

   ☐ **water plants: water lily, eelgrass, milfoil, other**

☐ **other types of vegetation**

b. What kind and amount of vegetation will be removed or altered?

Non Project Action - The WSP does not identify any projects that would result in measurable impacts to existing vegetation.

c. List threatened and endangered species known to be on or near the site.

Non Project Action - No endangered plant species are known within the distribution system area.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

Non Project Action- No mitigation measures required.

e. List all noxious weeds and invasive species known to be on or near the site.

Non Project Action. Weed control practices at each of the identified facilities in the WSP are required to be performed in compliance with standards for drinking water protection.

5. Animals

Find help answering animal questions[8]

a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site.

Non Project Action. The Okanogan distribution system includes lands adjacent to the Okanogan River, which is a migratory flyway and provides habitat for a variety of fish species. The system also includes lands adjacent to Salmon Creek, which provides habitat for listed steelhead and chinook salmon.

Examples include:

- **Birds: hawk, heron, eagle, songbirds, other:**
- **Mammals: deer, bear, elk, beaver, other:**
- **Fish: bass, salmon, trout, herring, shellfish, other:**

b. List any threatened and endangered species known to be on or near the site.

[8] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-5-Animals

Non Project Action. The City distribution system includes lands adjacent to the Okanogan River and Salmon Creek, which provide habitat for listed UCR steelhead trout, and UCR Spring Chinook Salmon.

c. Is the site part of a migration route? If so, explain.

The City Distribution System includes areas adjacent to the Okanogan River, which serves as a flyway for migratory birds, including bald eagles.

d. Proposed measures to preserve or enhance wildlife, if any.

None required as the facilities are operated in compliance with applicable state, federal, and local regulations.

e. List any invasive animal species known to be on or near the site.

None Known.

6. Energy and natural resources

Find help answering energy and natural resource questions[9]

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.

Operation of the City water system requires electricity from the local utility provider (Okanogan PUD). Several of the facilities also feature back-up generators to ensure continued service during power disruptions.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

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.

Non Project Action. Although the WSP details project efficiencies and priorities upgrades to facilities, these are prioritized for reliability rather than energy conservation.

7. Environmental health

Health Find help with answering environmental health questions[10]

[9] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-6-Energy-natural-resou
[10] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-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 because of this proposal? If so, describe.**

Non Project Action - Although the WSP does include operation and maintenance guidance and wellhead protection standards.

1. **Describe any known or possible contamination at the site from present or past uses.**

   Identified known sites that could pose possible contamination concerns to the city water system are identified in Table 5-3.

2. **Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

   None Known. As identified above, known sites are listed on Table 5-3. There are no underground hazardous liquid or gas transmission pipelines in the area of the Project.

3. **Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

   None known. The City does not provide disinfection but does operate an arsenic treatment facility, to reduce levels on Well 4 . The City is in compliance with all other state and federal water quality requirements, and recent sample results for disinfection byproducts, nitrates, nitrites, soil fumigants, pesticides, and radionuclides have all been well below the respective EPA maximum contaminant limits (MCLs).

4. **Describe special emergency services that might be required.**

   Non Project Action - the WSP does include an emergency preparedness plan.

5. **Proposed measures to reduce or control environmental health hazards, if any.**

   Non Project Action - As identified above the WSP does include an emergency preparedness plan, a wellhead protection plan, and an operation and maintenance plan designed to reduce or control environmental health hazards.

b. **Noise**

1. **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

   Noise in the project area is typical for small communities in North Central WA. None present unique conditions that could affect the project.

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)?**

   Non Project Action - the EWSP does not propose any changes to system operation that would generate noise outside of typical noises already existing within the city service area.

3. **Proposed measures to reduce or control noise impacts, if any:**

   None needed

8. Land and shoreline use

Find help answering land and shoreline use questions[11]

a. **What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.**

   The WSP includes a detailed discussion of historic and projected land uses within the city that are supported by the water system. Water system maintenance and projected upgrades will allow for continued expansion of residential and commercial uses within the service area. The existing system provides adequate service to most areas within the city's service areas. Planned improvements to fire flow and storage would increase opportunities for expansion and growth within undeserved areas. Figure 1-4 identifies the zoning applied to lands within the service area.

b. **Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses because of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?**

   The City of Okanogan historically included areas of working farmlands and orchards but these areas have gradually been replaced by residential and commercial development over the past 100+ years. Improvements identified and prioritized in the WSP are not expected to displace any worming farmlands.

   1. **Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?**

      No adverse effects known.

[11] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-8-Land-shoreline-use

c. Describe any structures on the site.

Okanogan's water system consists of five groundwater wells, one surface water source, six reservoirs, two booster pump stations, a transfer station, and approximately 22 miles of transmission and distribution piping. The WSP Provides detailed information on each facility. The locations of each of the wells are shown on Figure 1-2. Relative depths and pumping rates are provided on Figure 1-3.

d. Will any structures be demolished? If so, what?

No

e. What is the current zoning classification of the site?

A detailed Zoning map is included as Figure 1-4.

f. What is the current comprehensive plan designation of the site?

The City has an adopted Comprehensive Plan that covers the entire service area. The current designation map is attached as Figure 1-5.

g. If applicable, what is the current shoreline master program designation of the site?

The Current Shoreline Master Program addresses lands within 200 feet of the Right Bank of the Okanogan River, together with associated areas within the 100-year floodplain. According to the FEMA Flood Insurance Rate Map (see attached Figure 1.6), a majority of the City of Okanogan is within the 100-year floodplain. Capital improvement projects noted in Chapter 8 are located within the 100 -year floodplain. The City will conduct SEPA review for capital improvement projects thr0ugh the normal permitting process at the time of construction.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

The City of Okanogan has adopted Shorelines, FEMA Floodway and FEMA Floodplain areas within the City as "frequently flooded areas" that are regulated as Critical areas. Associated and isolated wetlands and steep slope areas are also identified as critical areas. Compliance for WSP improvements proposed in these areas will be addressed during routine permitting.

i. Approximately how many people would reside or work in the completed project?

Okanogan's Population is approximately 2,400.

a. residents. **Approximately how many people would the completed project displace?**

None

b. Proposed measures to avoid or reduce displacement impacts, if any.

None needed

c. **Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.**

None needed

d. **Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:**

None needed

9. Housing

Find help answering housing questions[12]

a. **Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.**

Non Project Action - The WSP will not directly affect the number of housing units provided.

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 needed

10. Aesthetics

Find help answering aesthetics questions[13]

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 - This is a non-project action proposal that does not propose any structures.

b. **What views in the immediate vicinity would be altered or obstructed?**

None

c. **Proposed measures to reduce or control aesthetic impacts, if any:**

None needed. Activity is consistent with existing approved practices.

[12] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-9-Housing
[13] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-10-Aesthetics

11. Light and glare

Find help answering light and glare questions[14]

a. **What type of light or glare will the proposal produce? What time of day would it mainly occur?**

   Not applicable.

b. **Could light or glare from the finished project be a safety hazard or interfere with views?**

   No

c. **What existing off-site sources of light or glare may affect your proposal?**

   None

d. **Proposed measures to reduce or control light and glare impacts, if any:**

   None needed

12. Recreation

Find help answering recreation questions

a. **What designated and informal recreational opportunities are in the immediate vicinity?**

   The water system serves a variety of public park and recreation areas adjacent or near the Okanogan River, which provide recreational opportunities. Several city wells are located in developed parks.

b. **Would the proposed project displace any existing recreational uses? If so, describe.**

   No

c. **Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:**

   None needed

13. Historic and cultural preservation

Find help answering historic and cultural preservation questions[15]

a. **Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.**

[14] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-11-Light-glare
[15] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-13-Historic-cultural-p

This is a non-project action proposal. Any such facilities and the impact on them from a specific project will be assessed during the project planning period.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

The WSP does not provide details of specific historic features. The City service area is in an area with potential historic use or occupation given its proximity to the Okanogan River and the Colville Reservation. Historic protection will include consultation with appropriate tribes and DAHP during the permitting process.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

This is a non-project action proposal. Consultation with appropriate tribes and DAHP as well as archaeological surveys will be used when appropriate before and during construction for specific projects outlined in the Water System Plan.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

An inadvertent discovery plan will be required for site specific projects to address archeological consultation should historical/cultural resources be discovered.

14. Transportation

Find help with answering transportation questions[16]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The City street plan is attached as Figure 1-4.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Non Project Action - WSP implementation will not impact any public transportation serves the urban areas of the central WA region.

[16] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-14-Transportation

c. **Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).**

No

d. **Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

No

e. **How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?**

None

f. **Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.**

No

g. **Proposed measures to reduce or control transportation impacts, if any:**

None needed

15. Public services

Find help answering public service questions[17]

a. **Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.**

No

b. **Proposed measures to reduce or control direct impacts on public services, if any.**

None needed

16. Utilities

Find help answering utilities questions[18]

a. **Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:**

[17] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-15-public-services
[18] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-16-utilities

The City water system occurs in areas served by public power, city water, sanitary sewer, garbage collection, telephone, and internet service. There are isolated domestic and irrigation wells and septic systems in some areas of the city.

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.

None required

Signature

Find help about who should sign[19]

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.

X_____

Type name of signee:

Position and agency/organization:

Date submitted:

[19] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-C-Signature

Supplemental sheet for non-project actions

Find help for the nonproject actions worksheet[20]

Do not use this section 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?**

   It is not expected that there would be any increase in discharge as a result of this project.

   - **Proposed measures to avoid or reduce such increases are:**

     None required

2. **How would the proposal be likely to affect plants, animals, fish, or marine life?**

   The proposal is not likely to affect plants, animals, fish, or marine life.

   - **Proposed measures to protect or conserve plants, animals, fish, or marine life are:**

     None Required

3. **How would the proposal be likely to deplete energy or natural resources?**

   The proposal is not likely to deplete energy or natural resources.

   - **Proposed measures to protect or conserve energy and natural resources are:**

     None required

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 proposal is not likely to affect environmentally sensitive or government protected areas.

   - **Proposed measures to protect such resources or to avoid or reduce impacts are:**

     None Required.

[20] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-d-non-project-actions

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?**

The WSP details and prioritizes actions to ensure the orderly development of future water system needs. The plan is intended to provide for continuance and goals outlined in zoning and comprehensive plans.

- **Proposed measures to avoid or reduce shoreline and land use impacts are:**

  None Required

6. **How would the proposal be likely to increase demands on transportation or public services and utilities?**

The Proposal is not likely to increase demands on transportation or public services and utilities

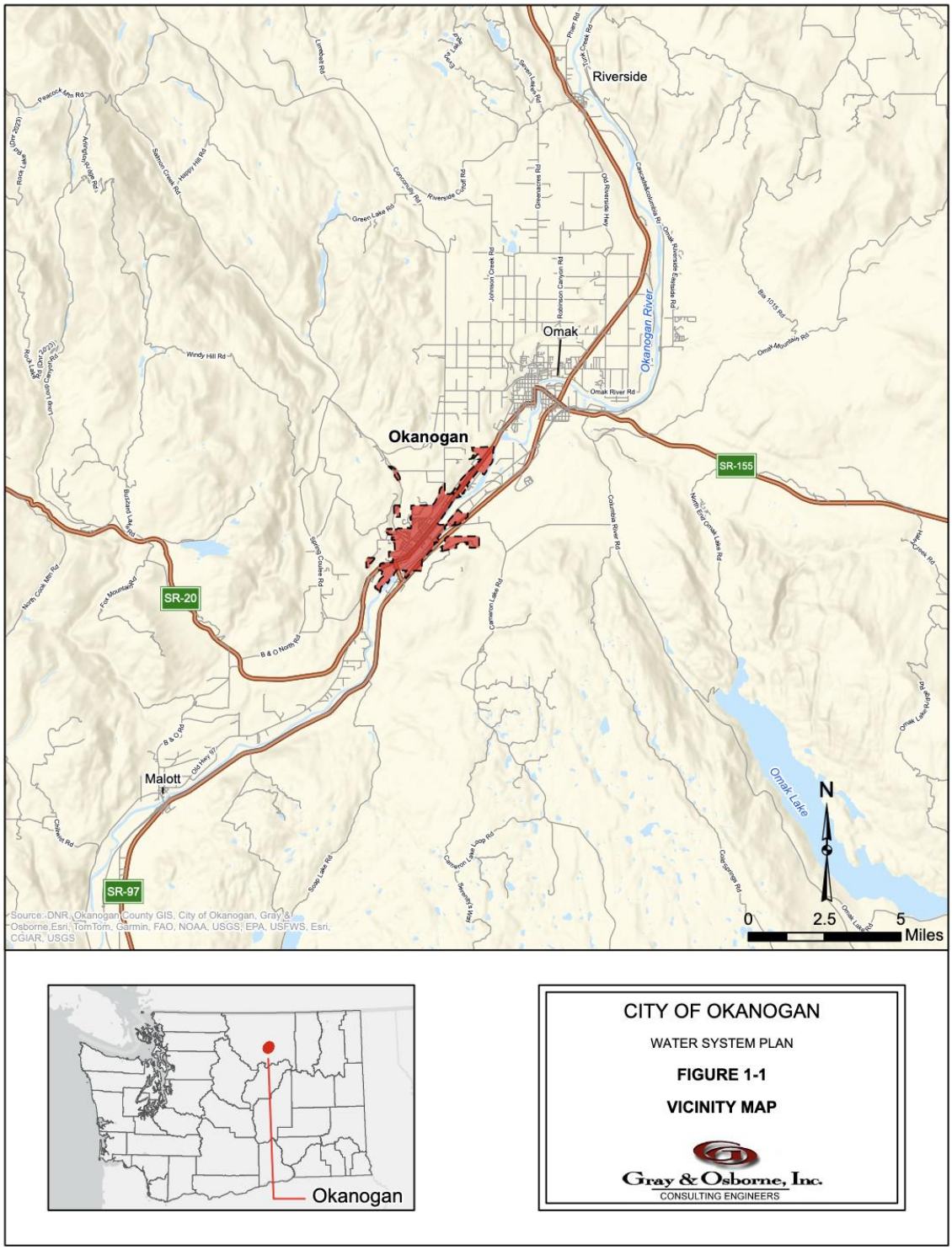
- **Proposed measures to reduce or respond to such demand(s) are:**

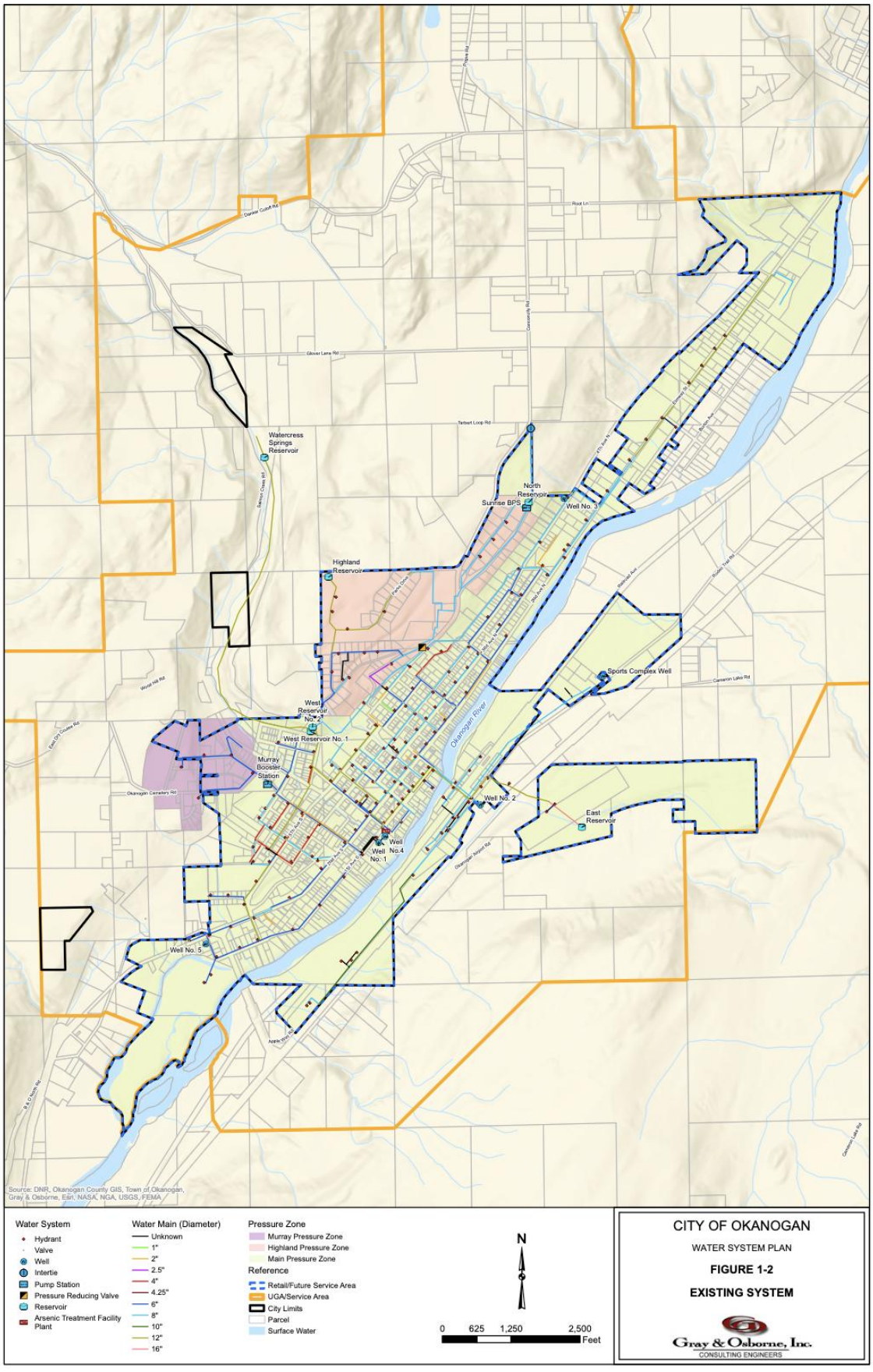
  None Required

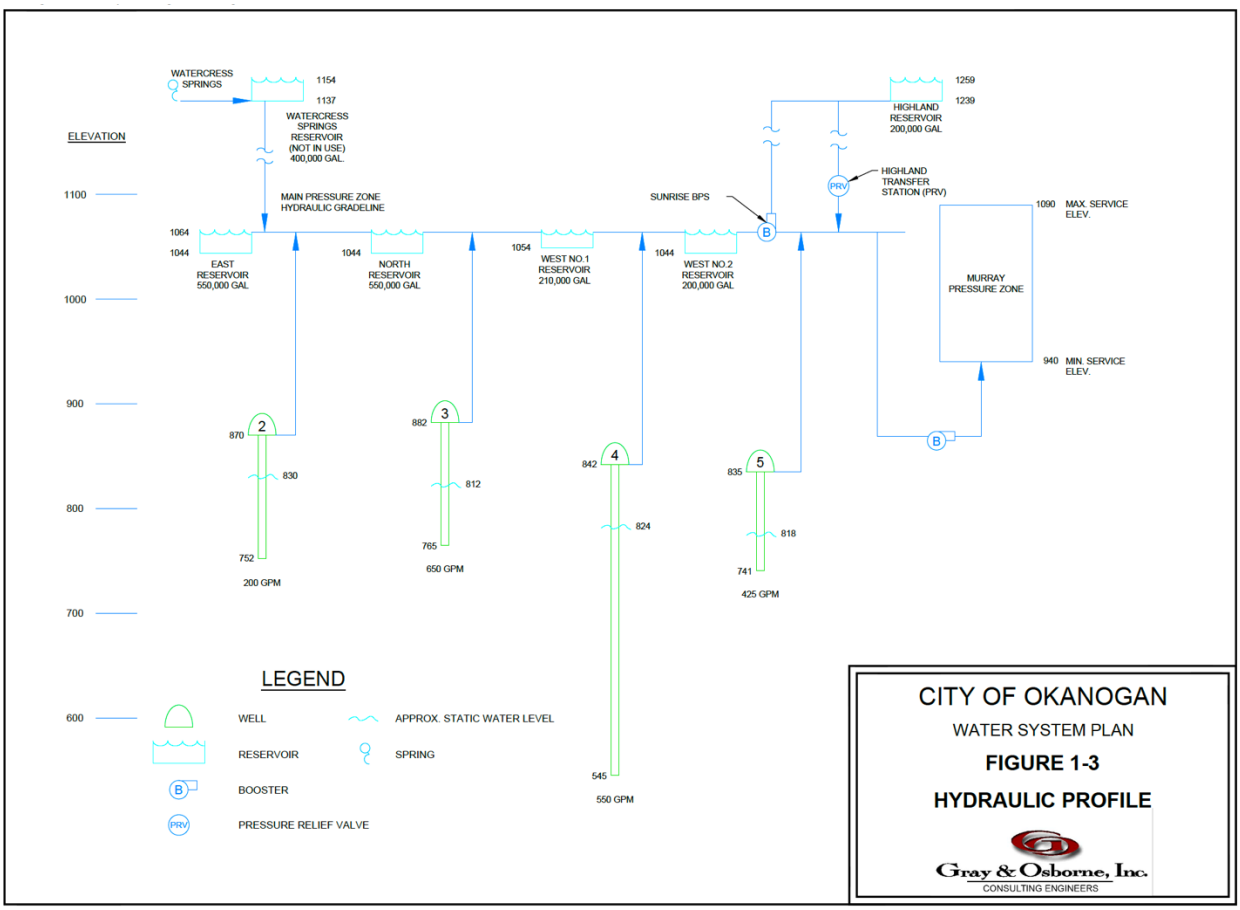
7. **Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.**

The proposal is unlikely to conflict with local, state, or federal laws or requirements for environmental protection.

FIGURES:


Riverside
Omak
Okanogan
Malott
SR-155
SR-20
SR-97
Okanogan River
Omak Lake
N
0
2.5
5
Miles
Source: DNR, Okanogan County GIS, City of Okanogan, Gray & Osborne,Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, CGIAR, USGS
Okanogan
CITY OF OKANOGAN
WATER SYSTEM PLAN
FIGURE 1-1
VICINITY MAP
Gray & Osborne, Inc.
CONSULTING ENGINEERS


Watercress Springs Reservoir
North Reservoir
Sunrise BPS
Well No. 3
Highland Reservoir
Sports Complex Well
West Reservoir No. 2
West Reservoir No. 1
Murray Booster Station
Okanogan River
Well No. 2
East Reservoir
Well No. 4
Well No. 1
Well No. 5
Source: DNR, Okanogan County GIS, Town of Okanogan, Gray & Osborne, Esri, NASA, NGA, USGS, FEMA
Water System
Hydrant
Valve
Well
Intertie
Pump Station
Pressure Reducing Valve
Reservoir
Arsenic Treatment Facility Plant
Water Main (Diameter)
Unknown
1"
2"
2.5"
4"
4.25"
6"
8"
10"
12"
16"
Pressure Zone
Murray Pressure Zone
Highland Pressure Zone
Main Pressure Zone
Reference
Retail/Future Service Area
UGA/Service Area
City Limits
Parcel
Surface Water
N
0 625 1,250 2,500
Feet
CITY OF OKANOGAN
WATER SYSTEM PLAN
FIGURE 1-2
EXISTING SYSTEM
Gray & Osborne, Inc.
CONSULTING ENGINEERS


WATERCRESS SPRINGS
1154
1137
WATERCRESS SPRINGS RESERVOIR (NOT IN USE) 400,000 GAL.
ELEVATION
1100
1000
900
800
700
600
MAIN PRESSURE ZONE HYDRAULIC GRADELINE
1064
1044
EAST RESERVOIR 550,000 GAL
1044
NORTH RESERVOIR 550,000 GAL
1054
WEST NO.1 RESERVOIR 210,000 GAL
1044
WEST NO.2 RESERVOIR 200,000 GAL
SUNRISE BPS
1259
1239
HIGHLAND RESERVOIR 200,000 GAL
PRV
HIGHLAND TRANSFER STATION (PRV)
1090 MAX. SERVICE ELEV.
MURRAY PRESSURE ZONE
940 MIN. SERVICE ELEV.
B
2
870
830
752
200 GPM
3
882
812
765
650 GPM
4
842
824
545
550 GPM
5
835
818
741
425 GPM
LEGEND
WELL
APPROX. STATIC WATER LEVEL
RESERVOIR
SPRING
BOOSTER
PRESSURE RELIEF VALVE
CITY OF OKANOGAN
WATER SYSTEM PLAN
FIGURE 1-3
HYDRAULIC PROFILE
Gray & Osborne, Inc.
CONSULTING ENGINEERS

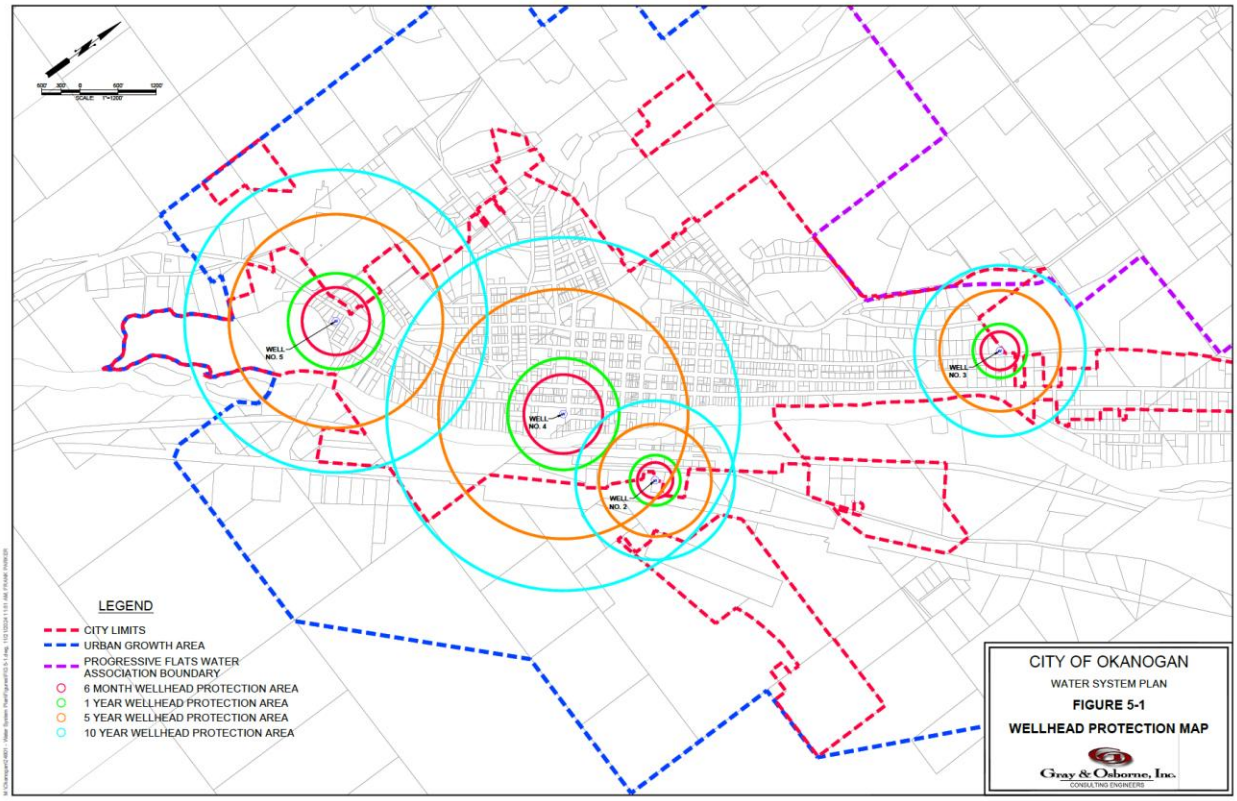
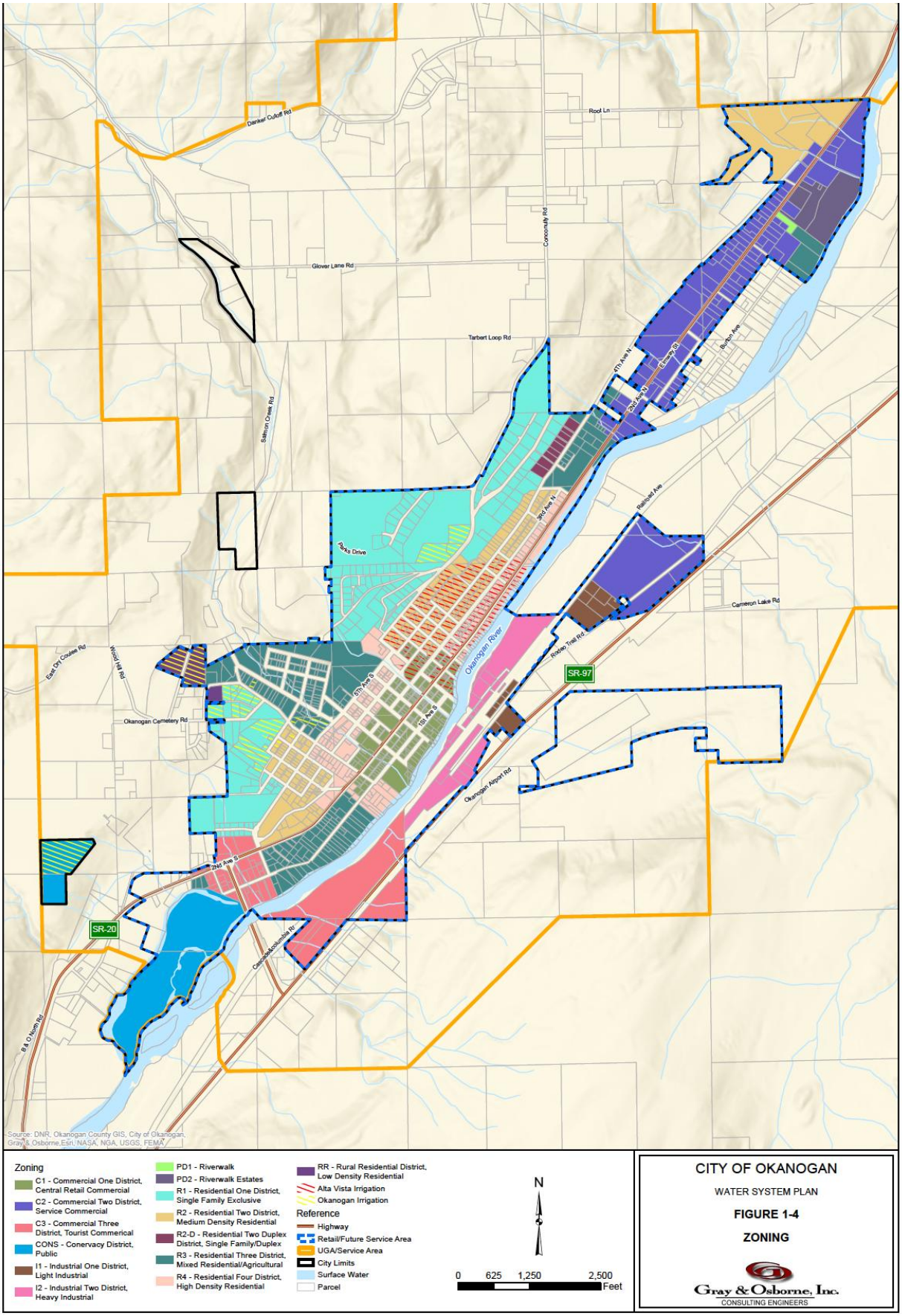

WELL NO. 5
WELL NO. 4
WELL NO. 2
WELL NO. 3
LEGEND
CITY LIMITS
URBAN GROWTH AREA
PROGRESSIVE FLATS WATER ASSOCIATION BOUNDARY
6 MONTH WELLHEAD PROTECTION AREA
1 YEAR WELLHEAD PROTECTION AREA
5 YEAR WELLHEAD PROTECTION AREA
10 YEAR WELLHEAD PROTECTION AREA
CITY OF OKANOGAN
WATER SYSTEM PLAN
FIGURE 5-1
WELLHEAD PROTECTION MAP
Gray & Osborne, Inc.
CONSULTING ENGINEERS

TABLE 5-3

Inventory of Potential Contaminant Sources

No.	Site Name	Address	Type	Status
1	High Country Batteries	1622 2nd Avenue North	Energy Recovery	Active
2	Okanogan County PUD No. 1	1331 2nd Avenue North	Hazardous Waste Generator	Active
3	North Central Petroleum Inc.	Van Duyan	Emergency/Haz Chem Rpt Tier 2	Active
4	WA MIL National Guard Armory 080	Hwy 97 Cameron Lake Road	LUST Facility	Inactive
5	Okanogan MS & HS	244 5th Avenue South	Underground Injection Control	Active
6	Klimeks Creamery	82 East Pine	Underground Storage Tank	Active
7	Okanogan County Courthouse	149 4th Avenue North	Construction SW GP	Active
8	The Muffler Man	308 2nd Avenue North	Underground Storage Tank	Active
9	5th Avenue Erosivity Waiver	5th Avenue	Construction SW GP	Active
10	Ralph Weitman Okanogan Truck Tractor	3rd and Queen	Underground Storage Tank	Active
11	Kens Service	134 South 2nd	Underground Storage Tank	Active
12	William Wehmeyer	130 North 2nd	Underground Storage Tank	Active
13	Thrifty Auto Center	123 North 2nd	Underground Storage Tank	Active
14	Brewster Central Office 4040 B01	15 1st Street	Underground Storage Tank	Inactive
15	Okanogan Dry Cleaners	105 South Pine Street	Enforcement Final	Active
16	Okanogan WWTP	1610 1st Avenue South	Biosolids	Active
17	Pape Machinery	1 Patrol Street	Underground Injection Control	Active
18	Okanogan Airport	Airport Road Uphill From Highway 97	Haz Treatment Storage Facility	Inactive
19	Chelan Fruit Cooperative	124 Van Duyn Street	Haz Waste Management Activity	Inactive
20	Okanogan Detachment	108 Patrol Street	Underground Injection Control	Active
21	Lift Station 1	North 2nd Avenue	Underground Storage Tank	Active
22	EDS Repair Service	670 South 2nd	Underground Storage Tank	Inactive
23	Okanogan Livestock Market	523 Van Duyn North Box 527	Underground Storage Tank	Inactive
24	WA DA Okanogan 1	531 Van Duyn North	Hazardous Waste Generator	Inactive

No.	Site Name	Address	Type	Status
25	MAGI Okanogan 2	-	Emergency/Haz Chem Rpt Tier 2	Active
26	Okanogan County Used Oil Collections	1234 2nd Avenue South, Ste A	Recycle	Active
27	Auto Servicio De Preparacion	1462 South 2nd Avenue	Revised Site Visit Program	Active
28	Okanogan POTW	1610 South 1st Avenue	Municipal NPDES IP	Active
29	Okanogan County Public Works Shop	28860 Highway 97	Hazardous Waste Generator	Inactive


Danker Cutoff Rd
Root Ln
Glover Lane Rd
Tarbert Loop Rd
Salmon Creek Rd
Parks Drive
East On Coulee Rd
Okanogan Cemetery Rd
Okanogan River
Okanogan Airport Rd
Rodney Trail Rd
Railroad Ave
Cameron Lake Rd
SR-97
SR-20
Source: DNR, Okanogan County GIS, City of Okanogan, Gray & Osborne,Esri, NASA, NGA, USGS, FEMA
Zoning
C1 - Commercial One District, Central Retail Commercial
C2 - Commercial Two District, Service Commercial
C3 - Commercial Three District, Tourist Commerical
CONS - Conervacy District, Public
I1 - Industrial One District, Light Industrial
I2 - Industrial Two District, Heavy Industrial
PD1 - Riverwalk
PD2 - Riverwalk Estates
R1 - Residential One District, Single Family Exclusive
R2 - Residential Two District, Medium Density Residential
R2-D - Residential Two Duplex District, Single Family/Duplex
R3 - Residential Three District, Mixed Residential/Agricultural
R4 - Residential Four District, High Density Residential
RR - Rural Residential District, Low Density Residential
Alta Vista Irrigation
Okanogan Irrigation
Reference
Highway
Retail/Future Service Area
UGA/Service Area
City Limits
Surface Water
Parcel
N
0 625 1,250 2,500
Feet
CITY OF OKANOGAN
WATER SYSTEM PLAN
FIGURE 1-4
ZONING
Gray & Osborne, Inc.
CONSULTING ENGINEERS

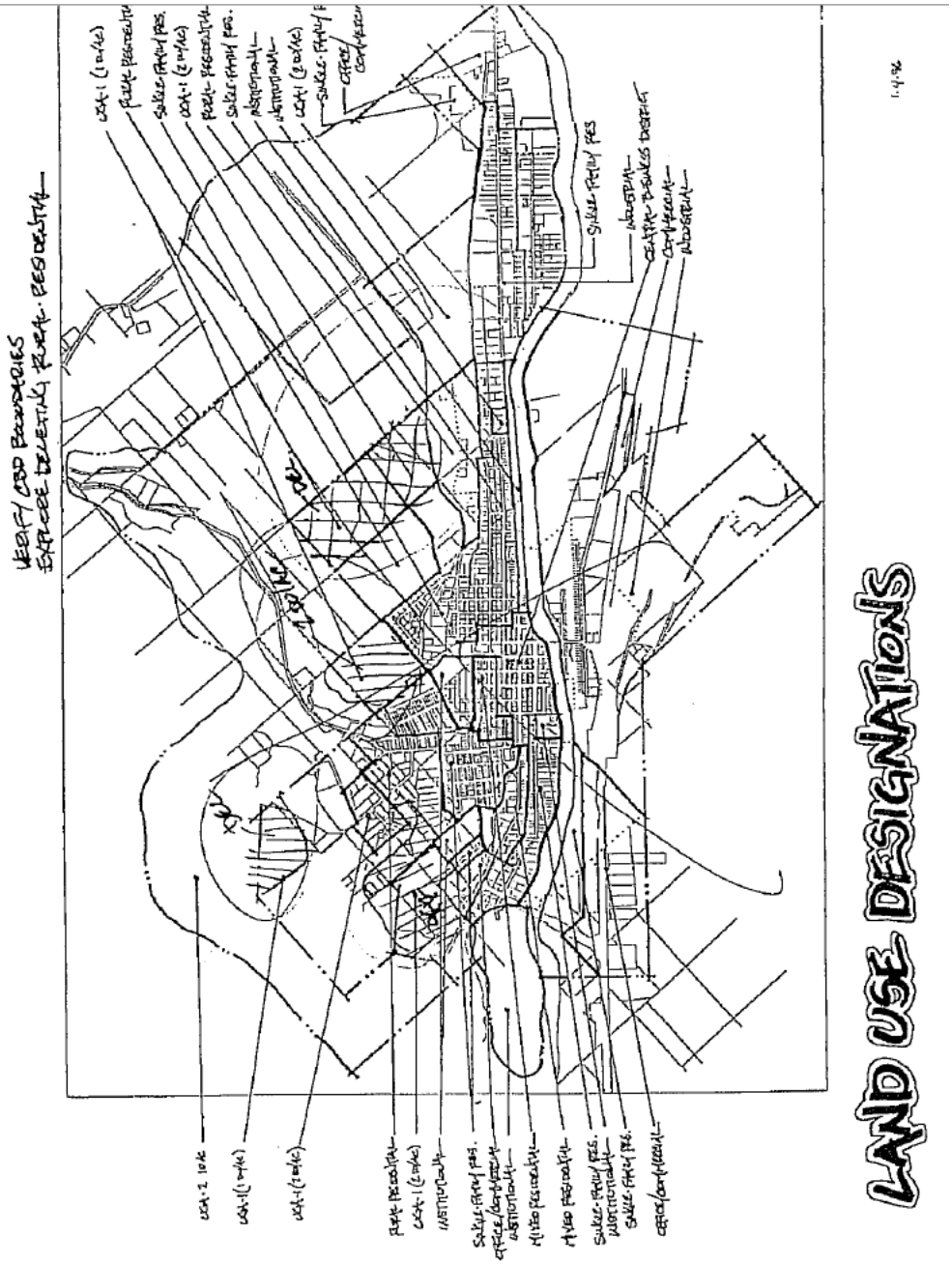


Figure 1-5 - Okanogan Comprehensive Plan Designations

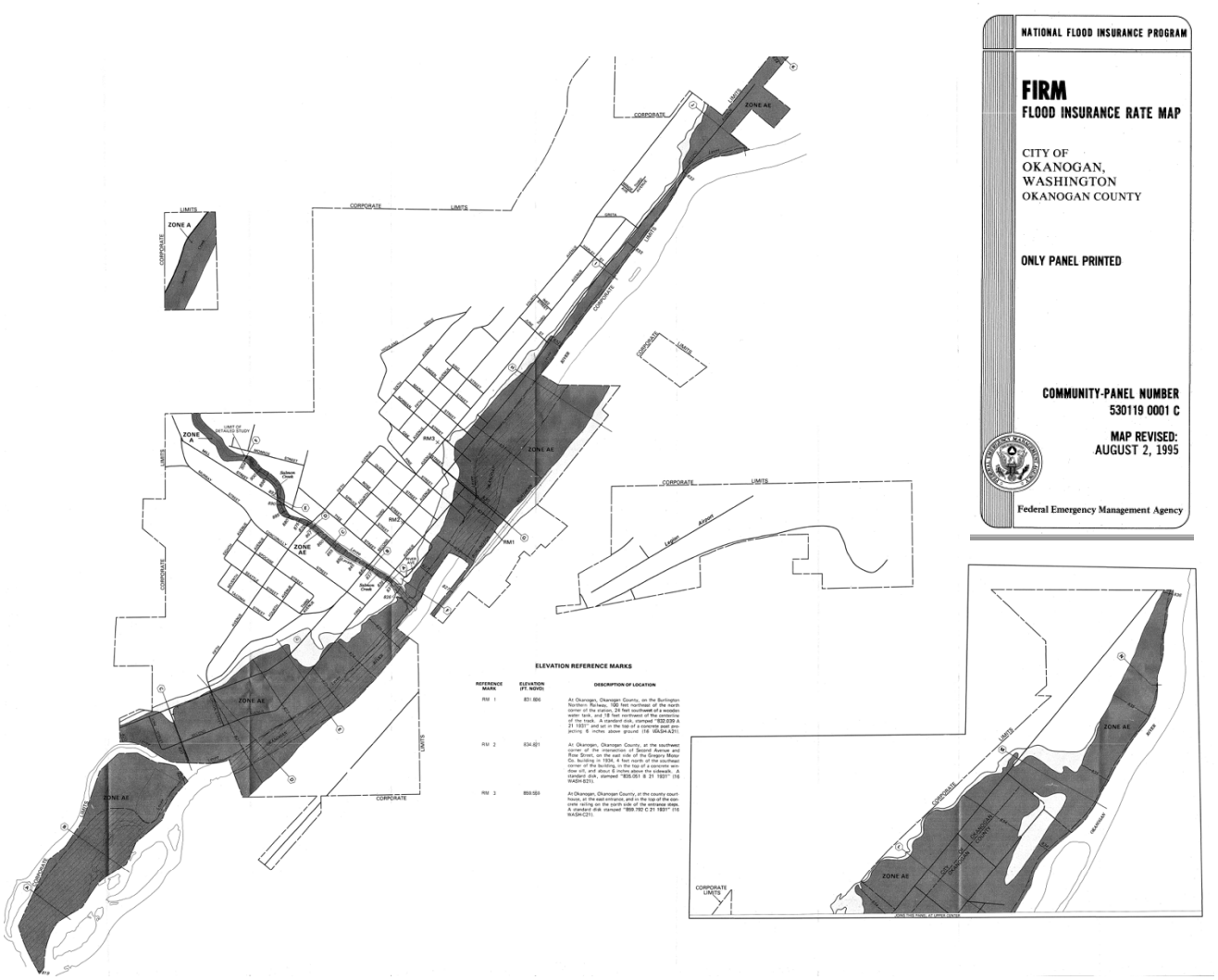


Figure 1-6 FEMA Flood Panel for Okanogan WA

REPLACE WITH SIGNED COPY ON CITY LETTERHEAD

STATE ENVIRONMENTAL POLICY ACT

Determination of Non Significance

Agency Contact: Shawn Davisson, Public Works Director
120 3rd Ave N, Okanogan, WA 98840
(509) 422-3600

Description of proposal
The proposal includes an analysis of the current conditions of the City's water distribution system and the proposed capital improvement projects to meet future water demands and enhance the reliability and redundancy of the water distribution system.

Location of proposal

The location of this proposal applies to various sites within the City of Okanogan

The City of Okanogan has determined that this proposal will not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030. We have reviewed the attached Environmental Checklist and associated information on file with the lead agency. This determination is based on the following findings and conclusions:

The proposal is a planning document that identifies capital improvement projects throughout the 20 - year planning period. All future projects will undergo their own SEPA checklists on a project-specific basis

.

This DNS is issued under WAC 197-11-340(2) by _____, City of Okanogan 120 3rd Ave N, Okanogan, WA 98840, (509) 422-3600.

_____ _____
Signature Date
(electronic signature or name of signor is sufficient)

CITY OF OKANOGAN
WAYNE TURNER MAYOR

SEPA Determination
WAC 197-11-970 Determination of Nonsignificance (DNS).

PROJECT: City of Okanogan 2025 Comprehensive Water System Plan

FILE ID: OKA 25-02

NOTICE IS HEREBY GIVEN THAT:

PROPONENT: City of Okanogan

CONTACT: Shawn Davisson (Public works Director City of Okanogan) or Chris Johnson (Planner City of Okanogan) (509) 422 – 3600

PROPERTY OWNER: City of Okanogan
120 3rd Ave North
Okanogan, WA 98840

of the below-described property has filed an application for the updating of:

PROPOSAL: The 2025 Water System Plan (WSP) update has been prepared by the City's consulting engineers (Gray and Osborne, Inc.) to comply with WAC 246-290-100 requirements. The WSP provides a description of how the system will address present and future needs in manner consistent with other relevant plans and local, state, and federal laws, including applicable land use plans and includes detailed descriptions of the water system, including:

(i) Ownership and management, including the current names, addresses, and telephone numbers of the owners, operators, and emergency contact persons for the system;

(ii) System history and background;

(iii) Related plans, such as coordinated water system plans, abbreviated coordinated water system plans, local land use plans, groundwater management plans, and basin plans;

(iv) Service area maps, including retail service area and future service area, if applicable, and areas where wholesale water is provided to other public water systems.

(v) Service area characteristics, agreements, and policies;

(vi) Satellite management, if applicable;

(vii) Basic planning data, including:

- Current population, service connections;
- Water use, and equivalent residential units; and sufficient water production and consumption data to identify existing and projected needs;
- Designated land use, zoning, population, and water demand within the water system's service area for the plan approval period, and at least a 20-year planning period.
- Demand forecasts, developed under WAC 246-290-221, for the plan approval period, and at least a 20-year planning period. These must show future use with and without savings expected from the system's water use efficiency program.

The WSP does not propose any new regulations or controls.

LOCATION:

The City of Okanogan, as shown in Figure 1-1, is located in north-central Washington on the banks of the Okanogan River, which forms the western boundary of the Colville Indian Reservation. The city of Okanogan is located in north-central Washington State, specifically within Okanogan County. It is located about 50 miles south of the Canadian border, 140 miles east of Seattle, and 100 miles northwest of Spokane. The City sits on a narrow river plain with steeply rising side slopes. Okanogan began as a trading post established by Frank J. Cummings in 1886, located near the mouth of Salmon Creek. As settlement near the post grew, it became the first City in the Okanogan Valley, known then as Alma, a name that is still borne by Alma Park.

The Okanogan River and area springs were the earliest water sources used by City residents. As the City grew, the City first started to use Salmon Creek Springs as a municipal supply source, and a rudimentary concrete distribution system was developed. The City continued to use Salmon Creek Springs as the sole municipal supply until the late 1920s when the Alma Park Well was developed. Major source, storage, and distribution system improvements continue to the present day.

The Okanogan water system consists of five groundwater wells, one surface water source, six reservoirs, two booster pump stations, a transfer station, and approximately 22 miles of transmission and distribution piping.

A map of the water system is shown in Figure 1-2.

LEAD AGENCY: City of Okanogan Planning and Permitting Department

The lead agency for this proposal reviewed the project Application and SEPA Checklist prepared by the applicant and has determined that the project, as described, will not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is therefore not required under RCW 43.21C.030(2)(C). This decision was made based on applicant's submittals and other information on file with the lead agency. This information is available to the public on request. This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 15 days of the date published. Timely comments must be submitted by **November 14th, 2025.**

RESPONSIBLE OFFICIAL: Bryan F. Forbus C.B.O. Building Official / Permit Administrator
Chris Johnson; City Planner

ADDRESS: P.O. Box 752
Okanogan, WA 98840

PHONE: (509) 422-3600

DATE: October 30th, 2025

You may appeal this determination to Okanogan City Council at the Clerk's Office, City Hall, 120 3rd Ave North, P.O. Box 752, Okanogan, Washington no later than **11/30/2025** by written method. You should be prepared to make specific factual objections. Contact City Hall to read or ask about the procedures for SEPA Appeals.

APPENDIX O

CONSTRUCTION STANDARDS

CITY OF OKANOGAN

OKANOGAN COUNTY **WASHINGTON**

CONSTRUCTION STANDARDS FOR THE PRIVATE CONSTRUCTION OF PUBLIC FACILITIES

G&O #24801
SEPTEMBER 2024

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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STANDARD DETAILS

CHAPTER 1

GENERAL

1. ENACTING AUTHORITY

These Design and Construction Standards are enacted by the City of Okanogan, in accordance with state law, to protect and preserve the public health, safety, and general welfare.

2. PURPOSE

The purpose of these Design and Construction Standards is to provide consistent requirements, standards, and specifications for the design and construction of public works infrastructure improvements by private developers.

3. STATE ENVIRONMENT POLICY ACT (SEPA)

These Design and Construction Standards will not affect any considerations involving issues under the State Environmental Policy Act (SEPA). The City's responsible official will continue to make all necessary SEPA decisions when individual proposals are submitted.

4. CONFLICTING PROVISIONS

The standards, procedures, and requirements of these Design and Construction Standards are the minimum necessary to promote the health, safety, and welfare of the residents of the City of Okanogan. The City may adopt more or less rigorous or different standards, procedures, and requirements whenever necessary. If the provisions of these Design and Construction Standards conflict with one another, or if a provision of these Design and Construction Standards conflicts with the provision of the Okanogan Municipal Code (OMC), or a previously enacted Ordinance of the City, the most restrictive provision or the provision imposing the highest standard shall prevail.

5. SEVERANCE

If any provision of these Design and Construction Standards or its application to any person or circumstance is for any reason held to be invalid, the remainder of these Design and Construction Standards or the application of the provisions is not affected.

6. PROCESS

Any project by a private developer that includes the construction of public infrastructure or represents an impact to public infrastructure shall comply with the procedures listed in CHAPTER 2 and the OMC.

7. ENGINEERING DESIGN PLAN REQUIREMENTS

All plans, specifications, engineering calculations, diagrams, details, and other relevant data shall be designed and prepared by a Civil Engineer licensed by the State of Washington in accordance with CHAPTER 3.

8. REVIEW AND INSPECTION FEE

Application, plan review, and inspection fees are hereby established to defray the costs incurred by the City of Okanogan, its agents, employees, and elected or appointed officials, for review and approval of the plans and specifications and for inspection of construction of the public works improvements. Fees as presented in the OMC and fee schedule as adopted by ordinance shall include, but not be limited to, application review, plan review, subsequent meetings with the Developer, explanations to the Developer's Consultant, reviews of revised plans, construction inspection, re-inspections, and a final inspection prior to acceptance of the project.

Fee payments shall be made in full by the Developer prior to the City releasing the approved original plans and specifications for construction or the issuance of the certificate of occupancy.

9. RECORD DRAWINGS

The Developer's Consultant shall prepare and maintain a neatly marked, full-sized print set of record drawings showing the final location and layout of all new construction of the public facilities. Record drawings shall be supplied to the City of Okanogan consistent with Section 1-05.3(1) Project Record Drawings as presented in CHAPTER 4 of these Design and Construction Standards.

10. TRANSFER OF OWNERSHIP

The City shall make final inspection of all constructed public improvements at construction completion. Upon final inspection and approval of the work, the Developer shall complete a Transfer of Ownership of Public Works Improvements form.

11. EASEMENTS

Public utility easements shall be established for the location of new and future public improvements serving new land divisions and land developments. Easement shall also be granted across the front of new lots and existing lots to provide future utility access as required.

All easements required shall be prepared by the Developer on the proper form and format for recording at the Okanogan County Auditor's Office. The easement legal description shall be prepared by a land surveyor licensed by the State of Washington. He easement document shall be submitted to the City for review prior to plan approval. Once approved by the City, the Developer shall record the executed and notarized easement, and provide proof of recording to the City prior to project acceptance.

Easements for new and/or future utility lines shall be a minimum of twenty (20) feet wide, with the exception of potable water which shall be a minimum fifteen (15) feet wide, provided the width of easements for buried utilities will be at least twice the depth of the planned excavation. Where utilities share or lie within a single easement, Washington State Department of Health separation requirements shall apply, as appropriate, and the easement width shall extend eight (8) feet beyond the center of pipe, parallel to the utility. Utility easements shall be continuous and aligned from block to block within a subdivision and with easements in adjoining subdivisions to facilitate the extension and future extension of public utilities.

CHAPTER 2

DEVELOPMENT PROCEDURE

INTRODUCTION

Any project by a private developer that includes the construction of public infrastructure or represents an impact to public infrastructure shall comply with the following procedures. Public infrastructure includes all construction or impact to public streets, water, sanitary sewer, storm drainage, illumination and any other facilities that will be owned, operated and maintained by the City. Additionally, all projects shall be reviewed by the City for regulating on-site stormwater runoff.

Unless otherwise specifically stated, the term "public improvement" or "public infrastructure" shall mean any improvement constructed within public rights-of-way or easements, or one that will be transferred to the City following construction, including, but not limited to, streets, water, sanitary sewer, storm drainage, sidewalk, and street lights. The term "City" shall mean the City Administrator or his/her designated representatives; "Developer" shall mean the actual Owner/Developer of the proposed development that includes public improvements or his/her designated Agent; and, "Consultant" shall mean an individual or firm licensed to practice Civil Engineering in the State of Washington, who shall have been retained by the Owner/Developer for the purposed of preparing the detailed plans and specifications and performing such other engineering work as shall be specifically identified within the context of these procedures and as approved by the City.

Improvements for which these procedures shall typically apply include water, sanitary sewer, storm, and street impacts. Examples include:

> Water: Public water mains and their appurtenances located with public rights-of-way and public easements. The required procedures for private on-site water systems from the City meter to the building is addressed through the building department.
>
> Sanitary Sewer: Public sanitary sewer interceptors, trunks, collectors and their appurtenances including portions of the building sewers located within public rights-of-way or public easements. The required procedures for private sanitary sewer service laterals and appurtenances located outside of the public rights-of-way or public easements are addressed through the building department.
>
> Stormwater: Public stormwater and drain systems and their appurtenances located within public rights-of-way or public easements, and infrastructure for private on-site stormwater systems located outside public rights-of-way and public

easements. On-site stormwater system designs will be reviewed by the City to ensure systems meet the required stormwater regulations.

Street: All public street or roadway facilities and their appurtenances including traffic signals, street lighting, driveways, sidewalks, curb ramps, curb, gutter, bicycle and pedestrian facilities, and parking areas. The required procedures for private on-site sidewalks, private parking and loading facilities, private driveways, and other improvements are addressed through the building department.

OWNER RESPONSIBILITY

The Owner/Developer shall, if other than himself/herself, name and identify the person who shall be designated to act on his/her behalf on matters related to the project. The Consultant may, at the Owner's/Developer's direction, be the Agent. The identified person shall be the single point of contact for the duration of the project.

The Owner/Developer shall retain the services of a Consultant licensed to practice Civil Engineering in the State of Washington, who is qualified to perform the required engineering services for design and construction stake/survey, as required, of the proposed public improvements. If the project includes installation of domestic water infrastructure, the Consultant shall comply with the requirements of WAC 246-290-125.

If a deviation from Design and Construction Standards or other adopted standards is proposed by the Owner/Developer, the Consultant shall provide to the City with their plan submission a letter on company letterhead stating the following:

- A clear description or exact quote and reference of the code or standard under consideration;
- The intent of the code and/or standard as interpreted by the Consultant;
- The requested deviation or consideration with respect to the interpreted intent of the code and/or standard; and
- The justification for the deviation from the code and/or standard.

If, at any time during the project, the Owner/Developer terminates or reduces the level of the services of the Consultant or the designated Agent as specifically identified and accepted by the City, the Owner/Developer and Consultant/Agent shall immediately notify the City.

The Owner/Developer has the overall responsibility for project management, construction management, contract administration, permit acquisition, compliance, testing, and, if require, right-of-way acquisition. No construction work shall commence prior to a pre-construction conference and plan approval by the City.

PLAN REVIEW

The Consultant shall prepare, seal, and submit to the City four (4) complete sets of detailed construction plans, profiles, cross sections, support data, design calculations, project details, and project specifications, as applicable, consistent with OMC 17.28.040. Additionally, a stormwater report shall be prepared, sealed, and submitted to accompany the construction plans. All such plans and specifications shall be in accordance with the requirements of the most current edition of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, the Manual on Uniform Traffic Control Devices, the Department of Health Water System Design Manual, the Department of Ecology Criteria for Sewage Works Design, the Stormwater Management Manual for Eastern Washington, City of Okanogan Design and Construction Standards, and all design of domestic water shall be compliant with WAC 246-290-200, 220, and 230.

Plans shall be prepared in accordance with CHAPTER 3. The City shall review the submitted plans and specifications within 30 business days and shall return one reviewed and noted copy indicating the changes, additions, deletions, or modifications that are required to make the plans and specifications acceptable. When the revised plans, specifications, and other materials are resubmitted to the City, the City shall review and upon acceptance, approved the revised plans and specifications notifying the Consultant of approval and the remainder of the review and inspection fees to be paid. Review of the revised plans and specifications will be on a first-come, first-served basis, and a response will be provided to the applicant within 15 business days. The response will include additional comments or approval notification.

In an effort to ensure that outside utilities are made aware of private development activities, it is critical that the Developer/Consultant notify the utility providers early in project planning. It is the Developer's/Consultant's responsibility to certify that they have contacted all impacted outside utility providers associated with the project, and that they will work with those utilities to ensure that the utility's infrastructure will be addressed prior to the start of construction without change to City-approved plans. Certification will be required as outlined in CHAPTER 3 of these Design and Construction Standards. The City does not take responsibility for construction standards and/or processes of outside utility providers.

Upon acceptance, the City, or their designee, will approved and sign the plans. Such approved plans and specifications shall not be changed, modified, or altered without written authorization from the City. The Developer shall provide the City with a minimum of five (5) copies of the approved plan set and specifications for use by City personnel as required.

CONSTRUCTION

Following selection of a Contractor and prior to construction, the Developer is responsible for scheduling a preconstruction conference with the City. Other jurisdictions, the Developer's Consultant, Contractor, utility companies, subcontractors and other necessary parties to the project shall be present at the preconstruction conference.

The City shall host the preconstruction conference within two weeks of the scheduling request by the Developer. The Developer's contractor will submit his insurance and construction schedule at this conference. Construction may proceed, per the approved schedule, following the completion of the preconstruction conference, provided all of the necessary documentation has been submitted and approved.

It is the responsibility of the Owner/Developer to ensure that construction is in conformance with the approved plans and specifications. The Owner/Developer is ultimately responsible for the work that is performed. The City shall be notified not less than three working days before construction is scheduled to start.

The City will assign a construction inspector to the project at the Owner's/Developer's expense. In addition to routine observation, the City inspector will inspect specific elements and milestones during the work. All tests, inspections, or reviews to be completed by the City shall be scheduled a minimum of two working days in advance. The City's inspection will not relieve the Owner's/Developer's liability of all work being performed in conformance with the approved plans, specifications, and permits.

The Owner/Developer shall independently hire and cover all costs associated with quality assurance sampling and materials testing by a certified testing company and provide documentation of the results of the sampling and testing to the City. The requirements for sampling and testing are contained in the current edition of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, and these City Design and Construction Standards.

The Owner/Developer, or his/her assigned Agent, shall administer, manage, and supervise the construction and will be readily available to approve design changes, as necessary. The Contractor shall have a representative with authority on site whenever work is being performed. Any problems that are encountered or changes required due to construction conditions will be reviewed with the Consultant and the Owner/Developer. Changes that require any increase or decrease to the Contractor's cost will be the responsibility of the Owner/Developer and may result in increased City review and inspection fees.

All construction shall meet the requirements of the most current edition of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, the Manual of

Uniform Traffic Control Devices, the Department of Health Water System Design Manual, the Department of Ecology Criteria for Sewage Works Design, the Stormwater Management Manual for Eastern Washington, City of Okanogan Design and Construction Standards, the approved plans and specifications, and all other applicable regulations. Special Provisions (if any) shall be prepared and submitted to the City for acceptance. All changes, alterations, or revisions to the approved plans and specifications shall be submitted for acceptance by the City.

Copies of all test records shall be furnished to the City on a weekly basis, or as deemed necessary by the City. The City, or their designee, will visit the project site to review the work related to the required inspection. Such site visits do not relieve the applicant, or the Contractor of any responsibilities for performing all work in accordance with the approved plans and this chapter. The City, or their designee, may also visit the project site from time to time to monitor the overall progress of the project.

Failure to comply with testing requirements may necessitate appropriate or additional testing and certification as directed by the City. Costs of such testing and certification shall be borne by the Contractor and/or Owner. At the time that such action is directed by the City, no further work will be permitted on the road or subdivision until all tests have been completed and all corrections have been made to the satisfaction of the City.

The City shall have the authority to cause a suspension of construction when, in the City's opinion, such work is not being performed in conformance with the approved plans, specifications, regulatory and/or permit requirements. Any resultant delays, impacts, or added expenses shall be the Owner's responsibility.

Upon written notice that the public improvements have been substantially completed, the City will, in the company of the Owner/Developer or his/her Agent, make a final inspection of the construction. The Owner/Developer shall see that all necessary additions, corrections, repairs, and/or modifications are made.

CONSTRUCTION COMPLETION

At the conclusion of construction and when all corrections and repairs have been made, the Owner/Developer shall submit record drawings together with a Transfer of Ownership of Public Improvements form which shall include, but not be limited to, testing records, material certifications and warranties.

CHAPTER 3

GENERAL PLAN REQUIREMENTS

All plans, details, specifications, engineering calculations, diagrams, and other relevant data shall be designed and prepared by a Civil Engineer currently licensed by the State of Washington.

GENERAL PLAN FORMAT

1. Plan sheets and profile sheets or combined plan and profile sheets and details sheets shall be on a sheet size of 22″ x 34″ (ANSI D).

2. The Cover sheet shall contain the following:

    a. Project title;
    b. Name, address, and phone number of the Owner/Developer;
    c. Name, address, and phone number and stamp of the Civil Engineer preparing the plans (Consultant);
    d. A minimum clear area of 2.5″H x 3.5″L for final acceptance stamp for City final approval of the plans;
    e. Signature block for Consultant's signature with the statement "I am certifying that I have contacted all of the impacted outside utility providers associated with this project. Furthermore, I will work with those utilities to ensure that their infrastructure will be addressed prior to the start of construction without change to City-approved plans." The Developer is responsible to coordinate with each utility, and their established system requirements and review/approval processes separate from the City plan submission requirements. For reference, the outside utilities, at a minimum, that this certification of acknowledgement covers is:
        i. Okanogan Irrigation District
        ii. Charter Communications
        iii. CenturyLink
        iv. Pacific Power
    f. Vicinity map showing the project site location;
    g. Survey benchmark used for the project;
    h. An overall site plan with contours;
    i. Sheet Index;
    j. Legend;
    k. Applicable project information; and
    l. Utility locate call #811

3. Each sheet shall contain the following:

    a. Project title and City project number, work order number, or LID number, if appropriate;
    b. Quarter section, Section – Township – Range;
    c. Sheet title;
    d. Page (of page) numbering;
    e. Revision block;
    f. Subdivision or short plat name;
    g. Signed stamp by a Civil Engineer currently licensed by the State of Washington; and
    h. A minimum clear area of 2.5″H x 3.5″L for final acceptance stamp for City final approval of the plans.

4. All plans sheets must have a NORTH arrow preferably pointing to the top of the sheet or to the left and must indicate the drawing scale. All engineering plans must be drawn to an appropriate engineer's scale. For profiles, the vertical scale shall be 1″=2′, 1″=5′, or 1″=10′. The horizontal scale shall be the same for both plan and profile and shall normally be 1″=20′. Plan and profile stationing shall generally read left to right.

5. Match lines are required at breaks between sheets.

6. The horizontal Datum for all plan submittals must be based on the City of Okanogan datum, NAD 83 (2011). The Vertical Datum for all plan submittals must be based on the City of Okanogan datum, NAVD 88. The benchmark used shall be referenced on the plans. An assumed datum will not be accepted.

7. Existing features and topography within the project construction limits must be shown on all plan sheets for clarity. This shall include existing road width and surfacing, utility poles, existing underground utilities and surface appurtenances, significant trees, landscaping, and other elements that may affect design/construction. The project construction limits shall include any and all adjacent complete road rights-of-way and/or at least 75 feet outside of parcel boundaries.

8. All existing and proposed underground utilities and pipes shall be shown in the profile. The location and depth of existing facilities should be verified if there is a potential conflict with proposed utilities.

9. All street, water, sanitary sewer and storm drainage work shall be drawn on standard plan and profile sheets. Street, water, sanitary sewer, storm drainage and electrical design information shall all be shown on the same plan and profile sheets.

10. Plan sheets shall indicate all existing and proposed property lines, right-of-way lines, and easements.

11. Plan sheets shall show all horizontal survey control as required to properly locate and tie the improvements in horizontal location.

12. An erosion/sedimentation control plan sheet shall be included in the plan set.

WATER SYSTEM PLAN REQUIREMENTS

See CHAPTER 5 for specific design requirements.

1. Show all existing and proposed water system features, if known, including, but not limited to, the following:

    a. Water mains, valves, meters, and service lines;
    b. Fire hydrants and blowoffs;
    c. Air and vacuum release valve assemblies;
    d. Pressure reducing valves;
    e. Fire sprinkler system lines;
    f. Double check valves;
    g. Post indicator valves; and
    h. Thrust blocking/mechanical restraints.

2. Indicate all easements required for the water main extensions and future extensions.

3. Show the water system and sanitary sewer system on the same plan and profile view for verification of minimum separation requirements. The design information for each system may be on individual drawings for that system.

4. Show the length, size, and pipe type for all main extensions, fire sprinkler system services, and domestic services, where applicable.

5. Identify all joint connections; provide detail of all non-standard joints.

6. Show by station or dimension the location of all fire hydrants, tees, crosses, and services relative to centerline or property lines.

7. A profile view shall be shown for all City water main extensions, aligned if practical with the plan view. Clearly indicate the horizontal and vertical scales.

8. Show the minimum cover and minimum separation on each sheet.

9. In the profile view show all utilities crossing the proposed water main.

SANITARY SEWER SYSTEM PLAN REQUIREMENTS

See CHAPTER 6 for specific design requirements.

1. Show all existing and proposed sanitary sewer system features including, but not limited to, the following:

    a. Sewer mains, gravity and force mains;
    b. Side sewers, proposed locations;
    c. Manholes, cleanouts; and
    d. Lift stations

2. Indicate all easements required for the sanitary sewer main extensions and laterals.

3. Provide an overall site plan of development with contours to show that all lots/parcels will be served by the proposed sanitary sewer system at design depth for all new development.

4. Show the sanitary sewer and water system on the same plan and profile for verification of minimum separation requirements. The design information for each may be on individual drawings for that system.

5. Slope, length, size, and pipe type shall be indicated for all sanitary sewer mains and side sewers. Pipe length shall be measured from centerline of manholes.

6. Provide a profile for each sanitary sewer main extension. Clearly indicate the vertical and horizontal scales. Show the profile on the same sheet with, and aligned underneath, the plan view as practical.

7. The plan and profile must show the location of all existing and proposed gas, water, irrigation, storm drain, and other utility lines and crossings.

8. Show all vertical data in the profile view and all horizontal data in the plan view. It is not desirable to repeat the vertical data in the plan view unless it does not show in a profile.

9. Each manhole shall be uniquely numbered and shall be stationed off of a referenced centerline. Indicate rim and invert elevations in and out of all manholes.

10. Indicate the length of each side **s**ewer stub, the centerline stationing for each side sewer, and the size.

STORMWATER SYSTEM PLAN REQUIREMENTS

See CHAPTER 7 for specific design requirements.

1. Show all existing features if known and all proposed storm drain system features, including, but not limited to, the following:

    a. Storm drain mains and lines;
    b. Catch basins, inlets, and drywells;
    c. Infiltration trenches;
    d. Retention systems;
    e. Biofiltration swales;
    f. Culverts;
    g. Streams;
    h. Ditches;
    i. Natural drainage swales;
    j. Headwalls;
    k. Oil/water separator assemblies; and
    l. Other requirements of the Department of Ecology's Stormwater Management Manual for Eastern Washington;

2. Indicate all easements required for the storm drainage system;

3. The plans shall clearly indicate the location of the storm drainage items stationed from a referenced centerline.

4. Show all horizontal measurements and control in the plan view.

5. Show slope, length, size, and pipe material for all storm drain mains and lines.

6. All catch basins and inlets shall be uniquely numbered and shall be clearly labeled. Stationing and offsets shall be indicated from referenced centerline. Show all proposed storm drain features within the right-of-way in the profile.

7. Indicate all grate, rim, and invert elevations in the profile view.

8. Provide a stormwater report consistent with Chapter 3 of the Stormwater Management Manual for Eastern Washington, with an emphasis on runoff and drainage facilities sizing calculations as described in CHAPTER 7. Additionally, the stormwater report shall include a maintenance plan for all drainage facilities, both public and private.

STREET PLAN REQUIREMENTS

See CHAPTER 8 for specific design requirements.

1. Show all existing and proposed roadway improvements, including, but not limited to, the following:
    a. Contours;
    b. Pavement and edge of pavement;
    c. Concrete curb and gutter;
    d. Sidewalks;
    e. Utilities (manholes, utility poles, pedestals, valves, water meters, etc.)
    f. Sidewalk ramps;
    g. Signs and barricades;
    h. Channelization and pavement markings;
    i. Driveways;
    j. Rockery or retaining walls;
    k. Mailboxes;
    l. Monuments;
    m. Streetlights, conduits, junction boxes, and service cabinets;
    n. Compliance with ADA requirements including design elevations at all pedestrian ramps; and
    o. Traffic control plans.

2. Show all right-of-way lines, centerlines, and roadway widths for all rights-of-way.

3. Clearly differentiate between areas of existing pavement, areas of new pavement, and areas to be overlaid.

4. Provide a cross section or typical section of all rights-of-way indicating right-of-way width, centerline, pavement width, superelevation or crown, sidewalk, street lights, curb and gutter, pavement, and base thickness of proposed section.

5. Provide a plan and profile of all new public roadways or extensions of existing roadways. Provide topography within the right-of-way including utilities. Indicate all horizontal and vertical curve data, percent of grade, bearings, centerline stationing every 50 feet, finish grade elevations, and existing ground line. The profile of the existing centerline ground should extend a minimum of 100 feet before the beginning and at the end of the proposed improvements to show the gradient blend.

6. Align the profile view with the plan view, if practical. Clearly indicate the horizontal and the vertical scale.

7. Clearly label all profiles with respective street names and plan sheet reference numbers if drawn on separate sheets.

8. Provide survey monuments along the road centerline at all ends of curves, intersection points, angle points, and center of cul-de-sacs.

9. For developments where road work is required on an existing street, development plans are required to include cross section of the existing street and spot elevations at proposed intersections and appurtenances to the project.

CHAPTER 4

GENERAL REQUIREMENTS FOR ALL PROJECTS

FORWARD

The City of Okanogan has adopted the latest edition of the Standard Specifications for Road, Bridge, and Municipal Construction (Standard Specifications) prepared by the Washington State Department of Transportation (WSDOT), and the American Public Works Association (APWA) General Special Provisions (GSP's) for Division One General Requirements as the standard specifications governing all design and construction of public works improvements by private developers.

All references hereinafter made to the "Standard Specifications" shall refer to the latest edition of the Standard Specifications described above. Except as may be amended, modified, or supplemented hereinafter, each section of the Standard Specifications shall be considered as much a part of these requirements as if they were actually set forth herein.

The Standard Specifications, Special Provisions, and City Standard Details contained in these Design and Construction Standards shall apply in their entirety to all City of Okanogan public works projects. These Design and Construction Standards have been prepared to form a compiled document intended to assist and inform developers, consultants, and contractors of the construction requirements to be used on proposed public works improvements.

The Standard Specifications, Special Provisions, and City Standard Details shall periodically be amended, revised, and updated. It shall be the responsibility of each user of this information to verify that he has the latest revisions prior to submitting any work covered by these specifications and details.

Copies of the Standard Specifications are available for review and inspection at the City of Okanogan:

City of Okanogan
Public Works Department
120 Third Ave N
Okanogan, WA 98840
(509) 422-3600

Developers and contractors are encouraged to obtain a copy of these standards.

GENERAL

All work shall be completed in accordance with the approved Plans, the latest edition of the Standard Specifications for Road, Bridge, and Municipal Construction prepared by the Washington State Department of Transportation, amendments to the Standard Specifications, referenced codes and organizations, and these Special Provisions.

The American Public Works Association (APWA) General Special Provisions (GSPs) to Division One of the WSDOT Standard Specifications shall amend Division One of the Standard Specifications for Road, Bridge, and Municipal Construction.

All materials incorporated into a proposed public works improvements project shall meet the requirements of Division 9 of the Standard Specifications or City of Okanogan Design and Construction Standards as shown in the Standard Details and Special Provisions.

1-01 DEFINITIONS AND TERMS

1-01.3 Definitions

The terms defined in Section 1-01.3 of the Standard Specifications shall be further described by the following:

Consultant:	Means a civil engineer licensed in the State of Washington, employed by the Developer to design the improvement and prepare plans and specifications, perform construction staking, or similar services.
Construction Documents:	Means the project plans, specifications, and special provisions prepared by the Developer's Consultant for the public works improvements contemplated and approved by the City.
City:	Means the City of Okanogan, a municipal corporation, as represented by its authorized officials, employees or agents. The term "Contracting Agency" and "City" are synonymous.
Contractor:	Means the person or firm employed by the Developer or under Contract with the City to do the construction of the public works improvements.
Developer:	Means the person or firm constructing the new development and engaging the services of and employing consultants, and/or contractors and paying for the design

	and construction of the public works improvements to be transferred to the City.
Drawings:	Means the construction plans prepared by the Developer's Consultant for the public works improvements contemplated. The terms "Construction Documents," "Contract Documents," "Plans," "Engineer's Plans," "Engineer's Drawings," "Working Drawings," and "Project Manual" are synonymous.
Owner:	Means the City of Okanogan acting through its legally established officials, boards, commissions, etc., as represented by its authorized officers, employees, or agents.
Engineer:	Means the appointed City Engineer for the City of Okanogan or his/her duly authorized agent or representative.
Standard Plans and Details:	Means specific drawings adopted by the City of Okanogan and revised from time to time which show frequently recurring components of work which have been standardized for use.
Standard Specifications:	The latest edition of Standard Specifications for Road, Bridge, and Municipal Construction prepared by the Washington State Department of Transportation, and amendments, and the APWA GSP's for Division One that are, by this reference, made part of the Contract Documents. Except as may be amended, modified, or supplemented hereinafter, each section of the Standard Specifications shall be considered as much a part of these Construction Documents as if they were actually set forth herein.
Special Provisions:	The Special Provisions supplement or modify the Standard Specifications and supersede any conflicting provisions of the Standard Specifications for Road, Bridge, and Municipal Construction and the appended amendments to the Standard Specifications and are made a part of the Construction Documents.

Should any conflicts be encountered, the following inter relationships shall govern: The Special Provisions shall supersede the APWA GSPs, which shall supersede the WSDOT Amendments, which shall supersede the Standard Specifications.

Supplement this section with the following:

All references in the Standard Specifications and WSDOT General Special Provisions to the terms "Department of Transportation", "Washington State Transportation Commission", "Commission", "Secretary of Transportation", "Secretary", "Headquarters", and "State Treasurer" shall be revised to read "Contracting Agency".

All references to the terms "State" or "state" shall be revised to read "Contracting Agency" unless the reference is to an administrative agency of the State of Washington, a State statute or regulation, or the context reasonably indicates otherwise.

All references to "State Materials Laboratory" shall be revised to read "Contracting Agency designated location."

All references to "final contract voucher certification" shall be interpreted to mean the Contracting Agency form(s) by which final completion is granted.

1-04 SCOPE OF THE WORK

1-04.4 Changes

Supplement this section with the following:

No changes in the work covered by the approved Construction Documents shall be made without having prior written approval of the Developer and the City.

1-04.11 Final Cleanup

Delete this section and replace it with the following:

The Contractor shall perform final cleanup as provided in this section to the Developer's and City's satisfaction. The date of acceptance will not be established until this work is performed. The material sites and all ground the Contractor occupied to do the work shall be left neat and presentable. The Contractor shall:

1. Remove all rubbish, surplus materials, discarded materials, falsework, temporary structures, equipment, and debris, and

2. Deposit in embankments, or remove from the project, all unneeded, oversized rock left from grading, surfacing, or paving.

Partial cleanup shall be performed by the Contractor when he feels it is necessary or when, in the opinion of the City or Developer, partial cleanup should be done prior to either major cleanup or final inspection.

1-04.12 Waste Site (New Section)

The following new section shall be added to the Standard Specifications:

Where there is additional waste excavation in excess of that needed for the project and in excess of that needed for compliance with requests of the Developer or City, the Contractor shall secure and operate his own waste site at his own expense. The Contractor shall also be required to secure and operate his own waste site at his own expense for the disposal of all unsuitable material, asphalt, concrete, debris, waste material, and any other objectionable material which is directed to waster.

The Contractor shall comply with the State of Washington's regulations regarding disposal of waste material as outlined in WAC 173-304, Subchapter 461.

1-05 CONTROL OF WORK

1-05.1 Authority of the Engineer

Supplement this section with the following:

Unless otherwise expressly provided in the approved Construction Drawings, Specifications and Addenda, the means and methods of construction shall be such as the Contractor may choose; subject, however, to the Consultant and the City's right to reject the means and methods proposed by the Contractor which (1) will constitute or create a hazard to the work, or to persons or property; or (2) will not produce finished work in accordance with the terms of the approved Construction Documents. Approval of the Contractor's means and methods of construction or his failure to exercise his right to reject such means or methods shall not relieve the Contractor of the obligation to accomplish the result intended by the Construction Documents; nor shall the exercise of such right to reject create a cause for action for damages.

1-05.3(1) Project Record Drawings (New Section)

The following new section shall be added to the Standard Specifications:

The Contractor shall maintain a neatly marked, full-size set of record drawings showing the final location and layout of all new construction. Drawings shall be kept current weekly, with all field instruction, change orders, and construction adjustment.

Drawings shall be subject to the inspection of the Developer and the City at all times. Prior to acceptance of the work, the Contractor shall deliver to the Developer record drawings in accordance with CHAPTER 1.

Bonding or Phased Improvements

The Developer can bond for remaining improvements per OMC 17.46.010. The Engineer's Estimate used for the bond amount will be itemized including item descriptions and units, consistent with the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction. In cases where the remaining improvements are bonded, the Developer is responsible to provide complete record drawings for constructed improvements, both paper and electronic, prior to receiving bonding acceptance consideration for remaining improvements or phases.

Future phases will not receive bonding acceptance without written acceptance of the Record Drawings from completed phases per this section.

Preliminary (Paper) Record Drawing Procedures

1. A licensed Engineer representing the Developer will ensure that all improvements associated with the approved construction plans are obtained and create an accurate as-built topographical representation of the data.

2. The data, differing from initial plan acceptance, will be incorporated into the preliminary record drawings and the Engineer will adjust the features in the record drawings to match the actual data. All revised and verified elevations for sewer, storm, water, and irrigation will be shown on the record drawings by striking a single line through the design elevations and adding the surveyed "as-built" elevations. Horizontal locations will be indicated by using centerline station and offsets. All revised and verified station and offsets will be shown on the record drawings by striking a single line through the design station and offsets and adding the surveyed station and offsets. The stationing will be based on the approved

construction drawings. The Engineer will update both the plan and profile layouts with the revised and verified data. Revised information shall be "clouded" as appropriate to indicate revisions.

3. Prior to final walk-through, the Engineer will compile the data and submit two copies of the preliminary (paper) record drawings to the City. The walk-through will not be scheduled until the paper record drawings are received.

Preliminary Record Drawing Submittals

- Two (2) paper copies (22"x34") including all field changes made.
- The preliminary record drawings will have all changes from the approved construction drawings clouded.
- The preliminary record drawing submittal will include the final field as-built information.

Upon receipt of the paper record drawings, the City shall have 10 business days to review the documents. Should the paper record drawings be found to be inaccurate or incomplete, the City shall have an additional 10 business days to review all subsequent submissions.

Final (Mylar and Electronic) Record Drawing Procedures

After receiving approval of the preliminary paper record drawings from the City, the Developer/Developer's Engineer will submit the following:

Final Record Drawing Submittals

- One (1) full size Mylar copy of the corrected record drawings. The final record drawings shall be signed and sealed by a licensed Engineer and licensed surveyor. The clouding of changes will be removed before the Mylar is submitted.
- One (1) PDF and one (1) full size paper copy of the final record drawings.

Upon receipt of the Mylar and electronic data, the City shall have 10 business days to review the information. Should the Mylar and/or electronic data be found to be inaccurate or incomplete, the City shall have an additional 10 business days to review all subsequent submissions. The project will not be considered Substantially Complete until both the Mylar and electronic as-builts have been deemed acceptable by the City.

1-05.5 Construction Staking (New Section)

The following new section shall be added to the Standard Specifications:

A land surveyor licensed in the State of Washington, retained by the Developer, shall establish the line and grade of proposed construction by offset stakes. Said surveyor shall establish the centerline for minor structures and bench marks at convenient locations for use by the Contractor and City inspectors. GPS systems may be used by the Contractor, but physical reference points shall be available for City inspectors.

The Contractor shall establish grades from the surveyor's stakes at suitable intervals in accordance with industry standards and acceptable to the City. Where new construction adjoins existing construction, the Contractor shall make such adjustments in grade as are necessary, and approved by the City.

1-05.6 Inspections of Work and Materials

Supplement this section with the following:

The Engineer or his representative may not be on the job site full-time. The Contractor shall follow the approved construction plans and specifications, schedule, and request inspections and testing at the appropriate times as required herein. The Engineer will try to provide inspections on short notice, but if unable to, the requirements for proper notice shall apply. The project schedule prepared by the Contractor and approved by the Engineer shall also be used as a guide for the Contractor to schedule inspections. The Contractor shall provide a minimum 48 hours' notice to request inspections and testing, but in no case shall there be more than 72 hours' notice. The request shall state the date and approximate time the inspection or test is requested. If the Contractor has requested two (2) inspections or tests and is not prepared for said inspection or test, the Contractor shall pay the costs for any additional improperly schedule requests.

At the beginning of the project, or each applicable construction activity, the Contractor shall meet with the Engineer or his representative and establish a minimum 100 feet of product, in the field, which meets the specifications. This work includes: Survey staking and control, pavement cuts, utility trenches, trench bedding, pipe installation, backfill, patches, curb and gutter alignment, grade and finish, sidewalk finish, paving finish, and any other activities determined by the Engineer to be important to the project. No major amount of work shall proceed until this is established. This does not waive the Contractor's requirements in the specifications for quality control or materials used.

Inspections and testing are mandatory for acceptance of backfilling any utility trenches; placing base course and top course for streets; paving; placing sidewalks, curbs and gutters; storm, sewer and water line installation.

1-05.7 Removal of Defective and Unauthorized Work
(October 1, 2005 APWA GSP)

Supplement this section with the following:

If the Contractor fails to remedy defective or unauthorized work within the time specified in a written notice from the Engineer, or fails to perform any part of the work required by the Contract Documents, the Engineer may correct and remedy such work as may be identified in the written notice, with Contracting Agency forces or by such other means as the Contracting Agency may deem necessary.

If the Contractor fails to comply with a written order to remedy what the Engineer determines to be an emergency or urgent situation, the Engineer may have the defective and unauthorized work corrected immediately, have the rejected work removed and replaced, or have the work that the Contractor refuses or fails to perform completed by others. An emergency or urgent situation is any situation when, in the opinion of the Engineer, a delay in taking remedial action could be potentially unsafe and might cause risk of personal injury, property damage, or economic loss to the public, the Work, or the Contracting Agency.

Direct or indirect costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, or work the Contractor failed or refused to perform, shall be paid by the Contractor. Such direct and indirect costs shall include, without limitation, compensation for additional professional services required, and costs for repair and replacement of work of others destroyed or damaged by correction, removal, or replacement of the Contractor's defective or unauthorized work.

The rights provided to the Contracting Agency by this Section shall not diminish the Contracting Agency's right to pursue any other avenue or additional remedy with respect to the Contractor's failure to perform the work as required.

Add the following new section:

1-05.12(1) 2-Year Guarantee Period
(March 8, 2013 APWA GSP)

The Contractor shall return to the project and repair or replace all defects in workmanship and material discovered within two years after Final Acceptance of the Work. The Contractor shall start work to remedy any such defects within

7 calendar days of receiving Contracting Agency's written notice of a defect, and shall complete such work within the time stated in the Contracting Agency's notice. In case of emergency, where damage may result from delay or where loss of services may result, such corrections may be made by the Contracting Agency's own forces or another contractor, in which case the cost of corrections shall be paid by the Contractor. In the event the Contractor does not accomplish corrections within the time specified, the work will be otherwise accomplished and the cost of same shall be paid by the Contractor.

When corrections of defects are made, the Contractor shall then be responsible for correcting all defects in workmanship and materials in the corrected work for two years after acceptance of the corrections by Contracting Agency.

This guarantee is supplemental to and odes not limit or affect the requirements that the Contractor's work comply with the requirements of the Contract or any other legal rights or remedies of the Contracting Agency.

1-05.13 Superintendents, Labor, and Equipment of Contractor
(August 14, 2013 APWA GSP)

Delete the sixth and seventh paragraphs of this section.

1-05.14 Cooperation with Other Contractors

Supplement this section with the following:

No additional compensation will be given to the Contractor for any coordination or delays caused by other nearby construction projects.

1-05.16 Water and Power (New Section)

The following new section shall be added to the Standard Specifications:

Water Supply: The Developer shall make necessary arrangements and shall bear the costs for water necessary for the performance of the work. Water for use on the projects may be purchased from the City of Okanogan, and the Contractor shall arrange for and convey the water from the nearest convenient hydrant or other source at his own expense. The hydrants shall be used in accordance with the City of Okanogan Water Department regulations.

If City water is used for any work related to a project, a fire hydrant meter and gate valve will need to be obtained from the City of Okanogan to be used specifically for this project. The City will charge the Contractor for any water used during construction. The Contractor shall not operate the hydrant as a gate

valve, nor shall the Contractor be allowed to operate any other City owned valve. The Contractor shall provide the necessary back flow prevention device when connecting to the water service.

The City reserves the right to deny the use of fire hydrants where deemed inappropriate by the City.

Power Supply: The Developer shall make necessary arrangements and shall bear the costs for power necessary for the performance of the work.

1-05.17 Oral Agreements (New Section)

The following new section shall be added to the Standard Specifications:

No oral agreement or conversation with any officer, agent, or employee of the Contracting Agency, either before or after construction, shall affect or modify any of the terms or obligations contained in any of the City-approved documents. Such oral agreement or conversation shall be considered as unofficial information and in no way binding upon the Contracting Agency, unless subsequently put in writing and signed by the Contracting Agency.

1-06 CONTROL OF MATERIAL

1-06.1 Approval of Materials Prior to Use

Revise the first paragraph to read:

Prior to use, the Contractor shall notify the Engineer of all proposed materials. The Contractor shall use the Request for Approval of Material (RAM) form, WSDOT Form 350-071. Materials included in the WSDOT Qualified Products List (QPL) but not in the City's Construction Standards will be taken under consideration by use of the RAM form. The Contractor shall note all deviations from the governing specifications and/or drawings and shall reference the appropriate paragraph of the section or sheet of the drawing. If the reason for the deviation from the specifications is not readily apparent, a written explanation shall be included. The Engineer's review of the Contractor's submittals shall not relieve the Contractor of the entire responsibility for the correctness of details and dimension. The Contractor shall assume all responsibility and risk for any misfits due to any errors in information submitted by the Contractor. Any fabrications or other work performed in advance of the receipt of approved submittals shall be entirely at the Contractor's risk and expense. The Contractor shall be responsible for the dimensions and the design of adequate connections and details.

1-06.2(1) Samples and Tests for Acceptance

Supplement this section with the following:

The Developer/Contractor shall be responsible for scheduling and paying for all material and compaction testing required by these Design and Construction Standards for new public works improvements. All testing services shall be performed by an independent, certified testing firm and/or laboratory meeting the approval of the Engineer. The Contractor shall submit information relating to the qualifications of the proposed testing firm to the City for review and approval prior to the preconstruction conference. The testing firm shall provide copies of all test results to the City within 24 hours after completion of any test. Test reports shall become the property of the City. Testing frequencies listed below may be modified to assure compliance with the Specifications.

Trench Backfill

Copies of moisture-density curves for each type of material encountered and copies of all test results shall be provided to the City as construction progresses.

Three (3) compaction tests, at varying depths, shall be performed within the first one hundred (100) feet of pipeline installed to establish compaction method. Once a satisfactory method has been established, one test shall be performed for each one hundred (100) linear feet of pipeline installed. Tests shall be taken at varying depths along the trench. Compaction method shall be reestablished each time backfill material, compaction equipment, or method of operations changes.

The Engineer may request additional tests be performed at the Developer's/Contractor's expense, if test results do not meet the required trench backfill densities.

Roadway Subgrade

Copies of the moisture density curves for each type of material encountered and copies of all test results shall be provided to the Engineer as construction progresses.

Compaction tests shall be taken at a frequency sufficient to document that the required density has been achieved. At a minimum, one (1) compaction test shall be taken for the every five thousand (5,000) square feet of subgrade.

The Engineer may request additional tests be performed at the Developer's/Contractor's expense, if test results do not meet the required

subgrade densities. Subgrade compaction shall be as specified for Embankment in Section 2-03.3(14)C, Method C.

Embankment

Copies of the moisture density curves for each type of material encountered and copies of all test results shall be provided to the Engineer as construction progresses.

Compaction tests shall be taken at a frequency sufficient to document that the required density has been achieved. At a minimum, one (1) compaction test shall be taken for every five thousand (5,000) square feet of surface area for each lift of embankment.

The Engineer may request additional tests be performed at the Developer's/Contractor's expense, if test results do not meet the required densities. Embankment compaction shall be as specified for Embankment in Section 2-03.3(14)C, Method C.

Ballast and Crushed Surfacing

Copies of the moisture density curves and gradation for each type of material encountered and copies of all test results shall be provided to the Engineer as construction progresses.

Compaction tests shall be taken at a frequency sufficient to document that the required density has been achieved. At a minimum, one (1) compaction test shall be taken for every five thousand (5,000) square feet of surface area for each lift of ballast or crushed surfacing.

The Engineer may request additional tests be performed at the Developer's/Contractor's expense, if test results do not meet the required densities. Compaction of ballast and crushed surfacing shall be as specified in Section 4-04.3(5).

Asphalt Paving

Asphalt paving may not occur until successful compaction test results are provided to the Engineer for trench backfill, subgrade, embankment, ballast and crushed surfacing, as applicable. Copies of the reference maximum density test for each class of Hot Mix Asphalt pavement and copies of all test results shall be provided to the Engineer as construction progresses.

The Engineer may request additional tests be performed at the Developer's/Contractor's expense, if test results do not meet the required densities.

Compaction of Hot Mix Asphalt shall be as specified in Section 5-04.3(10).

Cement Concrete Curb, Gutter and Sidewalk

A copy of the cement concrete design mix or certification from the concrete supplier that the concrete provided has been prepared to the strength requirement as specified elsewhere in these specifications.

All testing procedures shall be conducted in accordance with applicable Sections of Division 6-02 of the Standard Specifications and Section 8-04 and 8-14 of these Design and Construction Standards.

Copies of all test results shall be provided to the Engineer as construction progresses.

1-06.2(2) Statistical Evaluations of Materials for Acceptance

Delete Section 1-06.2(2).

1-07 LEGAL RELATION AND RESPONSIBILITIES TO THE PUBLIC

1-07.1 Laws to be Observed

Supplement this Section with the following:

In cases of conflict between different safety regulations, the more stringent regulation shall apply.

The Washington State Department of Labor and Industries shall be the sole and paramount administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA).

The Contractor shall maintain at the project site office, or other well known place at the project site, all articles necessary for providing first aid to the injured. The Contractor shall establish, publish, and make known to all employees, procedures for ensuring immediate removal to a hospital, or doctor's care, persons, including employees, who may have been injured on the project site. Employees should not be permitted to work on the project site before the Contractor has established and made known procedures for removal of injured persons to a hospital or a doctor's care.

> The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the project site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

Amend the second sentence of the first paragraph to read:

> The Developer/Contractor shall indemnify and save harmless the City of Okanogan (including any agents, officers, employees, and representatives) against any claims that may arise because the Contractor (or any employee of the Contractor or subcontractor or materialman) violated a legal requirement.

1-07.5(3) State Department of Ecology

Add the following to this Section:

11. Comply with the requirements and special general conditions of the Construction Stormwater General Permit issued by the Washington State Department of Ecology or Environment Protection Agency, as applicable.

1-07.13 Contractor's Responsibility for Work

1-07.13(1) General

Delete this section in its entirety and replace it with the following:

> All Work and material for the contract, including any change order work, shall be at the sole risk of the Contractor until the entire improvement has been completed as determined by the Engineer, except as provided in this section.
>
> The Contractor shall rebuild, repair, restore, and make good all damages to any portion of the permanent or temporary work occurring before the physical completion date and shall bear all the expense to do so.
>
> If the performance of the Work is delayed as a result of damage by others, an extension of time will be evaluated in accordance with Section 1-08.8.

Nothing contained in this section shall be construed as relieving the Contractor of responsibility for, or damage resulting from, the Contractor's operations or negligence, nor shall the Contractor be relieved from full responsibility for making good any defective Work or materials as provided for under Section 1-05.

1-07.17 Utilities and Similar Facilities

Supplement this section with the following:

It shall be the Contractor's responsibility to notify all non-City of Okanogan utility companies of the project including coordination of any impacts.

Locations and dimensions shown on the plans for existing facilities are in accordance with available information obtained without uncovering, measuring, or other verification. It shall be the Contractor's responsibility to investigate and verify the presence and location of all utilities prior to construction.

The Contractor shall call for field location, not less than two nor more than ten business days before the scheduled date for commencement of excavation which may affect underground utility facilities, unless other wise agreed upon by the parties involved. A business day is defined as any day other than Saturday, Sunday, or a legal local, state, or federal holiday. The phone number for the Northwest Utility Notification Center for Okanogan is 1-800-424-5555 (or 811). If no one-number locator service is available, notice shall be provided individually by the Contractor to those owners known to or suspected of having underground facilities within the area of proposed excavation.

The Contractor is alerted to the existence of Chapter 19.122 RCW, a law relating to underground utilities. Any cost to the Contractor incurred as a result of this law shall be at the Contractor's expense.

No excavation shall begin until all known facilities, in the vicinity of the excavation area, have been located and marked.

1-07.18 Public Liability and Property Damage Insurance

Supplement this section with the following:

The Contractor shall obtain and maintain in full force and effect during the duration of the work public liability and property damage insurance in accordance with this section and as modified herein.

Prior to start of construction, the Contractor/Developer shall furnish the City of Okanogan a Certificate of Insurance and the additional insured endorsements as

evidence of compliance with these requirements. This certificate shall name the City of Okanogan, its employees, agents, elected and appointed officials, consultants, and all subcontractors as "additional insureds" and shall stipulate that the policies named thereon cannot be canceled unless at least forty-five (45) days written notice has been given to the City of Okanogan. The certificate shall not contain the following or similar wording regarding cancellation notification: "Failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents, or representatives."

1-07.23 Public Convenience and Safety

Supplement this section with the following:

All signs, barricades, traffic control devices, and labor for traffic control required by construction activities for the control of traffic shall be supplied, placed, and maintained by the Contractor. This shall apply to detours and traffic control both within and outside the limits of the project.

All work shall be done under a plan which shall have the approval of the City of Okanogan and create a minimum of interruption or inconvenience to pedestrian and vehicular traffic. All arrangements to care for such traffic will be the Contractor's responsibility and shall be made at his expense. All work shall be carried out with due regard for public safety. Open trenches shall be provided with proper barricades and at night they shall be distinctly indicated by adequately place lights. At entrances to business properties and other private roads, driveways, bridges, or other such means as to provide access shall be provided by the Contractor. The Contractor shall maintain vehicular and pedestrian access to businesses at all times that businesses are open for business.

Upon failure of the Contractor to immediately provide and maintain adequate suitable barricades, lights and detour signs, when ordered to do so, the City shall be at liberty, without further notice to the Contractor or the Surety, to provide the same and request payment for providing proper barricades, lights, and signs, and the City assumes no liability connected therewith.

Any traffic restriction must have prior approval of the City of Okanogan. Appropriate traffic control measures and signing are required during such temporary road closures.

It shall be the responsibility of the Contractor to secure the City's approval for any desired road closure and associated traffic control plan including detours. Following approval, the Contractor shall notify the Developer, City of Okanogan, the Police and Fire Departments, Okanogan School District, and Sunrise Disposal at least 24 hours prior to closing any street. When the street is re-opened, it shall

again be the responsibility of the Contractor to notify the above-named departments and persons.

1-07.23(1) Construction Under Traffic

Delete the second paragraph of this Section and replace it with the following:

To disrupt public traffic as little as possible, the Contractor shall permit traffic to pass through the Work with the least possible inconvenience or delay. The Contractor shall maintain existing roads, streets, sidewalks, and paths within the project limits, keeping them open, and in good, clean, safe condition at all times. Accessibility to existing or temporary pedestrian push buttons shall not be impaired. Deficiencies caused by the Contractor's operations shall be repaired at the Contractor's expense. Deficiencies not caused by the Contractor's operations shall be repaired by the Contractor when directed in writing by the Engineer, at the Contracting Agency's expense. The Contractor shall also maintain roads, streets, sidewalks, and paths adjacent to the project limits when affected by the Contractor's operations. The Contractor shall perform the following:

1. Remove or repair any condition resulting from the Work that might impede traffic or create a hazard.

2. Keep existing traffic signal and street lighting systems in operation as the Work proceeds.

3. Maintain the striping on the roadway.

4. Maintain existing permanent signing.

5. Keep drainage systems clean and allow for unobstructed flow of water.

1-07.29 Safety Standards (New Section)

The following new section shall be added to the Standard Specifications:

All work shall be performed in accordance with all applicable local, state, and federal health and safety codes, standards, regulations, and/or accepted industry standards. It shall be the responsibility of the Contractor to ensure that his work force and the public are adequately protected against any hazards.

The City of Okanogan or Developer shall have the authority at all times to issue a stop work order at no penalty if, in their opinion, working conditions present an undue hazard to the public, property, or the work force. Such authority shall not, however, relieve the Contractor of responsibility for the maintenance of safe

working conditions or assess any responsibility to the City of Developer for the identification of any or all unsafe conditions.

1-07.30 Notifying Property Owners (New Section)

The following new section shall be added to the Standard Specifications:

When construction activities will affect ingress and egress to a property along the project alignment, the Contractor shall be responsible for notifying the occupant/occupants of the property 72 hours prior to the construction activity beginning. If personal contact with the occupant is not possible, The Contractor shall leave written notification. A copy of all notifications shall be provided to the City.

1-08 PROSECUTION AND PROGRESS

1-08.3 Progress Schedule

Supplement this section with the following:

Prior to commencement of any work, a preconstruction conference shall be held. The Contractor or Developer shall contact the City of Okanogan and set a date and time for the meeting. If shall be the responsibility of the Contractor/Developer to notify and invite all parties having an interest in the project to the meeting, including the major subcontractors and all applicable private utilities.

At this conference, all points of the approved Plans and Specifications will be open to discussion including scope, order and coordination of work, equipment lead time required, means and methods of construction, inspection and reporting procedures, etc. The Contractor should satisfy himself that all provisions and intentions of the work are fully understood.

The Contractor shall prepare and submit to the City and Developer at the preconstruction conference a Construction Progress and Completion Schedule using a bar graph format. Items in the Schedule shall be arranged in the order and sequence in which they will be performed. The schedule shall be drawn to a time scale, shown along the base of the diagram, using an appropriate measurement per day with weekends and holidays indicated. The Construction Progress Schedule shall be continuously updated and, if necessary, redrawn upon the first working day of each month or upon issuance of any Change Order which substantially affects the scheduling. Copies (2 prints or 1 reproducible) if newly updated Schedules shall be forwarded to the City and Engineer, as directed, immediately upon preparation.

Any proposed road or sidewalk closures shall be presented to the City at the preconstruction conference for consideration, including duration of closure. If approved, closures shall not extend beyond permitted duration.

At the discretion of the City, a weekly meeting between representatives of the City and Contractor shall be held at the project site or at City Hall at a pre-determined time. The Contractor shall present an update on project status, project schedule, and any problems that have arisen.

1-10 TEMPORARY TRAFFIC CONTROL

Supplement this section with the following:

The provisions of the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways and amendments thereto published by the U.S. Department of Transportation, Federal Highway Administration, and WSDOT by the reference are made a part of these Contract Documents.

1-10.2(2) Traffic Control Plans

Delete the entire section and replace with the following:

The Contractor shall prepare a signing plan showing the necessary Class A and B construction signing, barricades, and traffic control devices required for the project and submit it to the City, no later than the preconstruction conference date. When the Class B signing for a particular area will be provided as detailed on one or more of the figures included in the MUTCD without modification, the Contractor may reference the applicable MUTCD figure at the appropriate location on the plan. When this procedure is used, variable distances such as minimum length of taper must be specified by the Contractor.

The signing plan prepared by the Contractor shall provide for adequate warning within the limits of the project and on all streets, alleys, and driveways entering the project so that approaching traffic may turn left or right onto existing undisturbed streets before reaching the project. The plan shall be prepared to create a minimum of inconvenience for pedestrian and vehicle traffic.

All modifications to the accepted signing plans shall be reviewed by the City.

1-10.3(3)A Construction Signs

The first sentence of the first paragraph is revised to read:

> All signs, barricades, flashers, cones, traffic safety drums, and other traffic control devices required by the approved traffic control plan(s), as well as any other appropriate signs prescribed by the City or County, shall be furnished and maintained by the Contractor.
>
> Open trenches shall be provided with proper barricades and at night they shall be distinctly indicated by adequately spaced lights.

7-08 GENERAL PIPE INSTALLATION REQUIREMENTS

7-08.1 General

Delete this section and replace it with the following:

> This work includes installing culverts, storm sewers, sanitary sewers, water main, and conduits. The Contractor shall also follow Section 7-02, 7-04, 7-09, 7-15, 7-17, or 8-20 as it applies to the specific kind of work. In cases of conflict between sections, the more stringent regulation shall apply.
>
> All construction work shall be inspected by the City of Okanogan prior to backfilling. At least 48 hours' notice shall be given to the City prior to backfilling.
>
> The Contractor shall notify the Utility Notification Center (One Call Center) at least 48 hours prior to start of excavation so that underground utilities may be marked. Telephone number is 1-800-424-5555.

7-08.3 Construction Requirements

7-08.3(1)A Trenches

Delete the first paragraph under this section and replace with the following:

> The length of trench excavation in advance of pipe laying shall be kept to a maximum of 100 feet. Excavation shall either be closed up at the end of the day or protected per Section 1-07.23(1).

7-08.3(2)B Pipe Laying - General

Supplement this section with the following:

All pipe shall be unloaded from delivery vehicles with mechanical equipment. Dropping of pipe onto the ground or mats will not be permitted. All pipe and fittings shall be carefully lowered into the trench in such a way as to prevent damage to pipe materials and protective coatings and linings. Under no circumstances shall materials be dropped or dumped into the trench.

All pipe shall be laid in straight lines and at uniform rate for grade between structures. Variation in the invert elevation between adjoining ends of pipe due to non-concentricity of joining surface and pipe interior surfaces shall not exceed 1/64 inch per inch of pipe diameter, or ½-inch maximum. The invert line may vary from the true line and grade within the limits stated to develop uniformity, concentricity, and uniform compression of jointing material provided such variance does not result in a reverse sloping invert. The limit of variance at the invert elevation of the pipe shall be plus or minus ¾-inch for a completed, backfilled pipe. Checking of the invert elevation of the pipe shall be done by remote operated CCTV camera utilizing a ¾-inch measuring device (lead ball).

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being laid. After placing a length of pipe in the trench, the spigot end shall be centered in the bell and pipe forced home and brought to correct line and grade. The pipe shall be secured in place with pipe bedding tamped under it. Precaution shall be taken to prevent dirt from entering the joint space. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means approved by the City. If water is in the trench when work resumes, the seal shall remain in place until the trench is dewatered as specified for groundwater control. Tee branches shall be blocked and sealed with the same joint and pipe material as used for pipes.

Care shall be taken to properly align, clean and lubricate the spigot and socket area of the pipes before joining. The pipe spigot shall be forced into the socket until the reference mark on the spigot is flush with the bell end.

All connections to existing pipe of differing materials shall be made with adapters which are specifically manufactured for this purpose. If the band type adapters are used, then only stainless steel bands will be allowed.

The Contractor shall obtain approved grading and filling permits for all spoils material sites, from the City, County, or both as required. These permits shall be secured and paid for by the Contractor.

Potable domestic water mains shall maintain a 10-foot horizontal and 18-inch vertical separation above non-potable pipelines (sewer, irrigation, and storm) consistent with the Department of Health Water System Design Manual.

When parallel to existing utilities, new domestic water mains shall be installed a minimum of 10 feet horizontally (outside pipe wall to outside pipe wall, typical) and 18 inches vertically above other non-potable pipelines. Where this is not possible at the discretion of the City, a water main may be installed a minimum of five feet horizontally and 18 inches vertically above other non-potable pipelines, as long as the water main is placed in a separate trench and on a bench of undisturbed earth.

When crossing existing utilities, new domestic water mains shall be installed a minimum of 18 inches vertically above non-potable pipelines. Where this is not possible, or the water main passes under a non-potable pipeline, the water main shall be installed in a pressure rated pipe casing extending 10 feet each side of the crossing. In addition, where the water main passes under an existing non-potable pipeline, support shall be provided for the non-potable pipeline by backfilling the non-potable pipeline trench with controlled density backfill or other approved methods. A minimum of 6 inches of separation between the crossing pipelines must be maintained in all cases.

When parallel to existing potable water mains, new non-potable pipelines shall be installed a minimum of 10 feet horizontally and 18 inches vertically below existing water mains. Where this is not possible at the discretion of the City, a non-potable pipeline may be installed a minimum of five feet horizontally from an existing water main, as long as the non-potable pipeline is placed in a separate trench. If the vertical separation cannot be met, then the non-potable pipeline shall be constructed of or encased in materials equal to water main standards with a minimum pressure rating of 235 psi (C900 PVC DR 18, ductile iron, etc.).

When crossing existing potable water mains, new non-potable pipelines shall be installed a minimum of 18 inches vertically below existing water mains. Due to difficulties in compacting under existing utilities, controlled density backfill or other City-approved materials shall be placed as backfill at the crossing locations, to a depth of the water main spring line. Where the minimum clearance is not possible, or the non-potable pipeline passes above a water main, a full length of non-potable pipeline shall be centered at the crossing. In addition, the non-potable pipeline shall either be installed in a pressure rated pipe casing extending 10 feet each side of the crossing, or be constructed of one standard length of pipe material equal to waterline standards with a minimum pressure rating of 235 psi (C900 PVC DR 18, ductile iron, etc.). A minimum of 6 inches of separation between the crossing pipelines must be maintained in all cases.

Detectable marking tape shall be installed above the pipe. The tape shall be placed above the top of the pipe as shown on the Standard Details and shall extend its full length. The horizontal location of the tape shall vary no more than one-half foot from the centerline alignment of the pipe. In addition, tracer wire shall be taped to the top of all water mains and water services and tied off in valve and meter boxes.

7-08.3(3) Backfilling

Delete the second paragraph under this section and replace with the following:

Pipe zone backfill shall be gravel backfill for pipe zone bedding conforming to the requirements of Section 9-03.12(3).

Supplement this section with the following:

The City may require the use of controlled density fill (CDF) for trench backfill in certain circumstances. The requirements for CDF are set forth in Section 2-09.3(1)E Backfilling.

The Contractor shall be responsible for scheduling, conducting, and paying for all testing required.

CHAPTER 5

WATER SYSTEM IMPROVEMENTS

GENERAL REQUIREMENTS FOR WATER SYSTEM IMPROVEMENTS

All extensions and additions to the City of Okanogan's domestic water system shall conform to the Design and Construction Standards of the City of Okanogan, the Washington State Department of Health (DOH), American Water Works Association, and be designed by a Civil Engineer licensed by the State of Washington.

All new lots and developments shall be served by a public domestic water supply line to be maintained by the City of Okanogan and located adjacent to the lot or development site. The water supply line shall be capable of providing sufficient flow and pressure to satisfy the fire flow and domestic service requirements of the proposed lots and development requirements. If determined necessary by the City, hydraulic analysis including modeling shall be performed by the City or its agents, and all costs shall be borne by the Developer.

Water lines shall be extended by the Developer to the point where the adjoining property owner's responsibility for further extension begins. This typically requires an extension across the entire frontage of the property to the property line of the adjoining owner. In some cases, it will require dedication of an easement and a line extension across the property or extension across two or more sides of the developing property. Extensions will be consistent with and implement the City's adopted Water System Plan.

All new public domestic water mains shall be a minimum diameter of 8 inches or larger diameters as specified in the City's Water System Plan, or larger as required to meet the fire flow demand of the development. Fire hydrants located within 50 feet of the water main shall be a minimum diameter of 6 inches. Hydrants beyond 50 feet of the water main shall be a minimum diameter of 8 inches, or larger as necessary to achieve required fire flows. Cover over new water mains shall be a minimum depth of 48 inches and a maximum of 72 inches.

New water mains shall be located in existing or proposed streets within City right-of-way and shall be offset from the street centerline, not located with a vehicle wheel path.

Larger public water mains may be required depending upon fire flow requirements as determined by the City Fire Chief and City Building Code Department.

All domestic water mains shall be looped, where possible, as determined by the City. Temporary dead-end mains over 300 feet in length will only be allowed where future water main looping via public right of way will be assured. No permanent dead-end

water mains over 300 feet in length will be allowed to be part of the City of Okanogan's public water system.

Permanent dead-end water mains may become private water mains owned and maintained by the Developer. All dead-end water mains shall be isolated from the public water main with a reduced pressure double check valve assembly and vault furnished and installed by the Developer. All services must extend from a water main owned and operated by the City.

The cross-connection control policy requires all commercial/industrial properties to have a reduced pressure backflow assembly (RPBA) for premises isolation of the building water supply. Backflow prevention assemblies shall be installed at the water meter and shall be shown on the plans. Yearly test reports shall be provided to the City's water quality inspector. The backflow device shall be on the state approved list, available through the Washington State Department of Health.

All double detector check valve assemblies shall conform to City of Okanogan Standards. Initial and annual testing will be required at the expense of the property owner.

Maximum valve spacing in public water mains will be 750 lineal feet. Valves shall be installed on all but one of the legs of new water main intersections. Valve operating nut extensions approved by the City will be required on valves where the operating nut is deeper than 36 inches below finished grade.

All new water main installations shall be satisfactorily tested per Section 7-09 prior to being placed into service including hydrostatic pressure and bacteriological testing, all at the expense of the Developer.

All new water service lines shall be a minimum of 1-inch, for 5/8″ x 3/4″ and 1″ meters, and shall be a minimum of 2-inch for 1 1/2- and 2-inch meters. The Developer/Contractor shall furnish and install all water service components (except water meter) from the water main to the property line including service saddle, corporation stop, service pipe, meter stop, meter check valve, customer piping, meter setter and box, all at the Developer's expense. Only one meter shall be served from each main tap. Each building containing water system facilities shall be served by an independent water service with dedicated meter. Branched water service lines serving multiple buildings and properties shall not be permitted. A single water service line serving multi-unit buildings is permitted with approval from the City.

New water main connections to existing water mains shall be installed with cut-in tees/crosses, unless a hot tap is approved by the City. If the existing water main is less than 6-inch diameter, a cut-in tee shall be required, and a hot tap will not be considered for approval. All hot taps of water mains 12″ and smaller shall be performed by City public works crews or a contractor approved by the City, using a full circle stainless steel

sleeve with tapping gate valve. The Contractor shall provide traffic control, excavate the connection location, provide adequate sloping/shoring, and install tapping sleeve and valve prior to City crew arrival. All work (including City crew tap) will be at the expense of the Developer.

Minimum 2-inch air and vacuum release valves shall be furnished and installed at high points in the water system.

Maximum spacing of fire hydrants shall be 500 feet and shall be located at intersections. Additional hydrants may be required to protect structures as determined by the Fire Chief. Additional fire hydrants required on a site may require a looped, on-site water main. Easements shall be provided for all on-site, public, looped water mains, in accordance with CHAPTER 1. Fire hydrants shall be located at the ends of curb returns or at property lines between lots, and not be located within driveways, driveway ramps, or handicap ramps.

When additional fire hydrants are required or the required fire slow of a new site is greater than the existing fire flow capacity, the public water main shall be extended and looped around the site, reconnecting to the public distribution supply main, at the Developer's expense. Fire hydrants shall be located along the looped public water main as determined by the Fire Chief. The looped water main will remain public and will not require check valves. The looped water main shall be located within an easement centered on the water main, free of any other parallel-aligned private utilities, see CHAPTER 1. All water main components shall be located within the easement including valves, hydrants, thrust blocks, fittings, etc. such that the City can maintain the public utility.

City-approved backflow prevention devices are required on all fire line connections to public water mains when the line is not required to be looped.

Where the water system pressures are outside of acceptable ranges as identified in the City's Water System Plan, a pressure reducing valve (PRV) station may be required as determined by the City. The PRV station shall be designed by a Civil Engineer currently licensed by the State of Washington and shall be submitted to the City for review. All costs for design, review, approval, procurement, installation, and construction shall be borne by the Developer.

Water mains installed beneath railroad tracks, State highways, irrigation canals, building structures, etc. shall be encased in a continuous welded steel casing (or as approved by the permitting agencies) and provided with casing spacers in accordance with these Standards. Requirements by other agencies involved in crossings shall supersede these Standards.

Water mains shall maintain a 10-foot horizontal and 18-inch vertical separation above non-potable pipelines (sanitary sewers, reclaimed water, irrigation, stormwater pipes, and other uses) in accordance with the current edition of the Washington State Department of Health Water System Design Manual. Additionally, water and sewer mains shall be separated in accordance with Section C1-9.1 of the Washington State Department of Ecology Criteria for Sewage Works Design. Gas, power, telephone, and other dry utilities shall maintain a minimum 5-foot horizontal clearance from water mains.

The design of water mains and appurtenances is subject to review and approval consideration by the City of Okanogan. The City may, at their discretion, adjust these Design and Construction Standards as necessary to facilitate installation of water lines and appurtenances for the health, safety, and protection of the general public.

New water systems shall be place in service, including all successful testing, prior to placement of asphalt.

Pressure Reducing Valve (PRV) Stations

The City's Water System Plan define the minimum and maximum pressures admissible in the system. In locations not covered by the Plan, the City may determine a study is necessary to determine a development's impacts on the system, at the expense of the Developer. The topography of the service area dictates the division of the water system into different pressure zones. PRVs are needed where connections between different pressure zones are proposed or required for the extension of the water system. PRVs are deemed necessary when otherwise the potable water would be delivered at pressures non-compliant with the established threshold.

When a PRV is deemed necessary by the City, the Developer shall be responsible for providing a design in accordance with the City's Water System Plan and City Standards. Said design will be reviewed by the City as part of the development plan review process.

The PRV design and all associated flow calculations and thrust block/restraint calculations must be performed by a Civil Engineer licensed in the State of Washington.

The PRV design must comply with the following criteria:

- All necessary calculations and drawings for any related design shall be submitted to the City for approval. Calculations of flow must be performed by the Developer's engineer based on the Peak Hourly Demand (PHD), plus provisions for required fire flow.

- Pressure zones must adhere to the provisions included in the Water System Plan.

- All PRVs will be placed in reinforced concrete vaults that are large enough to provide ample work space for field inspection and valve repair.

- Vaults shall be designed with a gravity drain or sump pump into an adjacent drainage structure, to prevent vault flooding.

- Pressure relief valves will be considered for closed pressure zones to prevent over pressurization if a PRV fails in the open position. A pressure relief valve can be incorporated into the PRV Station or can be designed in stand-alone configuration. Pressure relieve valves shall feature full flow piping to a turned down riser 18″ to 36″ above ground, for visible detection of relief flow. Relief flow shall be routed to a nearby retention basin of appropriate size.

- The pressure reducing valve shall be set to open at any pressure below its preset setpoint and to close at any pressure above an adjustable deadband, to maintain downstream pressure within 2.5 psi of the pressure setpoint. Downstream pressure control shall not be based on changing upstream pressures. Valve shall be provided with a valve position indicator assembly.

- The upstream pressure shall be sustained at a predetermined minimum, to be established by the City.

SPECIAL PROVISIONS FOR WATER SYSTEM IMPROVEMENTS

The following sections of the WSDOT Standard Specifications have been amended or supplemented as described below and apply to the construction of public works water system improvements within the City of Okanogan.

7-09 WATER MAINS

7-09.2 Materials

Pipe and fittings approved for use shall be as follows:

Pipe for Main Line:

Ductile Iron Pipe
Polyvinyl Chloride (PVC) Pressure Pipe (4 inches and over)

Supplement this section with the following:

Ductile Iron Pipe: Ductile iron pipe shall conform to the requirements of Section 9-30.1(1) of the Standard Specifications, except that it shall be Standard Thickness Class 52 for main line and Standard Thickness 53 for flanged spools.

Joints shall be rubber gasket, push-on type (TYTON JOINT®). Fittings shall be mechanical joint or flanged, as shown on the Plans, and shall conform to Section 9-30.2(1) of the Standard Specifications and NSF 61. Flange gaskets shall be full face.

PVC Pipe: PVC pipe shall conform to the requirements of Section 9-30.1(5)A of the Standard Specifications.

Fittings for Main Lines:

Ductile Iron and PVC Pipe Fittings: Fittings shall be cement lined, ductile iron, rubber gaskets and glands, and bolts meeting the requirements of AWWA C110, C111, or C153. Fittings shall comply with NSF 61 requirements. Flange gaskets shall be full face.

Hardware: Bolts and studs shall be carbon steel, grade B meeting the requirements of ASTM A307 and nuts meeting the requirements of ASTM A563.

Restrained Joints: Mechanical joint restrainer shall utilize the full circumference of the pipe for restraining and utilize standard MJ gaskets and bolts. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1. The restrainer shall be GRIPRING™ as manufactured by Romac Industries, or approved equal.

Restrained joint ductile ironpipe in buried applications shall be push-on joint pipe with FIELD LOK 350® gaskets as manufactured by U.S. Pipe, or approved equal.

Joint restraint for ductile iron hydrant pipe shall be MEGALUG®, as manufactured by EBAA Iron, Inc., or ROMAGRIP™, as manufactured by Romac Industries, or approved equal.

Appurtenances:

Detectable Marking Tape: Underground marking tape shall be a minimum of six inches in width, detectable marking tape, with a minimum of 5.0 mil overall thickness. Tape shall be manufactured using a 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a 0.35 mil solid aluminum foil core, and then laminated to a 3.75 mil clear virgin polyethylene film. Tape shall be printed diagonally striped design for maximum visibility, and meet the APWA Color-Code standard for identification of buried utilities. Detectable marking tape shall be Pro-Line Safety Products, or approved equal.

Tracer Wire: Tracer wire shall be 14-gauge heavy insulated (60 mil) copper wire with UF insulation colored for the utility being installed in accordance with 9-15.18. Direct bury splice kits shall be 3M DBY-6.

7-09.3 Construction Requirements

7-09.3(5) Grade and Alignment

Replace the first sentence of the third paragraph with the following:

The depth of trenching for water mains shall be such as to give a minimum cover of 48 inches and a maximum cover of 72 inches over the top of the pipe, unless otherwise approved by the City.

Supplement this section with the following:

Except where necessary, in making connections with other lines and unless authorized by the City, pipes shall be laid with bells facing in the direction of laying. Bells shall be placed on the uphill side for lines installed on an appreciable slope.

Water mains shall be laid on a continuous positive grade as shown on the plans to minimize the number of high or low points in the pipeline profile unless approved by the City. The Contractor shall, based on his review of the site and the plans, note areas where additional depth beyond the minimum pipe cover is required to avoid certain utility conflicts and provide adequate bury at ditches, and adjust the pipeline profile accordingly to maintain a continuous grade.

7-09.3(7) Trench Excavation

Delete the third paragraph under this section and replace it with the following:

The length of trench excavation in advance of pipe laying shall be kept to a maximum of 100 feet. Excavation shall either be closed up at the end of the day or protected per Section 1-07.23(1).

Supplement this section with the following:

The Contractor shall neatly sawcut all areas of existing pavement within the trench excavation area, then remove and haul all waste materials from the project and dispose of at an approved site provided by the Contractor. Should any undermining occur on adjacent pavement, the Contractor shall neatly cut the pavement six (6) inches beyond the undermined area.

All trench excavations shall have adequate safety systems for the trench excavation that meet the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. The Contractor shall be fully responsible for providing the necessary back sloping, cribbing, trench boxes, etc., as required to meet the specified safety requirements for the trench. When City crews will be making the main line taps or other work in the trench, the Contractor shall provide all trench safety measures, prior to City personnel entering the trench.

7-09.3(9) Bedding the Pipe

Supplement this section with the following:

All construction work shall be inspected by the City or its representative before pipe installation and backfilling.

7-09.3(11) Compaction of Backfill

Delete the second paragraph and supplement this section with the following:

Mechanical compaction shall be required for all trenches. The Contractor shall provide the services of a City-approved soils testing laboratory to conduct materials testing to determine the maximum compaction values and in-place density tests of the compacted materials used for backfilling trenches to ensure their placement is in compliance with the Contract Documents. An advance copy of any and all results obtained by the independent testing laboratory onsite shall be given to the City prior to the laboratory representative leaving the site.

The density of the compacted material shall be at least 95% of the maximum density as determined by ASTM D1557 (Modified Proctor). Density tests shall be taken at various depths in the trench. All costs associated with testing shall be the responsibility of the Contractor. Placement of courses of aggregate shall not proceed until density requirements have been met.

The first 500 feet of trench backfill operations shall be considered a test section for the Contractor to demo backfilling and compaction techniques. The Contractor shall notify the City at least 3 working days prior to beginning trench excavation and backfill operations. The Contractor shall arrange in-place density tests to be taken on the completed test section in accordance with the above requirements. No further trenching will be allowed until the specified density is achieved in the test section. Passing in-place density tests in the test section will not relieve the Contractor from achieving the specified densities throughout the project.

At locations where paved streets, roadway shoulders, driveways, or sidewalks will be constructed or reconstructed over the trench, the backfill shall be spread and compacted in layers to achieve specified density requirements throughout the trench depth, by means and methods as proposed by the Contractor.

7-09.3(13) Handling of Pipe

Supplement this section with the following:

Pipe shall be stacked in such a manner as to prevent damage to the pipe, to prevent dirt and debris from entering the pipe, and to prevent any movement of the pipe. Stacking layers shall be limited to the recommendations of the DIP Installation Guide.

Pipe shall not be strung across driveways, in ditches, or within 10 feet of the edge of the travel lane.

7-09.3(15)A Ductile Iron Pipe

Revise the first paragraph of this section to read:

Long radius curves, either horizontal or vertical, may be laid with standard pipe lengths by deflecting the joints. If the pipe is shown curved on the Plans and no special fittings are shown, the Contractor can assume that the curves can be made by deflecting the joints with standard lengths of pipe. If shorter lengths are required, the Plans will indicate maximum lengths that can be used. The amount of deflection at each pipe joint when pipe is laid on a horizontal or vertical curve shall not exceed one-half (1/2) of the manufacturer's printed recommended deflections. If the deflection required to maintain the line shown on the approved construction drawings exceeds ½ of the manufacturer's printed recommended deflection, then the Contractor shall utilize fittings to maintain the approved line. Additional labor and materials will be at the Developer's expense.

7-09.3(16) Cleaning and Assembling Joints

Supplement this section with the following:

All joints in the pipe, fittings, valves, flexible couplings, ductile iron sleeves, etc., shall be fully seated with small clearances allowed for pipe expansion. Where flexible couplings and ductile iron sleeves are called for, the space between pipe ends shall not exceed ¼ inch, to prevent pipe movement such as would possibly be caused by the resultant thrust of a nearby closed valve.

When the space between pipe ends is excessive, a short section (1″ to 2″) of pipe may be inserted as a spacer ting to limit such pipe movement within the coupling (or sleeve), to obtain the ¼ inch limitation stipulated herein.

7-09.3(19)A Connections to Existing Mains

Supplement this section with the following:

The location, type, and size of existing facilities have been determined from available records and are approximate. It is anticipated that connections can be made, in general, as shown on the Plans. It shall be the responsibility of the Contractor to determine the exact location and to ascertain the type and size of the existing facilities prior to starting work on each connection and to provide minor alteration as may be required at no additional cost to the City.

If the connection to the existing system involves turning off the water, the Contractor shall provide a minimum notice of five (5) working days to the City prior to scheduling the shutoff. The Contractor shall notify (i.e., by distributing door hangers) all water customers affected by a scheduled shutdown. The notices shall be hand delivered not less than 48 hours nor more than 72 hours before the scheduled shutdown. The City will advise the Contractor which property owners are to be notified, and provide door hangers that the Contractor will be required to hang on each residential or commercial service location. No service shall be shut down for more than four (4) hours per day without prior approval of the City.

The Contractor shall maintain service in the existing facilities at each connection until such time that the connection is actually made. Final connection will be permitted under the supervision of the City after receiving satisfactory water quality tests, and a continuous safe supply of water is available through the new facilities.

The Contractor shall furnish, install and remove all temporary plugs, caps, blowoffs, temporary blocking, and all other items of a temporary nature required to construct the proposed facilities up to the point of connections for the pressure and purity tests.

The anticipated schedule for the connections shall be discussed and scheduled at the preconstruction conference and indicated on the weekly schedule. The City reserves the right to adjust the schedule of the connections, as required, subject to a minimum of 24-hour notice of schedule change to the Contractor. No connections will be scheduled for the first working day after a weekend or holiday.

7-09.3(19)B Maintaining Service

Supplement this section with the following:

No City-owned utility service will be allowed to be shutdown for more than four (4) hours per day without prior City approval.

7-09.3(20) Detectable Marking Tape

Delete this section and replace it with the following:

Detectable marking tape and tracer wire shall be installed over all water lines, including service lines. The tape shall be placed approximately 18 inches above the tope of the line and shall extend its full length. Care must be taken to ensure that the marking tape shall be continuous and unbroken during the backfill process. The tracer wire shall be fastened to the top of the pipe with duct tape at 6-foot intervals and shall be routed up into valve and meter boxes with adequate length for connection to location equipment.

7-09.3(21) Concrete Thrust Blocking

Supplement this section with the following:

Thrust blocks shall be formed and placed in conformance with the City of Okanogan Standard Details for the appropriate size and fitting type.

All fittings requiring a thrust block or anchor concrete block shall first be covered with 4 mil visqueen plastic sheets before concrete is placed. At no time shall the concrete be allowed to cover pipe joints, bolt heads, or nuts.

The poured in place concrete thrust and/or anchor blocks shall be in place at least 24 hours before beginning the pressure test to allow the concrete to set. Longer durations may be required to ensure adequate curing has been established to conduct the necessary testing.

7-09.3(22) Blowoff Assemblies

Delete all paragraphs in this section and replace with the following:

Blowoff assemblies shall be constructed at the locations shown on the Plans and in accordance with the City of Okanogan Standard Details.

All permanent dead-end lines must end with a blowoff, unless there is a hydrant connection within the last 30 feet of the water main.

7-09.3(23) Hydrostatic Pressure Test

Delete the fifth paragraph and replace with the following:

> The test shall be accomplished by pumping the main up to the required test pressure and closing a valve between the pump and the main. The main shall be pumped back up to the required test pressure at 15-minute intervals. The test shall be conducted for a period of two hours. During the test, the section being tested shall be observed to detect any visible leakage.

Delete the ninth paragraph and replace with the following:

> There shall not be an appreciable or abrupt loss in pressure during the 2-hour test period.

Supplement this section with the following:

> Testing pressure against closed butterfly valves shall not exceed 150 psi differential between upstream and downstream pressures.
>
> All water service lines shall be installed prior to testing the main lines.

7-09.3(24) Disinfection of Water Mains

Supplement this section with the following:

> AWWA Standard C651 shall be used as a guideline for disinfecting water mains.

7-09.3(24)A Flushing

Supplement this section with the following:

> The Contractor shall check the downstream capacity of the drainage system proposed to facilitate disposal of flushing water prior to starting the flushing process.
>
> The City will furnish the water necessary to fill and flush the pipelines for testing purposes at a time of day when sufficient quantities of water are available for normal system operation.
>
> The Contractor shall monitor the rate of disposal to prevent flooding of any areas downstream of the Contractor flushing operations.

All service lines shall be flushed prior to connecting the meters.

7-09.3(24)J Preventing Reverse Flow

Supplement this section with the following:

The configuration of the installation of an approved backflow prevention device shall be submitted to the City for review and approval prior to the installation and used of the device and making the connection.

7-09.3(24)K Retention Period

Revise this section to read as follows

Treated water shall be retained in the pipe at least 24 hours but not more than 48 hours. After the 24-hour period, the chlorine residual at pipe extremities and at other representative points shall be at least 25mg/l.

7-09.3(24)N Final Flushing and Testing

Delete the third paragraph and replace with the following:

Before placing the line into service, a satisfactory report shall be received on samples collected from representative points in the new system. Samples will be collected and bacteriological tests obtained by the City.

Supplement this section with the following:

All water mains shall be flushed within 48 hours of chlorination. No flushing will be allowed on weekends or on holidays. The City shall be notified by the Contractor a minimum of 48 hours in advance of any flushing or flow testing.

7-09.3(24)O Repetition of Flushing and Testing

Supplement this section with the following:

The Contractor shall be responsible for payment of all repeat bacteriological testing. Testing shall not be cause for claims for delay by the Contractor and all expenses accruing therefrom shall be borne by the Contractor. Retesting and reinspection required because of defective work and testing performed for the convenience of the Contractor shall be paid by the Contractor.

7-09.3(25) Temporary Blowoff Assemblies (New Section)

Any temporary blowoff assemblies required for the project shall be furnished and installed by the Contractor at no expense to the City. Blowoffs shall be sized to provide a minimum pipe flow (scouring velocity) of 2.5 feet per second. Only brass plugs will be allowed to be utilized to plug pipelines where these temporary facilities were installed.

7-12 VALVES FOR WATER MAINS

7-12.2 Materials

Supplement this section with the following:

Gate Valves: All valves sizes 4-inch through 12-inch diameter shall be resilient seat, wedge disc, gate valves with ductile iron bodies and shall conform to the latest revision of AWWA Resilient Seated Gate Valves Standard C515 or AWWA C509. All valves shall have non-rising stems, open counterclockwise, and shall be provided with a 2-inch square AWWA operating nut. Valves shall have all interior and exterior surfaces epoxy coated meeting NSF standards for potable water. Valves shall be Clow, Mueller, or approved equal.

Butterfly Valves: All valves 16-inch diameter and larger shall be butterfly valves suitable for direct burial and shall be rubber seated and conform to the latest revision of AWWA Standard C504 Class 150B. All valves shall open counterclockwise and shall be provided with a 2-inch square AWWA operating nut. Valves shall have all interior and exterior surfaces epoxy coated meeting NSF standards for potable water.

Valve Boxes: Valve boxes shall be two-piece adjustable, cast iron, 5-inch inside diameter, coal-tar epoxy painted, Olympic Foundry model 940, or approved equal. Cover shall have the word “WATER” cast into it.

Valve Marker Posts: Valve marker posts shall be Carsonite fiberglass composite CRM3-060 with flexible anchor barb, APWA blue.

Combination Air Release/Air Vacuum Valves: Valves shall meet the requirements of AWWA C512 and shall be APCO 140 series of Val-Matic VM-200 series, or approved equal.

Tapping Sleeve and Valve Assembly: Tapping sleeves shall be full circle stainless steel with ductile iron flanged outlet, conforming to the latest AWWA Standard C223. Tapping gate valves shall meet the requirements for Gate Valves in Section 7-12.2. The following stainless steel tapping sleeves are approved for use: Ford FAST style, Romac Model SST III.

7-12.3 Construction Requirements

Supplement this section with the following

The required field inspection shall include operating the valve over the full range of opening to closed to ensure the valve firmly seals and fully clears the flow path.

The ears of the valve box cover shall be aligned along the pipe centerline.

The Contractor performing taps for tapping sleeve and valve assemblies shall have at least five (5) years' experience with a minimum of ten (10) water main taps with diameters equal to or larger than that specified. The Contractor shall notify the City at least 72 hours prior to proposed taps and provide work experience references if requested. Work to complete the tap shall not commence without the City's written approval. If the Contractor does not have sufficient experience, in the sole opinion of the City, a qualified subcontractor as approved by the City shall complete the tap at no cost to the City.

7-14 HYDRANTS

7-14.2 Materials

Supplement this section with the following:

All hydrants shall be dry-barrel, compression type, with a Main Valve Opening (MVO) of 5-1/4″ and suitable for working pressures up to 250 psi meeting the requirements of AWWA C502. Hydrants shall have a 1-1/2″ pentagonal operating nut, opening counter-clockwise. Hydrants shall be equipped with two 2-1/2″ NST hose ports and one 4 1/2″ NST pumper connection. A permanent anodized short profile style Storz hydrant adapter and anodized Storz blind flange shall be installed on the pumper port. The size of the adapter shall be 4 inches. Fire hydrants shall be Mueller Super Centurion 250 model A-423, or approved equal.

7-14.3(1) Setting Hydrants

Delete the first two paragraphs and replace with the following:

Where shown on the Plans, hydrants shall be installed in accordance with the City's Standard Detail. In addition, a minimum 3-foot radius unobstructed working area shall be provided around all hydrants. The safety flange shall be set 3 inches above finished grade.

All hydrants shall be set on concrete blocks as shown on the City's Standard Detail. The hydrant barrel drain shall waste into a pit of porous gravel materials situated at the base of the hydrant as shown on the City's Standard Detail.

Supplement this section with the following:

The Contractor shall furnish fire hydrants with the correct bury depth (trench depth), in accordance with the specified pipe depth and special conditions of the project. The fire hydrants shall be installed to provide the mounting height above finished grade as shown on the plans. The hydrant shall be installed plumb on the vertical axis.

Hydrants shall be equipped with one Storz pumper nozzle. The pumper port shall be turned to face the street.

After installation, each hydrant shall receive two field coats of paint. The first coat shall be thoroughly dried before applying the second coat. The exact colors shall be per the City's current standards.

7-14.3(2) Hydrant Connections

Replace this section with the following:

Fire hydrant laterals where hydrants are located within 50 feet of the water main shall be a minimum diameter of 6 inches. Fire hydrant laterals where hydrants are located beyond 50 of the water main shall be a minimum diameter of 8 inches, or larger as necessary to achieve required fire flows. Each hydrant lateral shall include an isolation valve set vertically at the water main connection point. The valve size shall equal the hydrant lateral diameter. Where hydrant runs are in excess of 50 feet an additional auxiliary gate valve shall be installed just prior to the hydrant location.

7-14.3(2)A Hydrant Restraints

Replace this section with the following:

The thrust created in the hydrant lateral shall be restrained as shown on the City Standard Detail.

7-14.3(2)C Hydrant Guard Posts

Replace this section with the following:

The City may determine that up to four (4) 6-inch diameter Schedule 40 steel guard posts filled with concrete are required to be installed at a hydrant location. Hydrant guard posts shall be painted with two coats of high visibility yellow paint.

7-15 SERVICE CONNECTIONS

7-15.1 Description

Replace this section with the following:

All new water service lines shall be a minimum of 1-inch, for 5/8″ x 3/4″ and 1″ meters, and shall be a minimum of 2-inch for 1 1/2- and 2-inch meters. The Developer/Contractor shall furnish and install all water service components (except water meter) from the water main to the property line including service saddle, corporation stop, service pipe, meter stop, meter check valve, customer piping, meter setter and box, all at the Developer's expense. Only one meter shall be served from each main tap.

7-15.2 Materials

Supplement this section with the following:

All fittings shall be lead free.

Saddles: Service saddles shall be stainless steel, female iron pipe thread outlet, and shall be Style 101S (3/4- and 1-inch services) and Style 202S (2-inch services) as manufactured by Romac Industries, Inc., or approved equal.

Corporation Stops: Corporation stops shall be ball type, made of either bronze or brass alloy, as manufactured by Mueller Co., Ford Meter Box Co., Inc., or approved equal.

Service Pipe: HDPE tubing for water service shall meet the requirements of AWWA C901. Tubing shall be high molecular mass with a 250 psi rating. Tubing shall be SDR 9 copper tubing size. Stainless steel liners shall be used when utilizing compression fittings on HDPE tubing.

Service Fittings: Fittings shall be brass, either compression or stab type. Stab type fittings shall utilize an internal grip ring and O-ring seal.

Meter: Meters will be furnished by the City of Okanogan.

5/8″ x 3/4″ Meter Installations: Meter boxes shall be Mueller Thermal-Coil meter box as manufactured by Mueller Company, or approved equal. Meter box shall be 15-inch diameter, 48-inch deep, bottomless, and equipped with a 15-inch flat lid (touch-read register capable) with side mounted key lock and 4-inch thick insulating pad. Traffic rated lids and frames shall be provided for installations subject to traffic, including installations located in roads, alleys, and driveways. Meter box inlet shall be lockwing angle meter stop with a dual check valve outlet.

1″ Meter Installations: Meter boxes shall be Mueller Thermal-Coil meter box as manufactured by Mueller Company, or approved equal. Meter box shall be 18-inch diameter, 48-inch deep, bottomless, and equipped with an 18-inch flat lid (touch-read register capable) with side mounted key lock and 4-inch thick insulating pad. Traffic rated lids and frames shall be provided for installations subject to traffic, including installations located in roads, alleys, and driveways. Meter box inlet shall be lockwing angle meter stop with a dual check valve outlet.

7-15.3 Construction Requirements

Delete the first paragraph and first sentence of the second paragraph in this section and supplement this section with the following:

Service connections shall be constructed at the locations shown on the plans and in accordance with the City Standard Details.

The Contractor shall set the water meter box to the finished grade of the area, typically flush with the top back of sidewalk. The Contractor will be required to reset the meter box if it is not at finished grade at the completion of the project. The completed water service shall be tested at system operating pressure by the Contractor and must show no signs of leakage.

The location of water services at the property line or easement line shall be marked. Fiberglass markers may be proposed for approval consideration by the City. The fresh concrete curb above all water service lines shall be stamped on the curb face with a 2″ high “W”.

Service saddle shall not be placed within one (1) foot of pipe joint, couplings, or other clamps without approval from the City.

No joints are allowed between the corporation stop and the angle meter stop.

All pipe and fittings shall be left exposed until they have been inspected by the City and approval is given for backfilling.

CHAPTER 6

SANITARY SEWER SYSTEM IMPROVEMENTS

GENERAL REQUIREMENTS FOR SANITARY SEWER SYSTEM IMPROVEMENTS

All extensions and additions to the City of Okanogan's sanitary sewer system shall conform to the Design and Construction Standards of the City of Okanogan, the Washington State Department of Ecology, and be designed by a Civil Engineer licensed by the State of Washington.

All sanitary sewer improvements shall be design in accordance with the Washington State Department of Ecology's Criteria for Sewage Works Design.

All new lots and developments shall be served by a public sanitary sewer line adjacent to the lot or development site.

Sewer lines shall be extended by the Developer to the point where the adjoining property owner's responsibility for further extension begins. This typically requires an extension across the entire frontage of the property to the property line of the adjoining owner. In some cases, it will require dedication of an easement and a line extension across the property or extension across two or more sides of the developing property. Extensions will be consistent with and implement the City's adopted General Sewer Plan, including alignments, sizes, and depths necessary to serve future areas within the Urban Growth Area (UGA) boundary.

Sewer lines shall be located in streets to serve abutting properties. Lines located in streets will be offset from the street centerline and not located within a vehicle wheel path. When necessary, sewer lines may be located within public easements, see CHAPTER 1. Sewer lines located in easements shall generally be located in the center of the easement, but may, with the approval of the City, be offset to accommodate the installation of other utilities or to satisfy special circumstances.

The minimum size for public sewer lines is eight (8) inches in diameter. The Developer's sewer system must provide capacity for the proposed development but must also provide capacity for future extensions consistent with the General Sewer Plan.

Manholes shall be installed at intervals of no greater than 400 feet and at all vertical and horizontal angle points in the sewer main. Curved or deflected pipelines will not be permitted. Sewer lines shall be terminated with a manhole. In special circumstances, a flush-end (cleanout) may be installed on the end of a sewer main extensions, provided the

end is no further than 150 feet from the last manhole and the sewer main line and grade will permit further extension.

Sewer mains generally should not exceed a slope of 5%, unless site constraints require steeper slopes. Should the sewer main slope exceed 5%, the Developer's Engineer shall provide calculations to determine if energy dissipaters and/or pipe restraints are necessary. The City will make the final determination if dissipaters and restraints are required. Sewer mains with a slope of 20% or greater shall be secured with concrete anchors, with spacing requirements determined by the City.

All new sewer line installations shall be satisfactorily tested and inspected per Section 7-17 prior to being placed into service including low pressure air and deflection testing, and television inspection, all at the expense of the Developer.

Each building containing sanitary sewer facilities shall be served by an independent side sewer line. Branched side sewers serving multiple buildings and properties shall not be permitted. A single side sewer serving multi-unit buildings is permitted with approval from the City.

Sewer services to residential single-family lots shall be 4-inch diameter, and commercial properties shall be a minimum of 6-inch diameter.

Side sewers shall be installed in accordance with these Construction Standards and as shown on the City Standard Details. Water service and side sewer service lines shall not be laid in the same trench, except if approved materials (those listed in Section 7-17.2 of the Standard Specifications for Road, Bridge, and Municipal Construction) are used and the following requirements are met:

1. The bottom of the water pipe shall not be less than 12 inches above the top of the sewer or drain pipe.
2. The water pipe shall be place on a solid shelf excavated at one side of the common trench with a clear horizontal distance of not less than 12 inches from the sewer or drain line.

Side sewers shall extend 10-feet beyond the right-of-way and the pipe shall be capped and marked for future connection. Side sewers shall be located a minimum of 10-feet from water services and on the low side of the lot.

Sewer lines shall be designed for gravity flow operation and in accordance with the General Sewer Plan.

Sewer force mains may be necessary in specific City locations as determined by the City Engineer. Lift stations and force mains shall be limited to those locations and circumstances where they are consistent with the General Sewer Plan and are the only

viable solution to serve the proposed development and other properties in the vicinity. Lift stations and force mains shall be designed by a Professional Engineer licensed in the State of Washington in accordance with the direction and requirements given by the City, for review and approval by the City. Hydraulic analysis including modelling shall be performed by the Developer's Engineer as determined necessary by the City.

The design of sewer mains and appurtenances is subject to review and approval by the City. The City may, at their discretion, adjust these Design and Construction Standards as necessary to facilitate installation of sewer lines and appurtenances for the health, safety, and protection of the general public.

SPECIAL PROVISIONS FOR SANITARY SEWER SYSTEM IMPROVEMENTS

The following sections of the WSDOT Standard Specifications have been amended or supplemented as described below and apply to the construction of public works sewer system improvements within the City of Okanogan.

7-05 MANHOLES, INLETS, CATCH BASINS, AND DRYWELLS

7-05.2 Materials

Supplement this section with the following:

Manholes: Sanitary sewer manholes shall be constructed of 48-inch or larger diameter reinforced precast concrete manhole sections in conformance with the requirements of this Section. The base and first barrel section shall be precast monolithically with preformed channels. Precast components shall conform to the requirements of ASTM C478.

Standard precast base sections shall conform to the requirements for precast riser sections. The base shall be a minimum of 6 inches thick underneath the pipe invert for 48-inch diameter manholes and a minimum of 8 inches thick underneath the pipe invert for 60- and 72-inch diameter manholes. Openings for pipe shall be circular and tapered toward the inside of the section. Openings shall be of the minimum size possible to accommodate the size of the pipe to be inserted and to effectively seal the joint, unless otherwise shown on the plans. Precast base sections shall have a minimum foot base diameter of 12 inches greater than the outside diameter of the riser sections.

The taper section (cone) for 48-inch diameter manholes shall be eccentric, tapering from 48 inches inside diameter to 24 inches inside diameter and shall be between 24- and 36-inches high. Joining to the riser sections shall be similar to joining between riser sections, but the top surface shall be flat and at least 5 inches wide, radially, to receive grade rings.

Top slabs, where applicable, shall be a minimum of 8 inches thick.

Grade rings above the taper section, or top slab, where applicable, shall be 24-inches inside diameter and 4 inches high.

Rubber gaskets for use in precast manhole sections shall conform to the applicable requirements of AASHTO M198.

Pipe connections shall be as shown on the Standard Details.

Frames and Covers: Castings for rings shall be gray iron conforming to the requirements of ASTM A48/AASHTO M105, Grade 35B. Covers shall be ductile iron conforming to ASTM A536, Grade 80-55-06. All castings shall be of uniform quality, free from blowholes, porosity, shrinkage, distortion, cracks, or other defects. All mating surfaces shall be machined finished to ensure a non-rocking fit. All covers shall be interchangeable and marked "SEWER". All castings shall have a design wheel load conforming to AASHTO design loading H-20 and shall be made by Olympic Foundry, Inc., D&L Foundry, East Jordan Iron Works, Neenah Foundry, or approved equal.

Steps: Polypropylene manhole steps shall be made of a copolymer polypropylene meeting the requirements of ASTM D4101 and shall completely encapsulate a deformed 1/2-inch steel reinforcing rod conforming to ASTM A615, Grade 60. Polypropylene steps shall be factory installed in complete accordance with the manufacturer's instructions. This shall be accomplished by pre-drilling two parallel 1-inch diameter holes, 3 3/4 inch deep, and 13 inches on center in the cured concrete base and riser sections of the manhole. The insertion ends of the step shall be fully coated with a non-shrink epoxy grout then driven into the holes to the prescribed depth. In no case will the pre-drilled hole be allowed to penetrate through the wall of the manhole. Steps shall be Lane International Corporation Manhole Step, or approved equal.

7-05.3 Construction Requirements

Supplement this section with the following:

The design and construction of all manholes shall provide for a 0.10-foot vertical drop through the manhole.

7-05.3(1) Adjusting Manholes and Catch Basins to Grade

Delete this section and replace with the following:

Manholes, valve boxes, catch basins, and similar utility appurtenances and structures shall not be adjusted until the pavement is completed, at which time the center of each structure shall be relocated from references previously established by the Contractor. All existing manhole castings shall be replaced with new castings at time of adjustment.

The asphalt concrete pavement shall be cut and removed to a neat circle to a diameter of 36 inches centered around the cover. The frame shall be placed on cement concrete blocks or adjustment rings and brought up to the desired grade. A tack coat of asphalt shall be applied to the edges of the asphalt concrete pavement and the outer edge of the casting. HMA Cl. 3/8″ asphalt concrete shall then be placed and compacted with hand tampers and a patching roller.

The completed patch shall match the existing paved surface for texture, density, and uniformity of grade. The joint between the asphalt patch and the existing pavement shall then be sealed with emulsified asphalt and shall be immediately covered with dry paving sand before the tack has broken.

Utility appurtenances outside paved areas shall be adjusted to match the finish grade of the area surrounding the structure. The utility cover shall be cleaned of all concrete prior to acceptance.

7-05.3(2) Abandon Existing Manholes

Replace this section with the following:

Where shown on the Plans, existing sanitary sewer manholes shall be abandoned in place after the new sanitary sewer collection system is in place and all side sewers have been transferred to the new sanitary sewer pipeline.

At least the top three feet of each manhole, or the top conical section in precast concrete manholes, shall be removed, including the cast iron ring and cover and concrete pad, if any. Debris resulting from breaking of the upper portion of the manhole may be mixed with backfill subject to the approval of the City. Ring and cover shall become the property of the City and all other surplus material shall be disposed of by the Contractor.

The existing pipe openings shall be plugged watertight with Class 3000 concrete and the manhole bottom slabs shall be crushed to promote drainage. The remaining manhole structure shall be backfilled with granular material

conforming to Section 9-03.9(3) Crushed Surfacing Base Course. Place backfill in uniform layers and compact to 95% maximum dry density, as determined by ASTM D 1557.

Excavations resulting from manhole abandonment shall be backfilled with suitable, job-excavated material to top of subgrade. Compact to 95% maximum dry density, as determined by ASTM D1557. Restore surface to the condition existing prior to excavation with native material, gravel surfacing, or asphalt concrete pavement, as show for trench repair on the Plans.

7-17 SANITARY SEWERS

7-17.1 Description

Supplement this section with the following:

The term "sewer(s)" and "sanitary sewer(s)" shall mean the same.

7-17.2 Materials

Supplement this section with the following:

Pipe approved for use shall be as follows:

PVC Sanitary Sewer Pipe (Gravity): Solid wall PVC sanitary sewer pipe and fittings with flexible gasketed joints shall conform to the requirements of Section 9-05.12(1) of the Standard Specifications (ASTM D3034, SDR 35 for pipe sizes up to 15 inches in diameter, and SDR 26 for all sewer pipe with any portion of the sewer main greater than 12 feet of cover).

PVC fittings for PVC sanitary sewer pipe such as tees, wyes, elbows, plugs, caps, etc., shall be flexible gasket joint fittings acceptable for use and connection to solid wall PVC sanitary sewer pipe.

Transition Couplings: Couplings shall be longitudinally bolted with gasketed joints and fusion bonded epoxy lined and coated. Approved manufacturers include Romac, Ford, and Smith-Blair.

Detectable Marking Tape: Underground marking tape shall be a minimum of six inches in width, detectable marking tape, with a minimum of 5.0 mil overall thickness. Tape shall be manufactured using a 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a 0.35 mil solid aluminum foil core, and then laminated to a 3.75 mil clear virgin polyethylene film. Tape shall be printed diagonally striped design for maximum visibility, and meet the APWA Color-

Code standard for identification of buried utilities. Detectable marking tape shall be Pro-Line Safety Products, or approved equal.

7-17.3(1) Protection of Existing Sewerage Facilities

Supplement this section with the following:

When connecting to an existing system, the downstream system shall be protected from construction debris by placing a SRECO, UEMSI or equal metal stove pipe with a 90^0 bend sand trap, the same diameter as the sewer main, in the invert of the first existing manhole downstream of the connection. It shall be the Contractor's responsibility to maintain this trap until the new system is placed in service and then to remove it. Any construction debris, excavation or backfill material which enters the existing downstream system shall be removed. When the first manhole is set, the outlet shall be plugged until the entire system is accepted by the City.

7-17.3(2) Cleaning and Testing

7-17.3(2)A General

Delete the first paragraph and replace it with the following:

All sewer pipes and appurtenances shall be cleaned and low-pressure air tested after backfilling. Both infiltration (if applicable) and exfiltration testing of the gravity sewer pipeline will be required. Deflection testing of the pipeline may be required should video inspection review identify any irregularities or concerns at the discretion of the City.

All testing shall be performed by the Contractor and witnessed by the City.

Supplement this section with the following:

The Contractor shall keep the pipeline clean and free of debris. The pipeline shall be cleaned prior to the Contractor requesting inspections.

7-17.3(2)F Low Pressure Air Test for Sanitary Sewers Constructed of Non Air Permeable Materials

Supplement this section with the following:

The pipe installation shall be tested with low pressure air immediately following cleaning and flushing. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 4.0 psi greater than the average

back pressure of any ground water that may submerge the pipe. At least two minutes shall be allowed for temperature stabilization before proceeding further. After the internal air temperature stabilizes, the pressure in the pipe shall be bled down to 3-1/2 psi above the average back pressure of groundwater above the centerline of the pipe. The Contractor shall be responsible for coordinating and providing for rerouting existing sewage flow around the test area as necessary.

7-17.3(2)H Television Inspection

Delete the first paragraph and replace it with the following:

The costs incurred in making the initial inspection shall be borne by the Contractor.

Supplement this section with the following:

All recordings shall be in color and in DVD format, playable on standard DVD players. Television inspection shall begin at the downstream manhole and end at the next upstream manhole. The camera speed shall not exceed one-half (1/2) foot per second. A pivot head camera shall be used with detailed inspection of all laterals showing the entire lateral with a 360-degree pan around the opening. Panning of each lateral shall be a minimum of 15 seconds.

The Contractor shall add colored dye that contrasts with the pipe color and clean water to the cleaned sewer line before television inspection. The recording shall be free from static and a minimum distance of 10 feet shall be clearly visible in front of the camera.

All recordings shall show on the screen the correct time and date of the inspection, the name of the camera operator, the manhole numbers being inspected, an accurate footage count, and all lateral locations using a 12-hour clock position.

All inspections shall be performed by Pipeline Assessment and Certification Program (PACP) trained personnel. The Contractor shall provide a copy of the inspection, with all appurtenant written logs, within 24 hours of the inspection.

See Section 7-08.3(2) B for invert elevation confirmation and measuring device specifications.

7-18 SIDE SEWERS

7-18.3 Construction Requirements

7-18.3(1) General

Supplement this section with the following:

Side sewers shall be a minimum of four (4) inches in diameter. Larger sizes, if required, will be approved by the City on a case-by-case basis.

Side sewers shall be constructed with a minimum of 30 inches of cover. The City may way this provision under special circumstances; however, under no circumstances shall the side sewer be laid with less than 18 inches of cover.

The fresh concrete curb above all side sewer laterals shall be stamped on the curb face with a 2″ high "S".

7-20 SEWER FORCE MAINS (NEW SECTION)

The following new section is added to the Standard Specifications:

7-20.1 Description

This work shall consist of constructing sewer force mains in accordance with the Plans and Standard Specifications.

7-20.2 Materials

Materials shall meet the requirements of section 7-09 Water Mains of the Standard Specifications except as follows:

Pipe for Main Line:

Polyvinyl Chloride (PVC) Pressure Pipe (4 inches and over): PVC pipe shall conform to the requirements of Section 9-30.1(5)A of the Standard Specifications. Joints outside of casing shall be rubber gasket, push-on type (TYTON JOINT®) with thickened bell. Joints within casing shall be restrained using mechanical restraints, FIELD LOK 350® gaskets as manufactured by U.S. Pipe, or approved equal.

Ductile Iron Pipe: Ductile iron pipe shall conform to the requirements of Section 9-05.13 of the Standard Specifications, except that it shall be Standard Thickness Class 52. Joints shall be rubber gasket, push-on type (TYTON JOINT®).

Fittings shall be mechanical joint or flanged, as shown on the Plans, and shall conform to Section 9-30.2(1) of the Standard Specifications. Flange gaskets shall be full face. Pipe shall be polyethylene or epoxy lined to a nominal thickness of 40 mils. Minimum lining thickness shall be 30 mils. Products meeting the standard are U.S. Pipe's PROTECTO 401™, or approved equal.

High Density Polyethylene Pipe (HDPE): HDPE pipe shall be butt welded PE 4710 conforming to ASTM D3350 having a cell classification of PE 445574C or better. HDPE pipe shall be ductile iron pipe size (DIPS). HDPE pipe thickness shall be minimum DR 11.

7-20.3 Construction Requirements

7-20.3(2) Laying Pipe

Sewer force main installation shall conform to the requirements of Section 7-08 General Pipe Installation Requirements of the Standard Specifications or as modified by these Special Provisions.

7-20.3(23) Hydrostatic Pressure Test

Testing shall be consistent with the water main hydrostatic pressure test standards and special provisions of Section 7-09.3(23) with the exception that the test pressure shall be 100 psi.

CHAPTER 7

STORMWATER IMPROVEMENTS

GENERAL REQUIREMENTS FOR STORMWATER IMPROVEMENTS

All extensions and additions to the City of Okanogan's storm sewer system shall conform to the Design and Construction Standards of the City of Okanogan, the Washington State Department of Ecology, and be designed by a Civil Engineer licensed by the State of Washington. Private systems, where required by applicable provisions of the Okanogan Municipal Code, shall also comply with these requirements.

All stormwater and drainage improvements shall be planned, design, permitted, constructed and maintained in accordance with the requirements of the latest edition of the Washington State Department of Ecology Stormwater Management Manual for Eastern Washington (SWMMEW).

All new storm drainage facilities, public or private, shall be designed by a Civil Engineer licensed in the State of Washington. Complete stormwater runoff and drainage facilities sizing calculations shall be submitted to the City for review and comment. Storm sewer facilities and pipelines shall be designed to meet a minimum 25-year storm criteria, and both the long-duration and short-duration storms shall be considered in the design.

All storm runoff occurring on all new lots and developments (private property) shall be retained and disposed of on-site. No private storm runoff will be permitted to enter public right-of-way or the public storm sewer system. The property owner shall maintain all stormwater Best Management Practices (BMPs) that are installed on private property.

Where existing stormwater from adjacent properties enters the proposed site, the Developer shall be responsible for including the additional stormwater in the proposed system including retention and treatment as applicable.

Storm runoff for new public streets shall be designed and constructed as required to the point where the adjoining property owner's responsibility for further extension begins. This typically requires an extension across the entire frontage of the property to the property line of the adjoining owner.

All storm sewer designs for new public streets shall be based upon an engineering analysis by the Developer's Consultant that considers total drainage areas, runoff rates, pipe and inlet capacities, treatment capacity, and any other factors pertinent to the design.

All illicit discharges as defined by the Washington State Department of Ecology are not permitted to enter any storm sewer system.

Infiltration ponds, swales, or other surface infiltration facilities will not be acceptable within City right-of-way without City approval.

All subsurface infiltration facilities used for the treatment and disposal of stormwater shall meet the requirements of and be registered with the Ecology Underground Injection Control (UIC) program. Developer/Applicant must register UIC wells with Ecology in the applicant's name, 60 days prior to construction as required by Ecology. The Developer/Applicant shall only submit the latest approved City of Okanogan standards to Ecology. Attempts to gain approval for non-compliant infrastructure will result in the Developer/Applicant resubmitting the approved facilities at their expense and may result in delays. Following construction completion and at the time of public improvements certification, the Developer/Applicant shall process an ownership transfer request with Ecology, to transition UIC ownership to the City of Okanogan.

Inlet spacing shall be designed in accordance with the WSDOT Hydraulics Manual, Chapter 5. Generally, inlet spacing shall not exceed 300 feet. There shall be a manhole or Type II catch basin installed at the intersection of two collector storm sewers. A collector storm sewer is a sewer servicing more than one catch basin. Stormwater flow shall be kept in the gutter and shall flow across intersections. Catch basin "bubble up" installations will not be permitted.

Catch basins and inlets shall be located at the ends of curb returns or at property lines between lots. Catch basins and inlets shall not be located within driveways, driveway transitions, or pedestrian ramps.

All public stormwater pipes or culverts shall be a minimum of 12 inches in diameter. Pipes shall have a minimum slope of 0.5% and be designed with a minimum velocity of 3 feet per second. Pipes shall be sized so that they do not surcharge under design storm conditions.

Manholes shall be installed at all vertical and horizontal angle points in the stormwater pipes, and at intervals of no greater than 400 feet. Curved or deflected pipelines will not be permitted. All stormwater manholes with solid lids shall have a channeled base and all catch basin manholes with grated lids shall have a sump.

The applicant's project may require coverage under Ecology's Construction Stormwater General NPDES Permit or similar permit issued by the Environmental Protection Agency. The Developer shall be responsible for compliance with the stormwater permit conditions and shall provide the City with a copy of the approved Notice of Intent (NOI), Stormwater Pollution Prevention Plan (SWPPP), or Erosivity Waiver Certification, as applicable.

A temporary erosion and sedimentation control (TESC) plan shall be included with all plan submittals and should show how existing storm systems and adjacent properties will be protected from storm runoff.

SPECIAL PROVISIONS FOR STORMWATER IMPROVEMENTS

The following sections of the WSDOT Standard Specifications have been amended or supplemented as described below and apply to the construction of public works storm sewer or drainage improvements within the City of Okanogan.

7-02 CULVERTS

7-02.2 Materials

Supplement this section with the following:

Culvert pipe approved for use shall be as follows:

Aluminum Culvert Pipe: Aluminum Culvert Pipe shall meet the requirements of Section 9-05.5 of the Standard Specifications.

Steel Culvert Pipe: Steel Culvert Pipe shall meet the requirements of Section 9-05.4 of the Standard Specifications, treatment 2 galvanized steel or plain aluminized steel.

7-04 STORM SEWERS

7-04.1 Description

Supplement this section with the following:

The term “storm drain(s)” shall mean the same as storm sewer(s).

7-04.2 Materials

Supplement this section with the following:

Storm sewer (drain) pipe approved for use shall be as follows:

12-INCH TO 24-INCH

Solid Wall PVC Storm Sewer Pipe: Solid Wall PVC Storm Sewer Pipe shall meet the requirements of Section 9-05.12(1) of the Standard Specifications. Pipe and fittings shall be furnished with bells and spigots, which are integral with the pipe wall and with a rubber gasket securely locked in place in the bell.

UNDERDRAIN INFILTRATION SYSTEM MATERIALS

Pipe: Perforated Corrugated Polyethylene Underdrain pipe, couplings, and fittings shall meet the requirements of Section 9-05.2(8) of the Standard Specifications.

Drain Rock: Drain rock for use as backfill for the perforated underdrain pipe in the infiltration trench system shall be clean coarse aggregate conforming to the requirements of Gravel Backfill for Drywells, as specified in Section 9-03.12(5) of the Standard Specifications.

Construction Geotextile: Geotextile fabric for underground infiltration systems shall be non-woven fiber pore size 0-13mm, maximum water permeability 0.05 cm/sec, minimum grab strength 100 lbs, minimum fabric toughness 10,000 lbs, and meeting the requirements of ASTM D1682.

7-04.3(1) Cleaning and Testing

7-04.3(1)A General

Supplement this section with the following:

All storm piping shall have television inspection. The costs incurred in making the initial inspection shall be borne by the Contractor.

The Contractor shall bear all costs incurred in correcting any deficiencies found during television inspection including the cost of any additional television

inspection that may be required by the Engineer to verify the correction of said deficiency.

The Contractor shall be responsible for all costs incurred in any television inspection performed solely for the benefit of the Contractor.

All recordings shall be in color and in DVD format, playable on standard DVD players. Television inspection shall begin at the downstream manhole and end at the next upstream manhole. The camera speed shall not exceed one-half (1/2) foot per second. A pivot head camera shall be used with detailed inspection of all laterals showing the entire lateral with a 360-degree pan around the opening. Panning of each lateral shall be a minimum of 15 seconds.

The Contractor shall add colored dye that contrasts with the pipe color and clean water to the cleaned sewer line before television inspection. The recording shall be free from static and a minimum distance of 10 feet shall be clearly visible in front of the camera.

All recordings shall show on the screen the correct time and date of the inspection, the name of the camera operator, the manhole numbers being inspected, an accurate footage count, and all lateral locations using a 12-hour clock position.

All inspections shall be performed by Pipeline Assessment and Certification Program (PACP) trained personnel. The Contractor shall provide a copy of the inspection, with all appurtenant written logs, within 24 hours of the inspection.

See Section 7-08.3(2) B for invert elevation confirmation and measuring device specifications.

7-05 MANHOLES, INLETS, CATCH BASINS, AND DRYWELLS

7-05.2 Materials

Supplement this section with the following:

Drain Rock: Backfill for drywells shall be Gravel Backfill for Drywells as specified in Section 9-03.12(5) of the Standard Specifications.

Precast Concrete Catch Basin: Catch basins shall be WSDOT Type 1, 1L, or 2 and constructed as shown on WSDOT Standard Plans.

Catch Basin Metal Castings: All frames and grates shall be capable of withstanding, with a reasonable margin of safety, a concentrated load of 20,000

pounds and shall be as specified in Section 9-05.15(2) of the Standard Specifications and WSDOT Standard Plan B-30.30-03 or B-30.40-03, or B-30.80-01 (circular for manholes). The grate shall be ductile iron and "bicycle safe." The contact surfaces of the frame and grate shall be machine finished to a common plane and shall be so cast as to prevent rocking.

Frames and Covers: Castings for rings shall be gray iron conforming to the requirements of ASTM A48/AASHTO M105, Grade 35B. Covers shall be ductile iron conforming to ASTM A536, Grade 80-55-06. All castings shall be of uniform quality, free from blowholes, porosity, shrinkage, distortion, cracks, or other defects. All mating surfaces shall be machined finished to ensure a non-rocking fit. All covers shall be interchangeable and marked "STORM". All castings shall have a design wheel load conforming to AASHTO design loading H-20 and shall be made by Olympic Foundry, Inc., D&L Foundry, East Jordan Iron Works, Neenah Foundry, or approved equal.

7-05.3(1) Adjusting Manholes and Catch Basins to Grade

Delete and replace with the following:

Manholes, valve boxes, catch basins, and similar utility appurtenances and structures shall not be adjusted until the pavement is completed, at which time the center of each structure shall be relocated from references previously established by the Contractor.

The asphalt concrete pavement shall be cut and removed to a neat circle, the diameter of which shall be equal to the outside diameter of frame plus 2 feet. The frame shall be placed on cement concrete blocks or adjustment rings and wedged up to the desired grade. The base materials shall be removed and Class 3000 cement concrete shall be placed within the entire volume of the excavation up to, but not to exceed, 1 1/2 inches below the finished pavement surface.

On the following day, a tack coat of asphalt shall be applied to the concrete, the edges of the asphalt concrete pavement, and the outer edge of the casting. HMA Cl. 3/8-inch asphalt concrete shall then be placed and compacted with hand tampers and a patching roller.

The completed patch shall match the existing paved surface for texture, density, and uniformity of grade. The joint between the asphalt patch and the existing pavement shall then be sealed with emulsified asphalt and shall be immediately covered with dry paving sand before the tack is broken.

Utility appurtenances outside paved areas shall be adjusted to match the finish grade of the area surrounding the structure. The utility cover shall be cleaned of all concrete prior to acceptance.

7-05.3(2) Abandon Existing Manholes

Delete and replace with the following:

Where shown on the Plans, existing sanitary sewer manholes shall be abandoned in place after the new sanitary sewer collection system is in place and all side sewers have been transferred to the new sanitary sewer pipeline. Remove the structure to a depth of at least four feet below the finish ground surface, plug all connections with concrete, and fill the remaining structure with crushed surfacing top course. Rings and covers shall be salvaged to the City, at the City's discretion, and all surplus excavated materials shall be hauled to waste.

CHAPTER 8

STREET IMPROVEMENTS

GENERAL REQUIREMENTS FOR STREET IMPROVEMENTS

All new street design and construction shall conform to the Design and Construction Standards of the City of Okanogan, the Manual on Uniform Traffic Control Devices, the Okanogan Municipal Code, and the latest edition of the Standard Specifications.

The maximum cul-de-sac length shall be 600 feet as measured along the street centerline from the nearest street intersection to the center of the cul-de-sac.

Cement concrete curb and gutter shall be installed along all new streets. Rolled curb may be permitted along certain residential streets as determined by the City. If rolled curb is allowed, barrier curb must be installed around all new radii. New concrete sidewalks behind rolled curb shall be a minimum of 6 inches thick.

Sidewalks shall be constructed on both sides of all new streets. If the Developer believes there are special circumstances whereby the construction of sidewalk on one side should be deferred, he may make written request to the City.

A street light shall be installed at each street intersection, one at mid-block, no more than three hundred feet apart, and at ends of cul-de-sacs. Street lights shall meet the design and placement these Standards and the City.

New street lighting shall be designed to provide required levels of lighting based upon street classification and location as determined by the City. All electrical panels will be designed to City Standards.

TRAFFIC STUDIES

In order to provide sufficient information to assess a development's impact on the transportation system and level of service, the City may require a traffic study to be completed by the Developer at the Developer's expense. This decision will be based upon the size of the proposed development, existing roadway condition, existing and expected traffic volumes, accident history, expressed community concern, and other factors relating to transportation.

Traffic studies shall be conducted under the direction of a traffic engineer or civil engineer licensed in the State of Washington and possessing special training and experience in traffic engineering. The level of detail and scope of the traffic study may vary with the size, complexity, and location of the proposed development. A traffic study

shall, at a minimum, be a thorough review of the immediate and long-range effects of the proposed development on the City's transportation system. Guidelines for the traffic study shall be reviewed by the City on a project basis.

At a minimum, a traffic study shall include the following:

- Description of development (location, current and proposed land use and zoning, lot size and description, any proposed project phasing) AM, PM, and daily trip generation. If the highest number of trips generated by the development in a 1-hour period occurs outside the typical AM or PM periods, then the peak hour of the generator trips shall be presented, in addition to the typical peak period trips.
- Other factors affecting trip generation (pass-by trips, diverted trips, internal trips, etc.
- Site plan review (access locations; bike/pedestrian/vehicle circulation; parking evaluation)
- Inventory of existing transportation network (bike, pedestrian, vehicular, transit)
- Trip distribution
- Surrounding area land uses and zoning
- Existing conditions (traffic counts collected within previous 12 months)
- No build conditions – future year of opening (using background growth and project trips)
- Build conditions – future year of opening
- Mitigation measures, as required (off-site, such as proportionate share of infrastructure improvements; on-site, such as traffic management plan or parking management plan)
- Safety analysis (crash data for all study intersections from last 5 years; discussion on crash trends; recommendations for safety improvements

SPECIAL PROVISIONS FOR STREET IMPROVEMENTS

The following sections of the WSDOT Standard Specifications have been amended or supplemented as described below.

2-01 CLEARING, GRUBBING, AND ROADSIDE CLEANUP

2-01.1 Description

Supplement this section with the following:

In no case shall the Contractor be required to clear and grub beyond the right-of-way line, except as specifically directed by the City or noted on the Plans to

remove trees, stumps, shrubs, or other items which, by proximity or due to root growth, would constitute a hazard to the public or endanger the facility. All work beyond the right-of-way line shall be coordinated with affected property owner(s) per Section 1-07.24 Rights of Way.

The Contractor shall temporarily remove and later replace to its original condition or relocate nearby as directed, all mail boxes, small trees, shrubs, street signs and posts, culverts, irrigation facilities, concrete or rock walls, or other similar obstructions which lie in or near the line of work and are not intended for removal. Should any damage be incurred, the cost of replacement or repair shall be borne by the Contractor.

2-01.3(5) Fencing (New Section)

Add the following new section:

The Contractor shall carefully remove existing fencing located within or near the work, as required for construction. All fencing materials to be removed and reset shall be temporarily place on the adjacent properties or stored as directed by the City. Fencing shall be reset along the property lines or as directed by the City. The removal and resetting of all fencing shall be done at the Contractor's expense.

2-02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

2-02.3 Construction Requirements

2-02.3(2) Removal of Bridges, Box Culverts, and Other Drainage Structures

Supplement this section with the following:

Where structures or installations of concrete, brick, blocks, etc., interfere with the construction, they shall be removed and any pipe openings shall be properly plugged watertight with Class 3000 concrete, or with mortar and masonry, blocks, or brick. The removal and plugging of pipes shall be considered as incidental to the construction and costs thereof shall be included in other items of work.

Where the structures are removed, the voids shall be backfilled with suitable, job-excavated material and compacted, and such work shall be considered as incidental to the removal work. If the City determines the job-excavated material to be unsuitable for backfill, the Contractor shall place ballast or crushed surfacing material as directed by the City.

2-02.3(3) Removal of Pavement, Sidewalks, Curbs, and Gutters

Supplement this section with the following:

Where shown on the Plans or as directed by the City, the Contractor shall be required to remove existing pavement, sidewalks, curbs, gutters, etc., which are outside the right-of-way line and are required to be removed for construction of the proposed improvements.

In those areas where asphalt pavement removal is required, the Contractor shall, prior to excavation, score the edge of the asphalt concrete pavement with an approved pavement cutter such as a concrete saw. During the course of the work, the Contractor shall take precautions to preserve the integrity of this neat, clean pavement edge. Should the pavement edge be damaged prior to asphalt concrete paving activities, the Contractor shall be required to trim the edge with an approved pavement cutter as directed by the City immediately prior to paving. Sidewalk and/or curb and gutter removal shall be from construction joint to joint. No partial sidewalk panels or curb and gutter sections will be allowed.

2-03 ROADWAY EXCAVATION AND EMBANKMENT

2-03.1 Description

Supplement this section with the following:

Street excavation shall consist of removing the existing material encountered to the subgrade elevation and shaping the subgrade to conform to the cross-section shown on the Plans or as staked in the field.

Where directed by the Consultant, the Contractor shall excavate beyond the right-of-way in order to adequately slope adjacent properties.

The City will reference all known existing monuments or markers relating to subdivisions, plats, roads, street centerline intersections, etc. The Contractor shall take special care to protect these monuments or markers and reference points. In the event the Contractor is negligent in preserving such monuments and markers, the points will be reset by a licensed surveyor at the Contractor's expense.

2-03.3 Construction Requirements

2-03.3(3) Excavation Below Subgrade

Supplement this section with the following:

At the direction of the Consultant, areas within the street subgrade which exhibit instability due to high moisture content shall be:

1. Aerated and allowed to dry,
2. Over-excavated and backfilled with ballast, or crushed surfacing base course. The Contractor may be instructed to install construction geotextile for soil stabilization in the excavation,
3. Or a combination of any of the above.

2-03.3(14)D Compaction and Moisture Control Tests

Delete this section and replace it with the following:

Compaction shall be 95% of maximum density as determined by ASTM D 1557 (Modified Proctor). The Contractor shall notify the City when ready for in-place subgrade density tests. Placement of courses of aggregate shall not proceed until density requirements are met. The Developer/Contractor shall be responsible for scheduling and paying for all testing. All costs associated with failed tests/testing shall be the responsibility of the Contractor.

If the product fails any test, the City will require additional testing to determine the extent of the failure and more frequent tests may be required on additional work. Testing shall be in accordance with Section 1-06.2(1).

2-07 WATERING

2-07.1 Description

Supplement this section with the following:

The Contractor shall be solely responsible for dust control on the Developer's project and shall protect motoring public, adjacent homes and businesses, orchards, crops, and school yards from damage due to dust, by whatever means necessary. The Contractor shall be responsible for any claims for damages and shall protect the City, Okanogan County, and Consultant from any and all such claims.

When directed by the City, the Contractor shall provide water for dust control within two hours of such order and have equipment and manpower available at all times including weekends and holidays to respond to orders for dust control measures. Should the Contractor fail to comply within two hours, the City may utilize its own staff at the prevailing staff wage rate plus equipment rental charges, and/or contracted watering services. The Contractor will be responsible for reimbursement of all dust control costs including labor, equipment, water, and contractor costs. Subsequent building permits will not be processed until reimbursement is paid in total.

2-11 TRIMMING AND CLEANUP

2-11.3 Construction Requirements

Add the following to the first paragraph:

7. Restore all grass area affected by construction with sod and in accordance with these Standards.
8. Restore all landscaping rock, mulch, and bark with the same materials as existed prior to construction.
9. Restore all shoulders, from edge of pavement to right of way line, with the same material as existed prior to construction, except that earth shoulders shall be restored with 2 inches of compacted crushed surfacing top course.
10. Restore the site and offsite areas damaged by the work to their original conditions or better and to the satisfaction of the City and the adjoining homeowners.

4-04 BALLAST AND CRUSHED SURFACING

4-04.3 Construction Requirements

4-04.3(5) Shaping and Compaction

Supplement this section with the following:

The Contractor shall notify the City when he is ready for in-place ballast, base course, or top course density tests. Placement of successive courses of aggregate or asphalt concrete shall not proceed until density requirements are met. The Developer/Contractor shall be responsible for scheduling and paying for all testing. All costs associated with failed tests/testing shall be the responsibility of the Contractor.

5-04 HOT MIX ASPHALT

Delete this entire section with the exception of 5-04.2(1), and replace it with the following:

5-04.1 Description

This Work shall consist of providing and placing one or more layers of plant-mixed hot mix asphalt (HMA) on a prepared foundation or base in accordance with these Specifications and the lines, grades, thicknesses, and typical cross-sections shown in the Plans. The manufacture of HMA may include warm mix asphalt (WMA) processes in accordance with these Specifications. WMA processes include organic additives, chemical additives, and foaming.

HMA shall be composed of asphalt binder and mineral materials as may be required, mixed in the proportions specified to provide a homogeneous, stable, and workable mixture.

5-04.2 Materials

Materials shall meet the requirements of the following sections:

Asphalt Binder	9-02.1(4)
Cationic Emulsified Asphalt	9-02.1(6)
Anti-Stripping Additive	9-02.4
HMA Additive	9-02.5
Aggregates	9-03.8
Recycled Asphalt Pavement	9-03.8(3)B
Mineral Filler	9-03.8(5)
Recycled Material	9-03.21
Portland Cement	9-01
Sand	9-03.1(2)
(As noted in 5-04.3(5)C for crack sealing)	
Joint Sealant	9-04.2
Foam Backer Rod	9-04.2(3)A

The Contractor may choose to utilize recycled asphalt pavement (RAP) in the production of HMA. The RAP may be from pavements removed under the Contract, if any, or pavement material from an existing stockpile.

The Contractor may use up to 20 percent RAP by total weight of HMA with no additional sampling or testing of the RAP. The RAP shall be sampled and tested at a frequency of one sample for every 1,000 tons produced and not less than ten samples per project. The asphalt content and gradation test data shall be reported

to the Contracting Agency when submitting the mix design for approval on the QPL. The Contractor shall include the RAP as part of the mix design as defined in these Specifications.

The grade of asphalt binder shall be PB 64S-28. Blending of asphalt binder from different sources is not permitted.

The Contractor may only use warm mix asphalt (WMA) processes in the production of HMA with 20 percent or less RAP by total weight of HMA. The Contractor shall submit to the Engineer for approval the process that is proposed and how it will be used in the manufacture of HMA.

Production of aggregates shall comply with the requirements of Section 3-01.

Preparation of stockpile site, the stockpiling of aggregates, and the removal of aggregates from stockpiles shall comply with the requirements of Section 3-02.

5-04.2(1) How to Get an HMA Mix Design on the QPL

If the Contractor wishes to submit a mix design for inclusion in the Qualified Products List (QPL), please follow the WSDOT process outlined in Standard Specifications 5-04.2(1).

5-04.2(2) Mix Design – Obtaining Project Approval

No paving shall begin prior to the approval of the mix design by the Engineer.

Nonstatistical evaluation will be used for all HMA not designated as Commercial HMA in the contract documents.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores, prelevel, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Project Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Project Engineer. The Proposal quantity of HMA that is accepted by commercial evaluation will be excluded from the quantities used in the determination of nonstatistical evaluation.

Nonstatistical Mix Design. Fifteen days prior to the first day of paving the contractor shall provide one of the following mix design verification certifications for Contracting Agency review:

- The WSDOT Mix Design Evaluation Report from the current WSDOT QPL, or one of the mix design verification certifications listed below.

- The proposed HMA mix design on WSDOT Form 350-042 with the seal and certification (stamp & signature) of a valid licensed Washington State Professional Engineer.

- The Mix Design Report for the proposed HMA mix design developed by a qualified City or County laboratory that is within one year of the approval date.

The mix design shall be performed by a lab accredited by a national authority such as Laboratory Accreditation Bureau, L-A-B for Construction Materials Testing, The Construction Materials Engineering Council (CMEC's) ISO 17025 or AASHTO Accreditation Program (AAP) and shall supply evidence of participation in the AASHTO resource proficiency sample program.

Mix designs for HMA accepted by Nonstatistical evaluation shall:

- Have the aggregate structure and asphalt binder content determined in accordance with WSDOT Standard Operating Procedure 732 and meet the requirements of Sections 9-03.8(2), except that Hamburg testing for ruts and stripping are at the discretion of the Engineer, and 9-03.8(6).

- Have anti-strip requirements, if any, for the proposed mix design determined in accordance with AASHTO T 283 or T 324, or based on historic anti-strip and aggregate source compatibility from previous WSDOT lab testing.

At the discretion of the Engineer, agencies may accept verified mix designs older than 12 months from the original verification date with a certification from the Contractor that the materials and sources are the same as those shown on the original mix design.

Commercial Evaluation Approval of a mix design for "Commercial Evaluation" will be based on a review of the Contractor's submittal of WSDOT Form 350-042 (For commercial mixes, AASHTO T 324 evaluation is not required) or a Mix Design from the current WSDOT QPL or from one of the processes allowed by this section. Testing of the HMA by the Contracting Agency for mix design approval is not required.

For Commercial HMA, the Contractor shall select a class of HMA and design level of Equivalent Single Axle Loads (ESAL's) appropriate for he required use.

5-04.2(2)A Vacant

5-04.2(2)B Using Warm Mix Asphalt Processes

The Contractor may elect to use additives that reduce the optimum mixing temperature or serve as a compaction aid for producing HMA. Additives include organic additives, chemical additives and foaming processes. The use of Additives is subject to the following:

- Do not use additives that reduce the mixing temperature more than allowed in Section 5-04.3(6) in the production of mixtures.

- Before using additives, obtain the Engineer's approval using WSDOT Form 350-076 to describe the proposed additive and process.

5-04.3 CONSTRUCTION REQUIREMENTS

5-04.3(1) Weather Limitations

HMA shall not be placed on any traveled way beginning October 1st through March 31st of the following year without written approval from the Engineer.

Asphalt for prime coat shall not be applied when the ground temperature is lower than 50^0F without written approval of the Engineer.

Do not place HMA on any wet surface, or when the average surface temperatures are less than those specified below, or when weather conditions otherwise prevent the proper handling or finishing of the HMA.

Minimum Surface Temperature for Paving

Compacted Thickness (Feet)	Wearing Course	Other Courses
Less than 0.10	55 degrees F	45 degrees F
0.10 to .20	45 degrees F	35 degrees F
More than 0.20	35 degrees F	35 degrees F

5-04.3(2) Paving Under Traffic

When the Roadway being paved is open to traffic, the requirements of this Section shall apply.

The Contractor shall keep intersections open to traffic at all times except when paving the intersection or paving across the intersection. During such time, and

provided that there has been an advance warning to the public, the intersection may be closed for the minimum time required to place and compact the mixture. In hot weather, the Engineer may require the application of water to the pavement to accelerate the finish rolling of the pavement and to shorten the time required before reopening to traffic.

Before closing an intersection, advance warning signs shall be placed and signs shall also be placed marking the detour or alternate route.

During paving operations, temporary pavement markings shall be maintained throughout the project. Temporary pavement markings shall be installed on the Roadway prior to opening to traffic. Temporary pavement markings shall be in accordance with Section 8-23.

5-04.3(3) Equipment

5-04.3(3)A Mixing Plant

Plants used for the preparation of HMA shall conform to the following requirements:

1. **Equipment for Preparation of Asphalt Binder** – Tanks for the storage of asphalt binder shall be equipped to heat and hold the material at the required temperatures. The heating shall be accomplished by steam coils, electricity, or other approved means so that no flame shall be in contact with the storage tank. The circulating system for the asphalt binder shall be designed to ensure proper and continuous circulation during the operating period. A valve for the purpose of sampling the asphalt binder shall be placed in either the storage tank or in the supply line to the mixer.

2. **Thermometric Equipment** – An armored thermometer, capable of detecting temperature ranges expected in the HMA mix, shall be fixed in the asphalt binder feed line at a location near the charging valve at the mixer unit. The thermometer location shall be convenient and safe for access by Inspectors. The plant shall also be equipped with an approved dial-scale thermometer, a mercury actuated thermometer, an electric pyrometer, or another approved thermometric instrument placed at the discharge chute of the drier to automatically register or indicate the temperature of the heated aggregates. This device shall be in full view of the plant operator.

3. **Heating of Asphalt Binder** – The temperature of the asphalt binder shall not exceed the maximum recommended by the asphalt binder manufacturer nor shall it be below the minimum temperature required to maintain the asphalt binder in a homogeneous state. The asphalt binder shall be heated in a manner that will avoid local variations in heating. The heating method shall provide a continuous supply of asphalt binder to the mixer at a uniform average temperature with no individual variations exceeding 25 degrees F. Also, when a WMA additive is included in the asphalt binder, the temperature of the asphalt binder shall not exceed the maximum recommended by the manufacturer of the WMA additive.

4. **Sampling and Testing of Mineral Materials** – The HMA plant shall be equipped with a mechanical sampler for the sampling of the mineral materials. The mechanical sampler shall meet the requirements of Section 1-05.6 for the crushing and screening operation. The Contractor shall provide for the setup and operation of the field-testing facilities of the Contracting Agency as provided for in Section 3-01.2(2).

5. **Sampling HMA** – The HMA plant shall provide for sampling HMA by one of the following methods:

    a. A mechanical sampling device attached to the HMA plant.

    b. Platforms or devices to enable sampling from the hauling vehicle without entering the hauling vehicle.

5-04.3(3)B Hauling Equipment

Trucks used for hauling HMA shall have tight, clean, smooth metal beds and shall have a cover of canvas or other suitable material of sufficient size to protect the mixture from adverse weather. Whenever the weather conditions during the work shift include, or are forecast to include, precipitation or an air temperature less than 45 degrees F or when time from loading to unloading exceeds 30 minutes, the cover shall be securely attached to protect the HMA.

The Contractor shall provide an environmentally benign means to prevent the HMA mixture from adhering to the hauling equipment. Excess release agent shall be drained prior to filling hauling equipment with HMA. Petroleum derivatives or other coating material that contaminate or alter the characteristics of the HMA shall not be used. For live bed trucks, the conveyer shall be in operation during the process of applying the release agent.

Sufficient numbers of trucks shall be provided by the Contractor to assure a continuous paving operation at proper HMA mix temperatures. Paving operations shall not proceed until hauling equipment sufficient to assure continuous operations is provided.

5-04.3(3)C Pavers

HMA pavers shall be self-contained, power-propelled units, provided with an internally heated vibratory screed and shall be capable of spreading and finishing courses of HMA plant mix material in lane widths required by the paving section shown in the Plans.

The HMA paver shall be in good condition and shall have the most current equipment available from the manufacturer for the prevention of segregation of the HMA mixture installed, in good condition, and in working order. The equipment certification shall list the make, model, and year of the paver and any equipment that has been retrofitted.

The screed shall be operated in accordance with the manufacturer's recommendations and shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, segregating, or gouging the mixture. A copy of the manufacturer's recommendations shall be provided upon request by the Contracting Agency. Extensions will be allowed provided they produce the same results, including ride, density, and surface texture as obtained by the primary screed. Extensions without augers and an internally heated vibratory screed shall not be used in the Traveled Way.

If the paving machine in use is not providing the required finish, the Engineer may suspend Work as allowed by Section 1-08.6. Any cleaning or solvent type liquids spilled on the pavement shall be thoroughly removed before paving proceeds.

5-04.3(3)D Vacant

5-04.3(3)E Rollers

Rollers shall be of the steel wheel, vibratory, oscillatory, or pneumatic tire type, in good condition and capable of reversing without backlash. Operation of the roller shall be in accordance with the manufacturer's recommendations. When ordered by the Engineer for any roller planned for use on the project, the Contractor shall provide a copy of the manufacturer's recommendation for the use of that roller for compaction of HMA. The number and weight of rollers shall be sufficient to compact the mixture in compliance with the requirements of Section 5-04.3(10). The use of equipment that results in crushing of the aggregate will not be

permitted. Rollers producing pickup, washboard, uneven compaction of the surface, displacement of the mixture or other undesirable results shall not be used.

5-04.3(4) Preparation of Treated Surfaces for HMA

A treated surface includes cement concrete, asphalt concrete, brick, seal coat, bituminous surface treatment and cement treated base. When the treated surface or old base is irregular, the Contractor shall bring it to a uniform grade and cross-section as shown on the Plans or approved by the Engineer.

Preleveling of uneven or broken treated surfaces over which HMA is to be placed may be accomplished by using an asphalt paver, a motor patrol grader, or by hand raking, as approved by the Engineer.

Compaction of preleveling HMA shall be to the satisfaction of the Engineer and may require the use of small steel wheel rollers, plate compactors, or pneumatic rollers to avoid bridging across preleveled areas by the compaction equipment. Equipment used for the compaction of preleveling HMA shall be approved by the Engineer.

Before construction of HMA on an existing paved surface, the entire surface of the pavement shall be clean. All fatty asphalt patches, grease drippings, and other objectionable matter shall be entirely removed from the existing pavement.

All treated surfaces over which HMA is to be placed shall be thoroughly cleaned of dust, soil, pavement grindings, and other foreign matter. All holes and small depressions shall be filled with an appropriate class of HMA. The surface of the patched area shall be leveled and compacted thoroughly. Prior to the application of tack coat, or paving, the condition of the surface shall be approved by the Engineer.

A tack coat of asphalt shall be applied to all treated surfaces on which any course of HMA is to be placed or abutted. Tack coat shall be uniformly applied to cover the treated surface with a thin film of residual asphalt free of streaks and bare spots at a rate between 0.02 and 0.10 gallons per square yard of retained asphalt. The rate of application shall be approved by the Engineer. A heavy application of tack coat shall be applied to all joints. For Roadways open to traffic, the application of tack coat shall be limited to surfaces that will be paved during the same working shift. The spreading equipment shall be equipped with a thermometer to indicate the temperature of the tack coat material.

Equipment shall not operate on tacked surfaces until the tack has broken and cured. If the Contractor’s operation damages the tack coat it shall be repaired prior to placement of the HMA.

The tack coat shall be CSS-1, or CSS-1h emulsified asphalt. The CSS-1 and CSS-1h emulsified asphalt may be diluted once with water at a rate not to exceed one part water to one part emulsified asphalt. The tack coat shall have sufficient temperature such that it may be applied uniformly at the specified rate of application and shall not exceed the maximum temperature recommended by the emulsified asphalt manufacturer.

Overlays and Utility Patches

Edges of asphalt and curb edge shall be tack coated.

Prior to paving utility trenches, the edges of the trenches shall be saw-cut parallel to the center of the street leaving long straight edges. Should any undermining occur on existing adjacent pavement, the Contractor shall neatly cut the pavement 6 inches beyond the undermined area. The Engineer may waive all or a portion of the saw cutting requirement if the original street cut is straight and not damaged.

All utility patching and/or pre-leveling of damaged areas must be completed prior to overlay. A minimum depth of 2 inches is required for overlays.

5-04.3(4)A Vacant

5-04.3(4)B Soil Residual Herbicide

Contractor shall apply one application of an approved soil residual herbicide on areas where hot mix asphalt is applied. The requirements of Section 8-02.3(2)A shall apply to this application. The application of herbicide shall precede paving by no more than 24 hours.

5-04.3(4)C Pavement Repair

The Contractor shall excavate pavement repair areas and shall backfill these with HMA in accordance with the details shown in the Plans and as marked in the field. The Contractor shall conduct the excavation operations in a manner that will protect the pavement that is to remain. Pavement not designated to be removed that is damaged as a result of the Contractor's operations shall be repaired by the Contractor to the satisfaction of the Engineer at no cost to the Contracting Agency. The Contractor shall excavate only within one lane at a time unless approved otherwise by the Engineer. The Contractor shall not excavate more area than can be completely finished during the same shift, unless approved by the Engineer.

Excavated materials will become the property of the Contractor and shall be disposed of in a Contractor-provided site off the right-of-way or used in accordance with Sections 2-02.3(3) or 9-03.21.

Asphalt for tack coat shall be required as specified in Section 5-04.3(4). A heavy application of tack coat shall be applied to all surfaces of existing pavement in the pavement repair area.

After the completion of trench and patch repairs, the Contractor shall seal all joints with CSS-1 and dry paving sand.

5-04.3(5) Vacant

5-04.3(6) Vacant

5-04.3(7) Spreading and Finishing

The mixture shall be laid upon an approved surface, spread, and struck off to the grade and elevation established. HMA pavers complying with Section 5-04.3(3) shall be used to distribute the mixture. Unless otherwise directed by the Engineer, the nominal compacted depth of any layer of any course shall not exceed 0.30 feet.

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the paving may be done with other equipment or by hand.

5-04.3(8) Aggregate Acceptance Prior to Incorporation in HMA

For HMA accepted by nonstatistical evaluation the aggregate properties of sand equivalent, uncompacted void content and fracture will be evaluated in accordance with Section 3-04. Sampling and testing of aggregates for HMA accepted by commercial evaluation will be at the option of the Engineer.

5-04.3(9) HMA Mixture Acceptance

Acceptance of HMA shall be as provided under nonstatistical, or commercial evaluation.

Nonstatistical evaluation will be used for the acceptance of HMA unless Commercial Evaluation is specified.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches,

slopes, paths, trails, gores, prelevel, temporary pavement, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Engineer.

5-04.3(9)A Vacant

5-04.3(9)B Vacant

5-04.3(9)C Mixture Acceptance – Nonstatistical Evaluation

5-04.3(9)C1 Vacant

5-04.3(9)C2 Mixture Nonstatistical Evaluation Sampling

Samples for acceptance testing shall be obtained by the Contractor when ordered by the Engineer. The Contractor shall sample the HMA mixture in the presence of the Engineer and in accordance with AASHTO T 168. A minimum of three samples should be taken for each class of HMA placed on a project.

5-04.3(9)C3 Mixture Nonstatistical Evaluation – Acceptance Testing

Testing of HMA for compliance of V_a will at the option of the Contracting Agency. If tested, compliance of V_a will use WSDOT SOP 731.

Testing for compliance of asphalt binder content will be by WSDOT FOP for AASHTO T 308.

Testing for compliance of gradation will be by FOP for WAQTC T 27/T 11.

Testing costs shall be the responsibility of the Contractor.

The Contractor will furnish the Engineer with a copy of the results of all acceptance testing performed in the field.

5-04.3(10) HMA Compaction Acceptance

HMA mixture accepted by nonstatistical evaluation that is used in traffic lanes, including lanes for intersections, ramps, truck climbing, weaving, and speed change, and having a specified compacted course thickness greater than 0.10-foot, shall be compacted to a specified level of relative density. The specified level of relative density shall be a minimum of 92 percent of the maximum density. The maximum density shall be determined by WSDOT FOP for AASHTO T 729. The specified level of density attained will be determined by the evaluation of the

density of the pavement. The density of the pavement shall be determined in accordance with WSDOT FOP for WAQTC TM 8, except that gauge correlation will be at the discretion of the Engineer, when using the nuclear density gauge and WSDOT SOP 736 when using cores to determine density.

Tests for the determination of the pavement density will be taken in accordance with the required procedures for measurement by a nuclear density gauge or roadway cores after completion of the finish rolling. The test procedures FOP for WAQTC TM 8 and WSDOT SOP T 729 will be used on the day the mix is placed and prior to opening to traffic.

Two (2) density tests shall be taken within the first one hundred (100) tons of asphalt delivered to the site each day and one (1) every 100 tons thereafter for the remainder of the day. If the asphalt fails any test, the Engineer will require additional testing to determine the extent of the failure and more frequent tests may be required on additional asphalt. Testing and samples shall be in accordance with Section 1-06.2(1).

In addition to randomly selected density test locations, the City may also isolate any area that is suspected of being defective in relative density and may require additional testing at the Contractor's expense.

HMA for pre-leveling shall be thoroughly compacted. HMA that is used for pre-leveling wheel rutting shall be compacted with a pneumatic tire roller unless otherwise approved by the Engineer.

Test Results

HMA testing shall be pre-arranged and oil content results reported within two (2) hours of sampling. Initial reports may be by phone, subsequent written documents shall be submitted to the City prior to the next day's paving shift.

5-04.3(10)A HMA Compaction – General Compaction Requirements

Compaction shall take place when the mixture is in the proper condition so that no undue displacement, cracking, or shoving occurs. Areas inaccessible to large compaction equipment shall be compacted by other mechanical means. Any HMA that becomes loose, broken, contaminated, shows an excess or deficiency of asphalt, or is in any way defective, shall be removed and replaced with new hot mix that shall be immediately compacted to conform to the surrounding area.

The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor's option, provided the specified densities are attained. Unless the Engineer has approved otherwise, rollers shall

only be operated in the static mode when the internal temperature of the mix is less than 175 degrees F. Regardless of mix temperature, a roller shall not be operated in a mode that results in checking or cracking of the mat. Rollers shall only be operated in static mode on bridge decks.

5-04.3(11) Reject Work

5-04.3(11)A Reject Work General

Work that is defective or does not conform to requirements shall be rejected. The Contractor may propose, in writing, alternatives to removal and replacement of rejected material. Acceptability of such alternative proposals will be determined at the sole discretion of the Engineer. HMA that has been rejected is subject to the requirements in Section 1-06.2(2) and this specification, and the Contractor shall submit a corrective action proposal to the Engineer for approval.

5-04.3(11)B Rejection by Contractor

The Contractor may, prior to sampling, elect to remove any defective material and replace it with new material. Any such new material will be sampled, tested, and evaluated for acceptance.

5-04.3(12) Joints

5-04.3(12)A HMA Joints

5-04.3(12)A1 Transverse Joints

The Contractor shall conduct operations such that the placing of the top or wearing course is a continuous operation or as close to continuous as possible. Unscheduled transverse joints will be allowed and the roller may pass over the unprotected end of the freshly laid mixture only when the placement of the course must be discontinued for such a length of time that the mixture will cool below compaction temperature. When the Work is resumed, the previously compacted mixture shall be cut back to produce a slightly beveled edge for the full thickness of the course.

A temporary wedge of HMA constructed on a 20H:1V shall be constructed where a transverse joint as a result of paving or planing is open to traffic. The HMA in the temporary wedge shall be separated from the permanent HMA by strips of heavy wrapping paper or other methods approved by the Engineer. The wrapping paper shall be removed and the joint trimmed to a slightly beveled edge for the full thickness of the course prior to resumption of paving.

The material that is cut away shall be wasted and new mix shall be laid against the cut. Rollers or tamping irons shall be used to seal the joint.

5-04.3(12)A2 Longitudinal Joints

The longitudinal joint in any one course shall be offset from the course immediately below by not more than 6 inches nor less than 2 inches. All longitudinal joints constructed in the wearing course shall be located at a lane line or an edge line of the Traveled Way. A notched wedge joint shall be constructed along all longitudinal joints in the wearing surface of new HMA unless otherwise approved by the Engineer. The notched wedge joint shall have a vertical edge of not less than the maximum aggregate size or more than ½ of the compacted lift thickness and then taper down on a slope not steeper than 4H:1V. The sloped portion of the HMA notched wedge joint shall be uniformly compacted.

All joints shall be hand raked prior to rolling. The final joint shall be straight, level with the abutting edge, free of coarse material at the surface, and neat in appearance. The Contractor shall use panel widths that minimize longitudinal pavement joints.

5-04.3(12)B Vacant

5-04.3(13) Surface Smoothness

The completed surface of all courses shall be of uniform texture, smooth, uniform as to crown and grade, and free from defects of all kinds. The completed surface of the wearing course shall not vary more than 1/8 inch from the lower edge of a 10-foot straightedge placed on the surface parallel to centerline. The transverse slope of the completed surface of the wearing course shall vary not more than 1/4 inch in 10 feet from the rate of transverse slope shown in the Plans.

When deviations in excess of the above tolerances are found that result from a high place in the HMA, the pavement surface shall be corrected by one of the following methods:

1. Removal of material from high places by grinding with an approved grinding machine; or
2. Removal and replacement of the wearing course of HMA; or
3. By other method approved by the Engineer.

Correction of defects shall be carried out until there are no deviations anywhere greater than the allowable tolerances.

5-04.3(14) Planing Bituminous Pavement

Plane in such a manner that the underlying pavement is not torn, broken, or otherwise damaged by the planing operation. The finished planed surface must be slightly grooved or roughened and must be free from gouges, deep grooves, ridges, or other imperfections. Delamination or raveling of the underlying pavement will not be construed as damage due to the Contractor's operations. Pavement outside the planing limits designated by the Engineer that is damaged by the Contractor's operations shall be repaired to the satisfaction of the Engineer at no additional cost to the Contracting Agency.

For mainline planing operations, use equipment with automatic controls and with sensors. The controls shall be capable of sensing the grade from an outside reference line, or a mat-referencing device. The automatic controls shall have a transverse slope controller capable of maintaining the mandrel at the desired transverse slope (expressed as a percentage) within plus or minus 0.1 percent.

Remove all loose debris from the planed surface before opening the planed surface to traffic. The planings and other debris resulting from the planing operation shall become the property of the Contractor and be disposed of in accordance with Section 2-03.3(7)C.

The finished product must be a prepared surface acceptable for receiving an HMA overlay.

5-04.3(14)A Paving and Planing Under Traffic

5-04.3(14)A1 General

In addition, the requirements of Section 1-07.23 and the traffic controls required in Section 1-10, and unless the Engineer approves, the Contractor must comply with the following:

1. Intersections

    a. Keep intersections open to traffic at all times, except when paving or planing operations through an intersection requires closure. Such closure must be kept to the minimum time required to place and compact the HMA mixture, or plane as appropriate. For paving, schedule such closure to individual lanes or portions thereof that allows the traffic volumes and schedule of traffic volumes required in the approved traffic control plan. Schedule work so that adjacent intersections are not impacted at the same time and comply with the traffic

control restrictions required by the Traffic Engineer. Each individual intersection closure or partial closure, must be addressed in the traffic control plan, which must be submitted to and accepted by the Engineer, see Section 1-10.2(2).

b. When planing or paving and related construction must occur in an intersection, consider scheduling and sequencing such work into quarters of the intersection, or half or more of an intersection with side street detours. Be prepared to sequence the work to individual lanes or portions thereof.

c. Should closure of the intersection in its entirety be necessary, and no trolley service is impacted, keep such closure to the minimum time required to place and compact the HMA mixture, plane, remove asphalt, tack coat, and as needed.

d. Any work in an intersection requires advance warning in both signage and a number of Working Days advance notice as determined by the Engineer, to alert traffic and emergency services of the intersection closure or partial closure.

e. Allow new compacted HMA asphalt to cool to ambient temperature before any traffic is allowed on it. Traffic is not allowed on newly placed asphalt until approval has been obtained from the Engineer.

2. Temporary centerline marking, post-paving temporary marking, temporary stop bars, and maintaining temporary pavement marking must comply with Section 8-23.

3. Permanent pavement marking must comply with Section 8-22.

4. Roadways Open to Traffic

When the roadway being paved is open to traffic, the following requirements shall apply:

The Contractor shall keep roadways open to traffic at all times except where paving is in progress. During such time, and provided that there has been an advance warning to the public, only that specified section of road being paved may be closed for the minimum time required to place and compact the HMA. Adjacent travel lanes and shoulder shall be left open for traffic during these times. In hot weather, the Engineer may require the application of water to the pavement to accelerate the finish rolling of the pavement and to shorten the time required before reopening to traffic.

Before temporarily closing a portion of the road, advance-warning signs shall be placed and signs shall also be placed clearly alerting the driver of temporary lane closures.

During paving operations, temporary pavement markings shall be maintained throughout the project. Temporary pavement markings shall be installed on the roadway prior to opening to traffic and shall be in accordance with Section 8-23.

6-02 CONCRETE STRUCTURES

6-02.3(14) Finishing Concrete Surfaces

Supplement this section with the following:

The completed surface shall be of uniform texture, smooth, uniform as to grade, and free from defects of all kinds. The completed surface shall not vary more than 1/8-inch from the lower edge of a 10-foot straightedge place on the surface parallel to the centerline.

The finish shall be a light broom finish, or as noted in the City of Okanogan Standard Plans, or as approved by the Engineer. A non-uniform broom finish, an overworked finish, a finish where a cement layer has formed, discolored, is spalling, or a finish damage by the weather, will not be accepted, and shall be replaced at the Contractor's expense.

8-04 CURBS, GUTTERS, AND SPILLWAYS

8-04.3 Construction Requirements

Supplement this section with the following:

Any curb and gutter damaged, defaced, cracked, chipped, or determined to be of poor workmanship, in the opinion of the Contracting Agency, shall be removed, wastehauled and replaced by the Contractor, at the Contractor's expense. Sacking and grinding shall not be considered an acceptable means for repairing unacceptable sections. The Contractor shall further provide verbal and written notice (door hangers) to property owners identifying restricted used of their walkways, sidewalks, etc. This notice must be provided twice: at 1 week prior and again 1 day prior to the work being performed.

8-06 CEMENT CONCRETE DRIVEWAY ENTRANCES

8-06.2 Materials

Supplement this section with the following:

Reinforcing Steel 9-07

8-06.3 Construction Requirements

Supplement this section with the following:

The driveway entrance shall be protected against damage or defacement of any kind until acceptance by the Contracting Agency. Any driveway entrance not acceptable, in the opinion of the Engineer, because of damage or defacement shall be removed, wastehauled, and replaced by the Contractor at the Contractor's expense. Sacking, grinding, or spot repair shall not be considered an acceptable means for repairing unacceptable sections.

8-13 MONUMENT CASES

8-13.1 Description

Delete this section and replace it with the following:

This work shall consist of furnishing and placing monument cases, covers, and pipes in accordance with the Standard Plans and these Specifications, in conformity with the lines shown on the plans.

8-13.2 Materials

Supplement this section with the following:

Pipe for monuments shall be Schedule 40 galvanized steel pipe. Caps shall be two-inch diameter brass caps.

8-13.3 Construction Requirements

8-13.3(1) Monument Case and Cover

The last paragraph of this section is revised to read:

> The monument, case, cover, pipe, and brass cap shall be furnished and set in concrete, adjusted and patched with concrete and hot mix asphalt by the Contractor.

8.14 CEMENT CONCRETE SIDEWALKS

8-14.3 Construction Requirements

Supplement this section with the following:

> Any sidewalk damaged, defaced, cracked, chipped, or determined to be of poor workmanship, in the opinion of the Contracting Agency, shall be removed, wastehauled and replaced by the Contractor, at the Contractor's expense. Damaged sidewalk shall be removed at a construction or expansion joint; sawcutting will not be allowed. Sacking, grinding, or spot repaired shall not be considered an acceptable means for repairing unacceptable sections. The Contractor shall further provide verbal and written notice (door hangers) to property owners abutting the project identifying restricted used of their walkways, sidewalks, etc. This notice must be provided twice: at 1 week prior and again 1 day prior to the work being performed.

8-22 PAVEMENT MARKING

8-22.1 Description

Supplement this section with the following:

> Pavement markings shall conform to this section and the latest edition and amendments thereto of the Manual on Uniform Traffic Control Devices (MUTCD) as adopted by the State of Washington, and shall be constructed as shown in the Plans, except as modified herein.
>
> This work includes temporary pavement markings as described in the Plans.
>
> The Contractor shall be responsible for all traffic control required to place and protect pavement marking material, as outlined in Sections 1-07.23 and 1-10 of the Standard Specifications and these specifications

8-22.2 Materials

Supplement this section with the following:

Plastic pavement marking materials shall be Type A – liquid hot applied thermoplastic.

Patents
The Contractor shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the work, and agrees to indemnify and save harmless the Contracting Agency and its duly authorized representatives from all suits of law or action of every nature for, or on account of, the use of any patented materials, equipment, devices, or processes.

Acceptance
The Contractor shall be responsible for supplying material that meets aforestated material and testing requirements. The Contractor shall supply certification that the pavement marking material meets the above specifications.



STANDARD DETAILS

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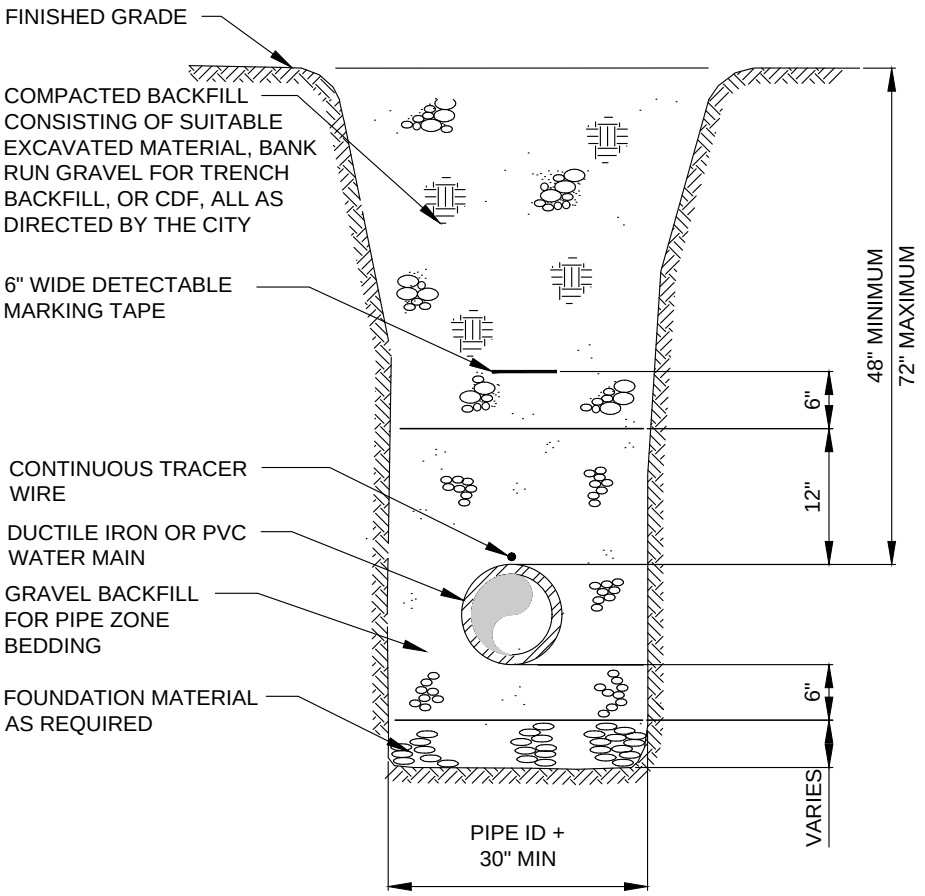
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SS-7	MANHOLE STEP
SS-8	CONNECTION TO EXISTING MANHOLE STRUCTURE
SS-9	STANDARD SIDE SEWER
SS-10	SANITARY SEWER CLEANOUT
SS-11	WATER TIGHT MANHOLE FRAME AND COVER
SS-12	COLLECTION SYSTEM PUMP STATION
SS-13	COLLECTION SYSTEM PUMP STATION SECTION
STORM DRAIN DETAILS	
SD-1	STORM DRAIN TRENCH SECTION
SD-2	CATCH BASIN TYPE 1
SD-3	CATCH BASIN TYPE 2
SD-4	DRYWELL
SD-5	STANDARD DRYWELL FRAME AND COVER
SD-6	INFILTRATION TRENCH
STREET DETAILS	
ST-1	TYPICAL ROADWAY SECTION
ST-2	TYPICAL CONCRETE SIDEWALK
ST-3	TYPICAL CURB AND GUTTER
ST-4	CONCRETE DRIVEWAY ENTRANCE OPTION A
ST-5	CONCRETE DRIVEWAY ENTRANCE OPTION B
ST-6	PARALLEL SIDEWALK RAMP
ST-7	PERPENDICULAR SIDEWALK RAMP
ST-8	SINGLE DIRECTION CURB RAMP
ST-9	TYPICAL UTILITY CROSSING
ST-10	CUL-DE-SAC STANDARD
ST-11	MONUMENT CASE AND COVER
ST-12	ACCESS EASEMENT AND ROADWAY
STREET REPAIR DETAILS	
SR-1	CSTL REPAIR DETAIL
SR-2	HMA PAVEMENT REPAIR
SR-3	CONCRETE SIDEWALK REPAIR
SR-4	CEMENT CONCRETE PAVEMENT REPAIR

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WATER DETAILS

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NOTE:

ALL BACKFILL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR, ASTM D1557.

BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH THE CITY STANDARDS AND/OR STATE OR COUNTY PERMIT REQUIREMENTS.

W-1
WATER MAIN TRENCH SECTION

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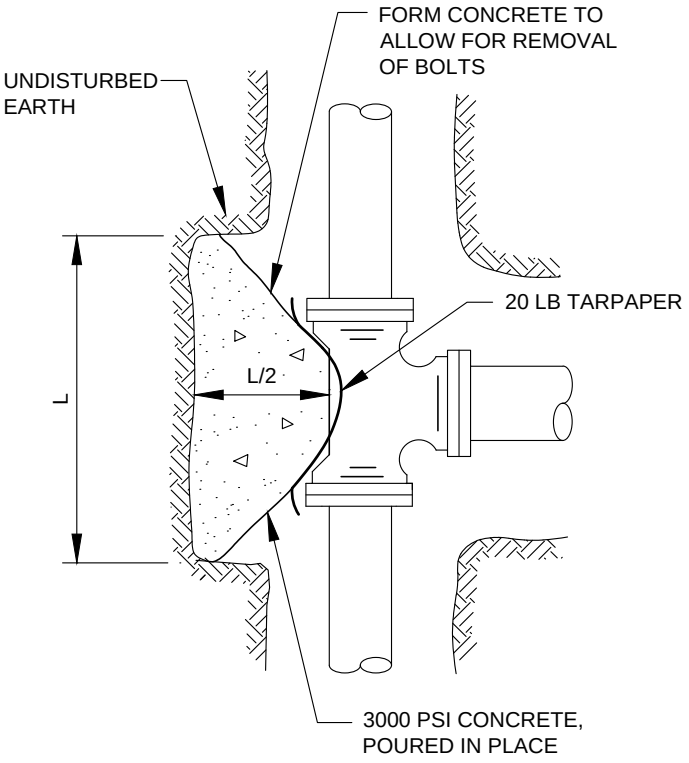
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MINIMUM BEARING AREA TABLE					
FITTING D	**TEE**			**1**	**11 1**
6"	4 SQ FT	6 SQ FT	3 SQ FT	2 SQ FT	2 SQ FT
8"	7 SQ FT	10 SQ FT	6 SQ FT	3 SQ FT	2 SQ FT
12"	14 SQ FT	22 SQ FT	12 SQ FT	6 SQ FT	4 SQ FT
16"	25 SQ FT	38 SQ FT	21 SQ FT	11 SQ FT	7 SQ FT
20"	40 SQ FT	52 SQ FT	31 SQ FT	15 SQ FT	11 SQ FT
24"	54 SQ FT	68 SQ FT	44 SQ FT	21 SQ FT	16 SQ FT

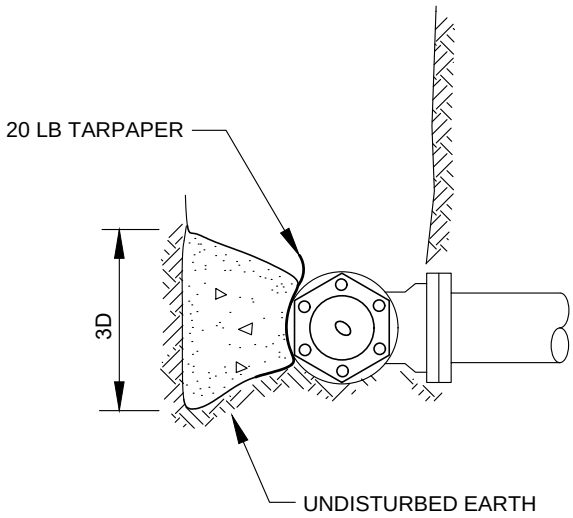
TYPICAL FOR SANDY SOIL WITH 2,000 PSF BEARING STRENGTH & 100 PSI WORKING PRESSURE. ADJUST BEARING AREA BY PRESSURE & SOIL BEARING CAPACITY. USE TEE FOR DEAD ENDS.

NOTES:

1. BLOCKING SHALL BE TO SOLID BEARING SURFACE.
2. FITTING SHALL BE PROTECTED WITH VISQUEEN.
3. BEARING AREA SHALL BE PROPORTIONALLY INCREASED WITH PRESSURES IN EXCESS OF 100 PSI OR IN SOIL CONDITIONS WITH LESS THAN 2,OOO PSF BEARING STRENGTH.
4. ALL BLOCKS ON TEES SHALL BE SEPARATED FOR DIRECTION OF THRUST.



PLAN



ELEVATION

W-2
THRUST BLOCKS

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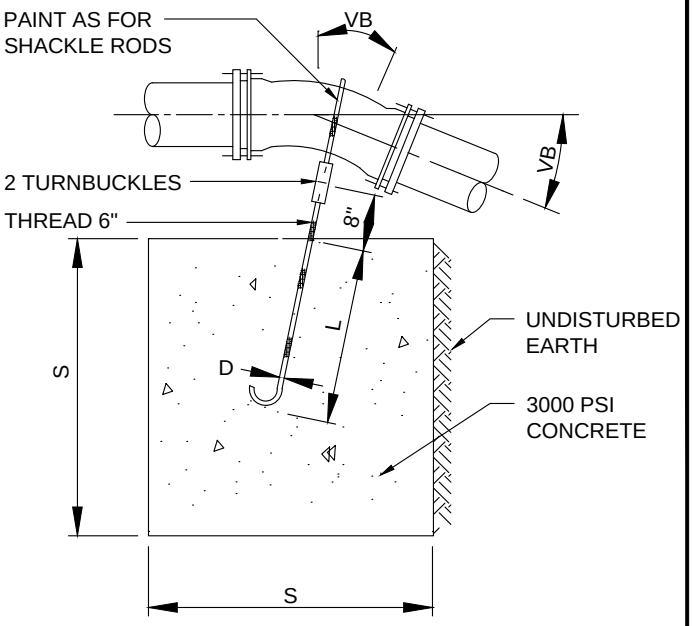
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TYPE "A" BLOCKING
FOR 11 1 - 1 - ER ICAL E D

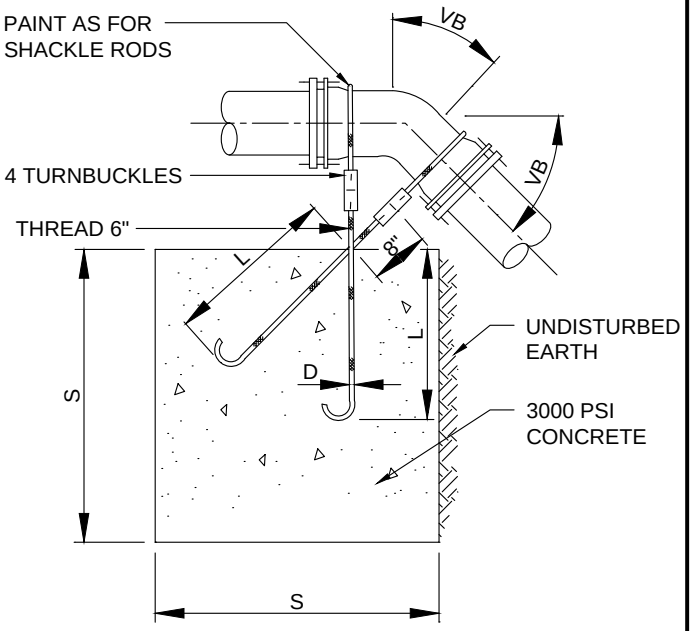
PIPE SIZE NOMINAL DIAMETER- INCHES	TEST PRESSURE PSI	VB VERTICAL BEND DEGREES	No. OF CU. FT. OF CONC. BLOCKING	S SIDE OF CUBE LIN. FT.	D DIAM. OF SHACKLE RODS (2) INCHES	L DEPTH OF RODS IN CONCRETE LIN. FT.
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5	7/8"	3.0
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7	1 1/8"	4.0
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1	1 1/4"	4.0
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8	1 3/8"	4.5

TYPE "B" BLOCKING
FOR ER ICAL E D

		VB		S	D	L
6"	300	45	68	4.1	5/8"	2.0
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5



TYPE "A" BLOCKING

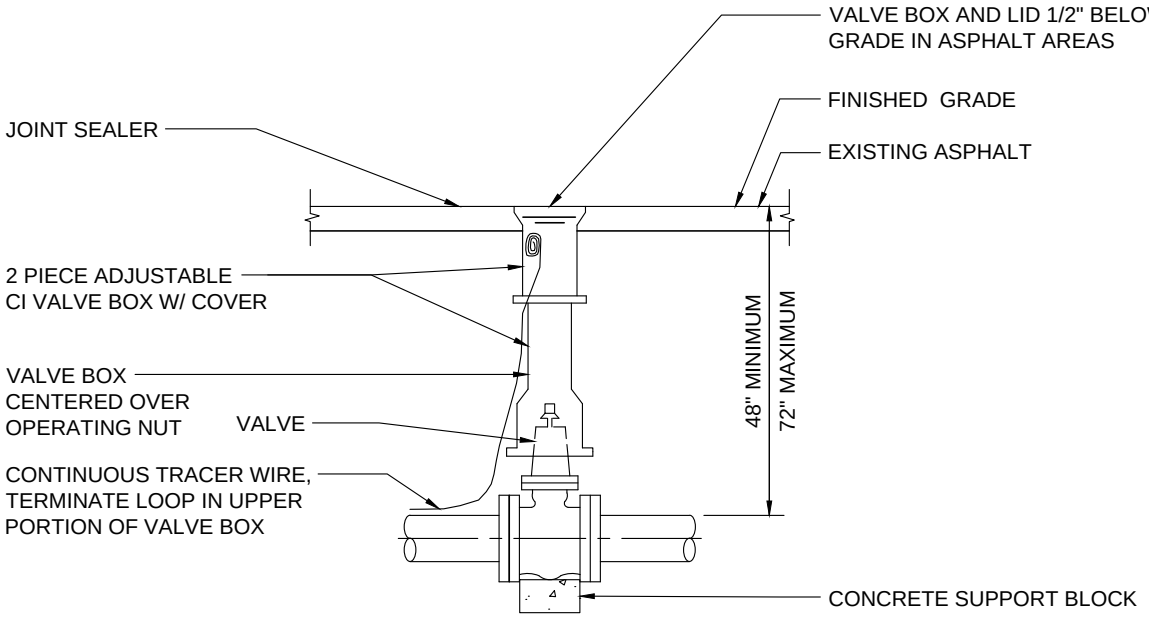


TYPE "B" BLOCKING

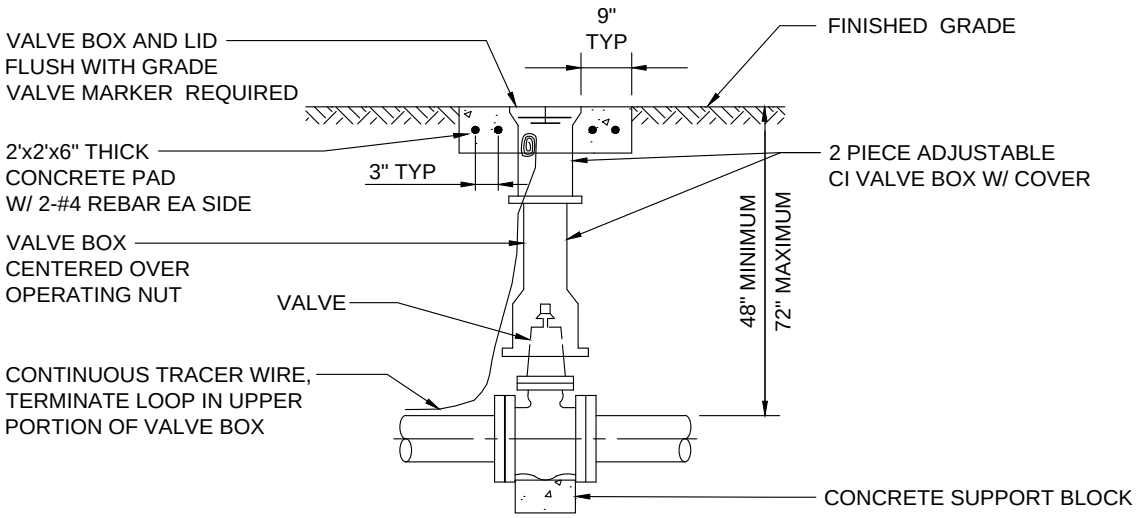
W-3
VERTICAL ANCHOR BLOCK

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VALVE BOX IN ASPHALT AREA

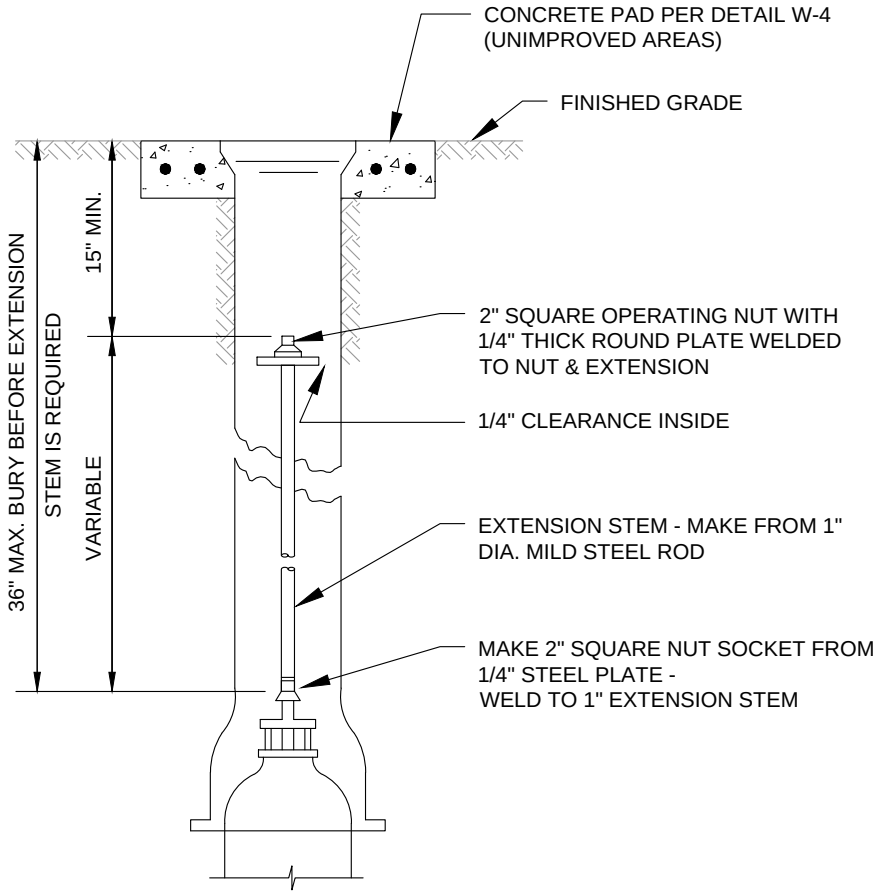


VALVE BOX IN UNIMPROVED AREA (VALVE MARKER REQUIRED)

W-4
TYPICAL VALVE INSTALLATION

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CONSULTING ENGINEERS

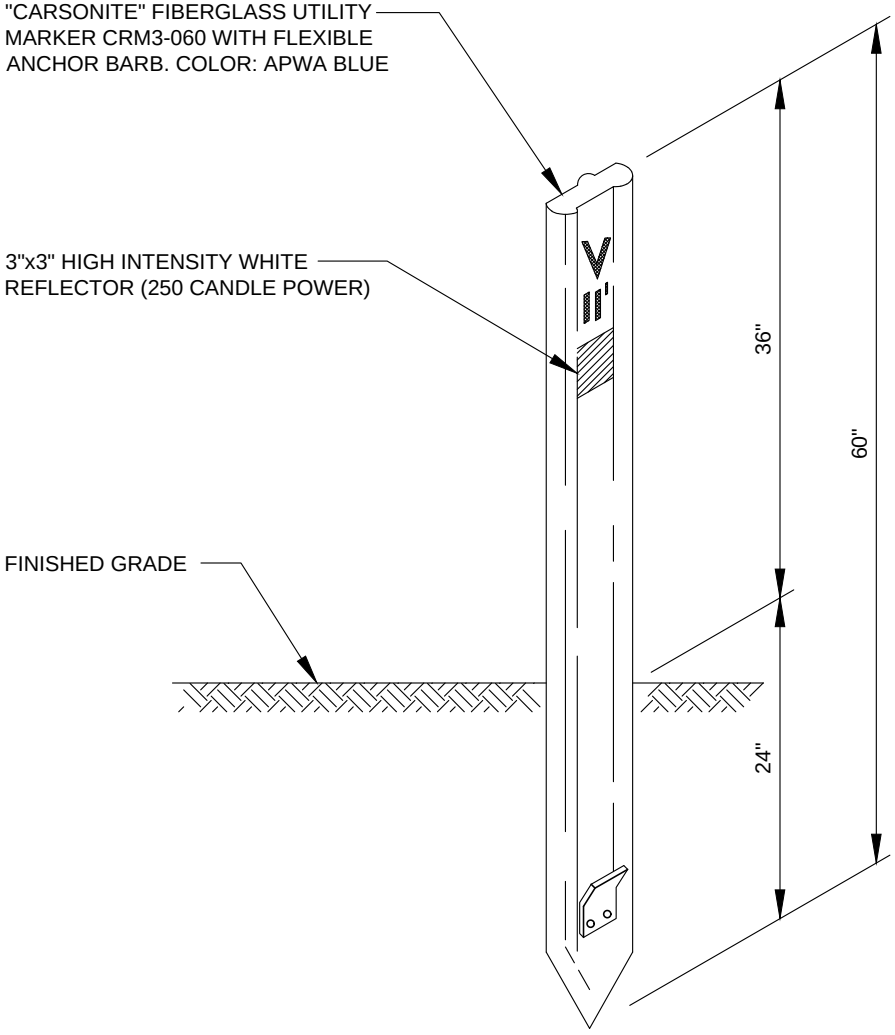
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W-5
VALVE STEM EXTENSION

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NOTES

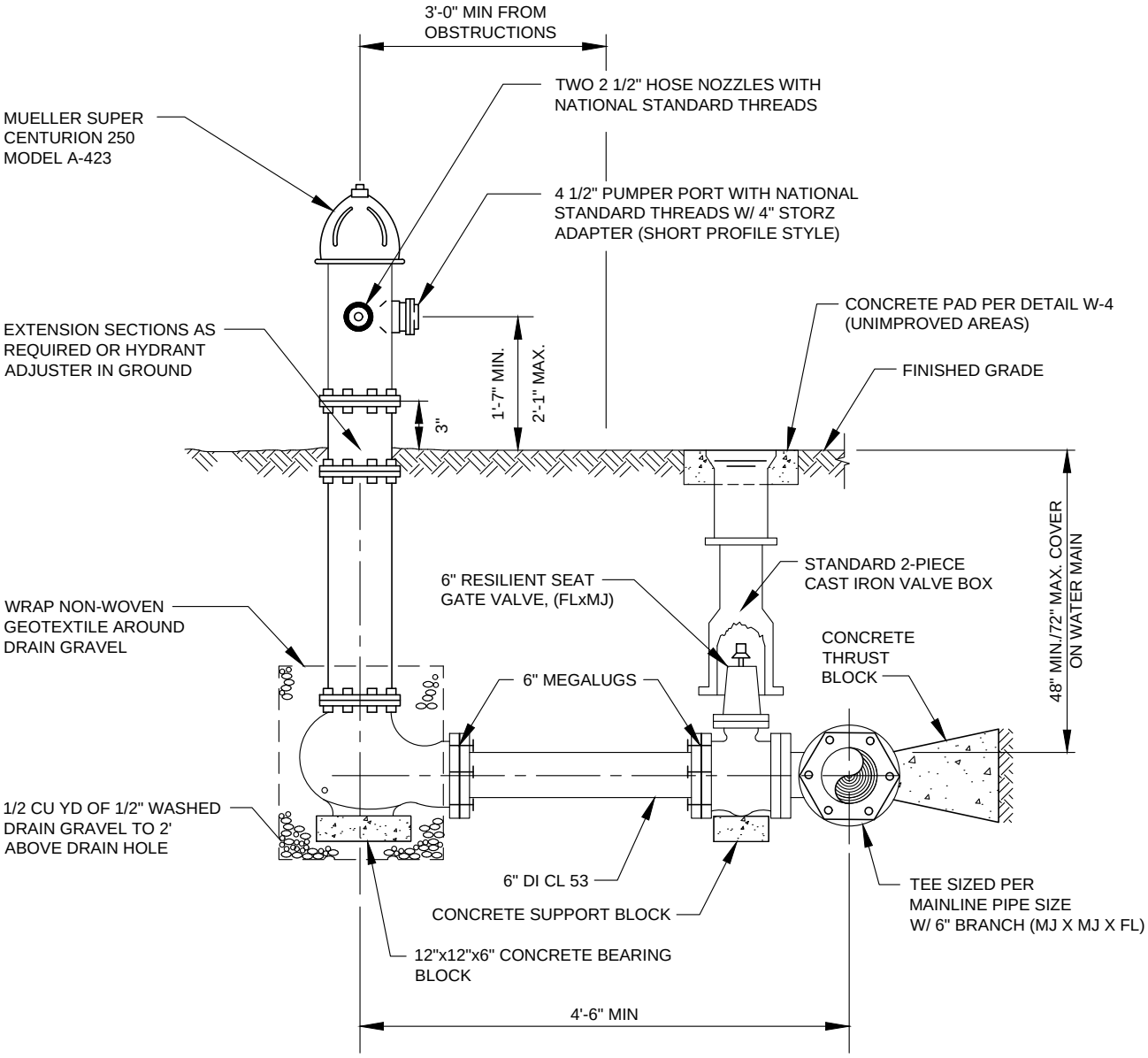
1. THE LETTER "V" AND THE DISTANCE IN FEET TO THE VALVE SHALL BE ON THE POST WITH 2" HIGH DECALS DESIGNED FOR USE ON FIBERGLASS BOATS.

2. EACH POST SHALL INCLUDE THE FOLLOWING DECAL: "CAUTION WATER VALVE, BEFORE DIGGING, CALL 811, UTILITY UNDERGROUND LOCATION CENTER."

W-6
VALVE MARKER

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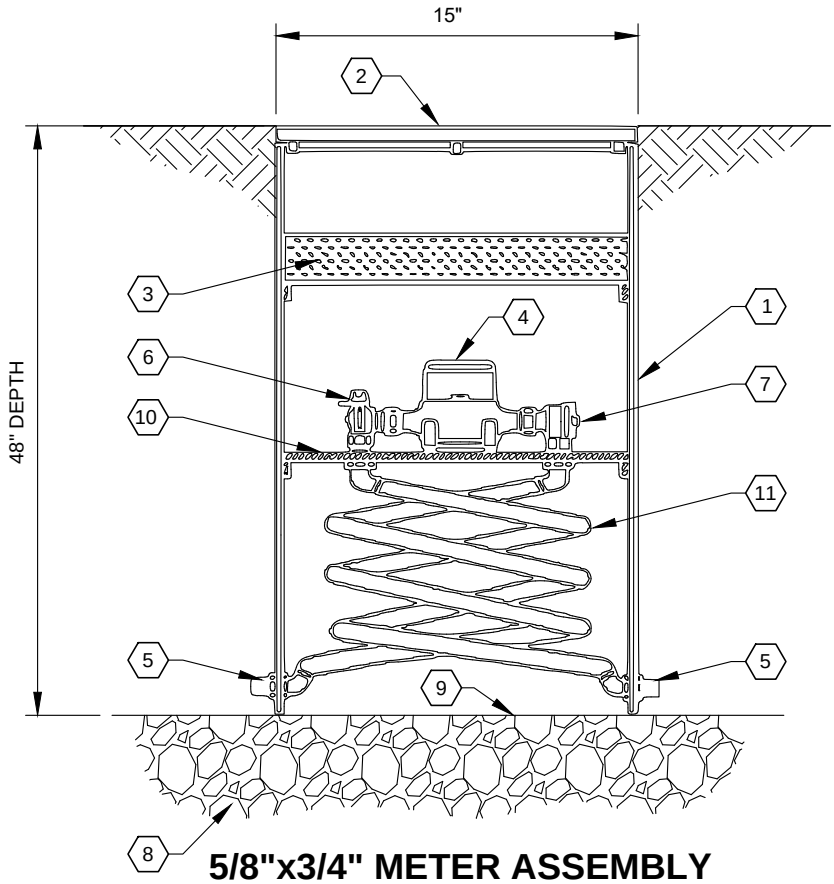
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W-7
FIRE HYDRANT ASSEMBLY

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5/8"x3/4" METER ASSEMBLY

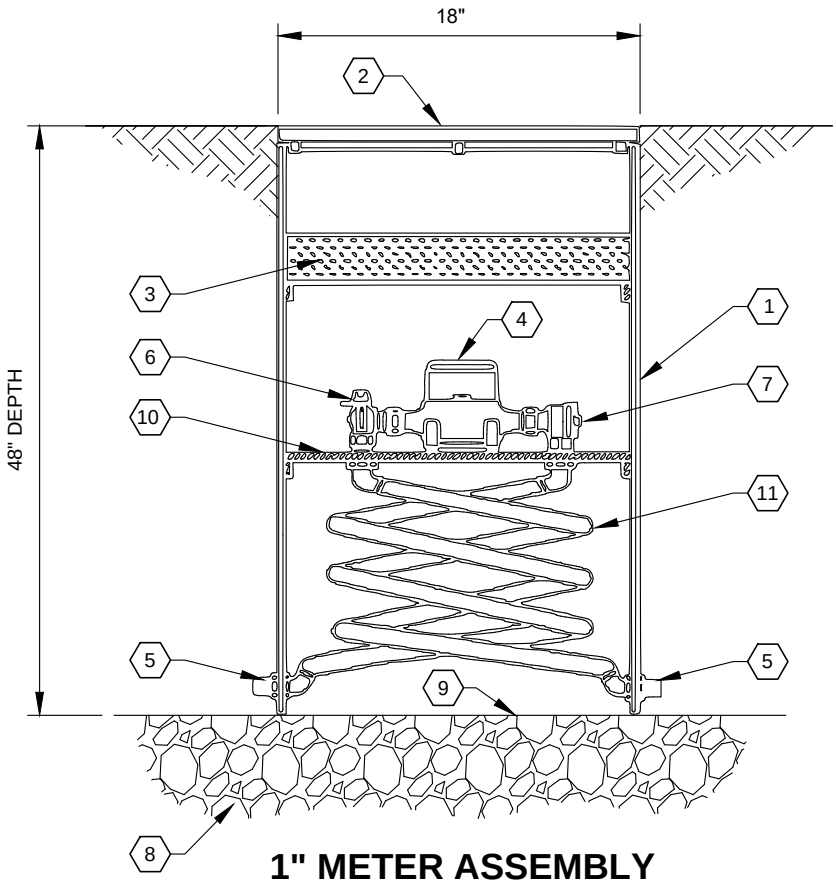
NTS

1. MUELLER THERMAL-COIL METER SETTER
2. FLAT LID WITH SIDE MOUNTED KEY LOCK
3. INSULATION PAD BY MANUFACTURER
4. 5/8"x3/4" METER, PROVIDED BY CITY
5. 1" MALE I.P. THREAD INLET AND OUTLET CONNECTIONS
6. LOCKWING ANGLE METER STOP
7. DUAL CHECK VALVE OUTLET
8. 4" THICK COMPACTED BEDDING MATERIAL
9. OPEN BOTTOM
10. MOVABLE PLATFORM BY MANUFACTURER
11. POLY COIL TUBING BY MANUFACTURER

W-8
5/8"x3/4-SERVICE METER INSTALLATION

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CONSULTING ENGINEERS

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1" METER ASSEMBLY

NTS

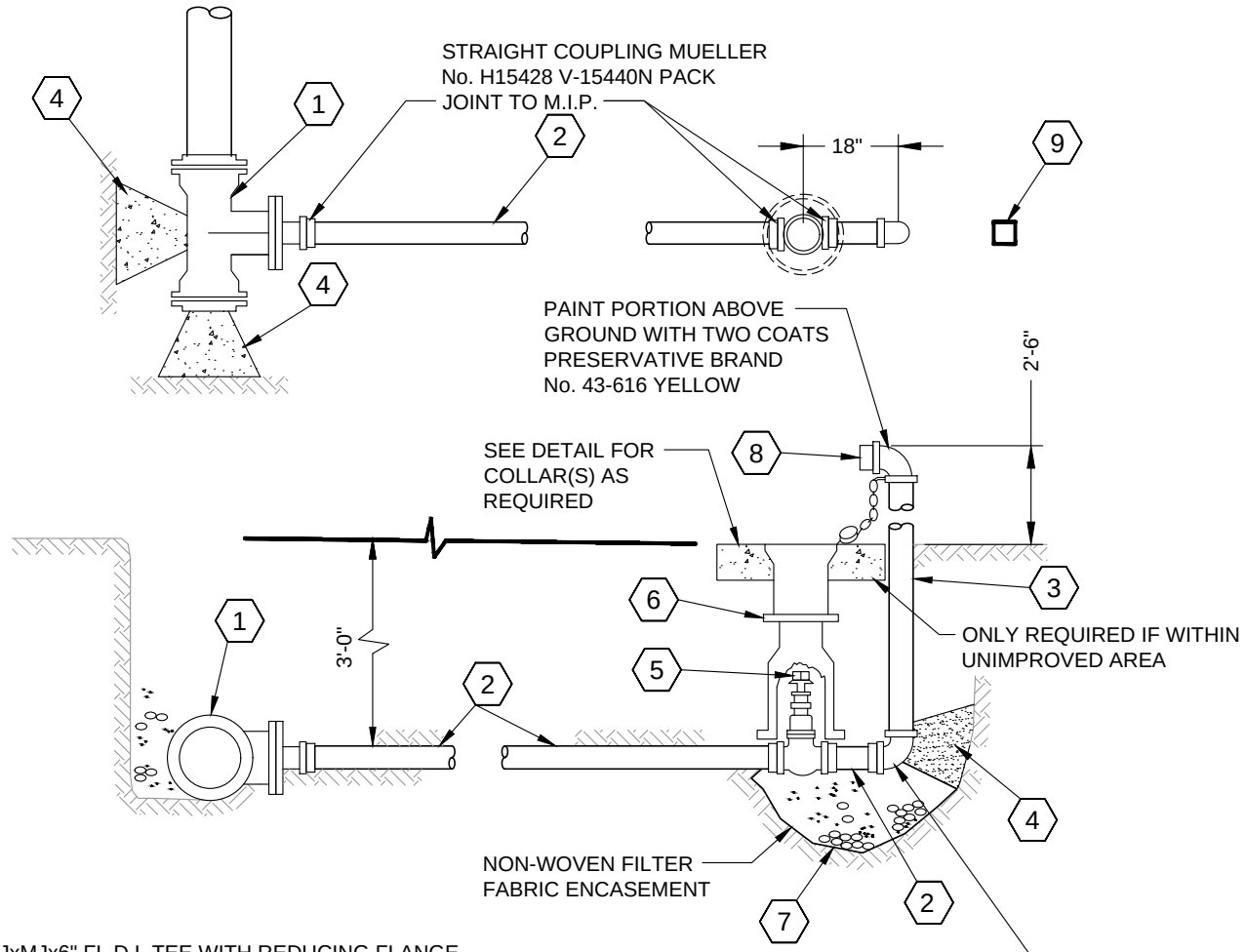
1. MUELLER THERMAL-COIL METER SETTER
2. FLAT LID WITH SIDE MOUNTED KEY LOCK
3. INSULATION PAD BY MANUFACTURER
4. 1" METER, PROVIDED BY CITY
5. MALE I.P. THREAD INLET AND OUTLET CONNECTIONS
6. LOCKWING ANGLE METER STOP
7. DUAL CHECK VALVE OUTLET
8. 4" THICK COMPACTED BEDDING MATERIAL
9. OPEN BOTTOM
10. MOVABLE PLATFORM BY MANUFACTURER
11. POLY COIL TUBING BY MANUFACTURER

CITY OF OKANOGAN
1907 2007
100 YEARS OF COMMUNITY PRIDE

W-9
1" SERVICE METER INSTALLATION

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1. MJxMJx6" FL D.I. TEE WITH REDUCING FLANGE TAPPED 2" AND MJ PLUG
2. 2" POLY-PIPE 250 PSI
3. 2" GALVANIZED IRON PIPE
4. CONCRETE THRUST BLOCK
5. 2" AWWA RESILIENT SEAT GATE VALVE, THD x THD, WITH OPERATING NUT
6. CAST IRON VALVE BOX
7. 1/4 CUBIC YARD WASHED GRAVEL POCKET
8. 2"x2-1/2" HOSE THREADS BRASS INSERT WITH CAP AND CHAIN
9. VALVE MARKER POST

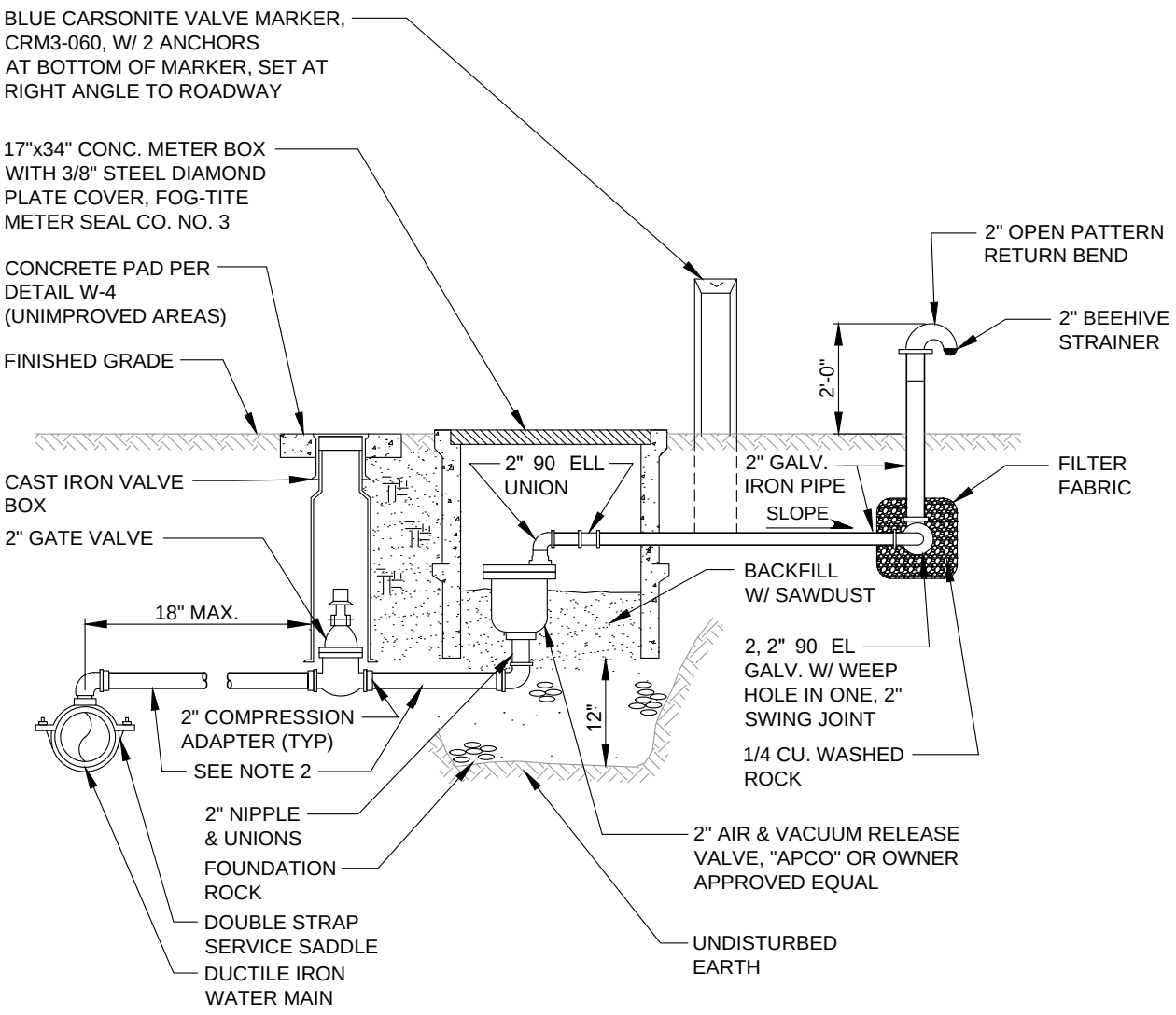
NOTES:

1. TURN NOZZLE TOWARDS ROADSIDE DITCH.
2. INSTALL DIELECTRIC COUPLINGS AT DISSIMILAR METALS.
3. TEMPORARY BLOWOFFS INSTALLED FOR FLUSHING WATERMAIN SHALL BE SIZED TO PROVIDE 2.5fps VELOCITY IN MAIN LINE.

W-10
PERMANENT END-LINE BLOWOFF ASSEMBLY

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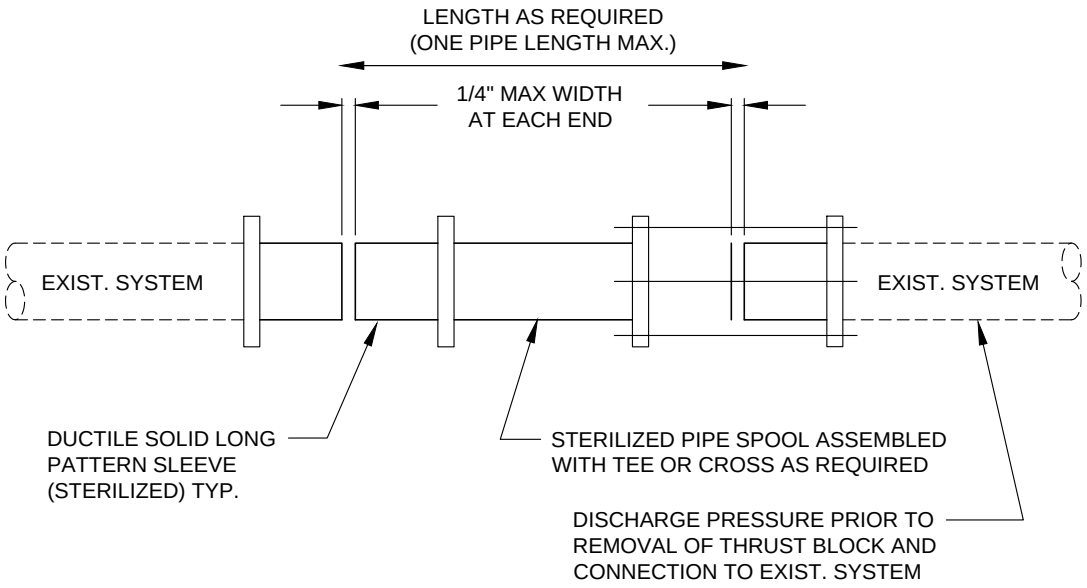
NOTES:

1. GATE VALVE: AWWA RESILIENT SEAL, THRDxTHRD WITH OPERATING NUT.
2. ALL PIPING BETWEEN DOUBLE STRAP SADDLE AND INLET SIDE OF COMBINATION AIR & VAC ASSEMBLY SHALL BE POLY PIPE 250 PSI.
3. TAP MAIN AT SYSTEM HIGH POINT. LOCATION TO BE APPROVED BY THE CITY.
4. PAINT PORTION ABOVE GROUND WITH TWO COATS RUSTOLEUM 31-144 CATERPILLAR YELLOW ENAMEL GLOSS.

W-11
2" AIR AND VACUUM RELEASE ASSEMBLY

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CONSULTING ENGINEERS

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NOTES:

1. NO DEFLECTION SHALL BE ALLOWED AT EITHER COUPLING.

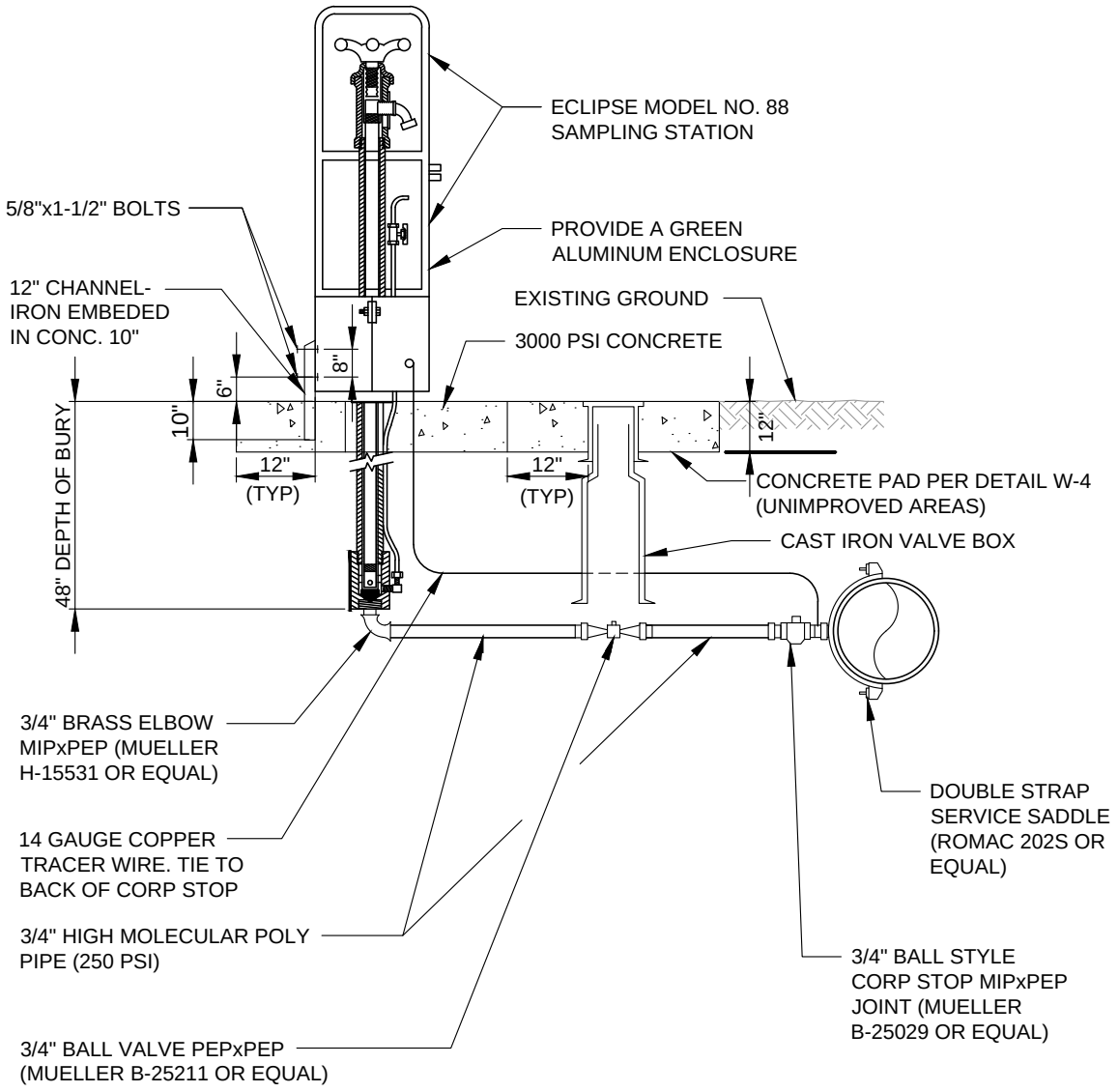
2. CUT-IN CONNECTIONS ON NON-DI PIPE SHALL USE EXTENDED RANGE COUPLING (ROMAC XR501 OR EQUAL)

3. IN-LINE VALVE(S) IN EXISTING SYSTEM MAY BE REQUIRED AT THE SOLE DISCRETION OF THE CITY AT ALL NEW INTERTIE LOCATIONS (NOTE: VALVE(S) ARE NOT SHOWN ABOVE FOR CLARITY)

W-12
CUT IN CONNECTION

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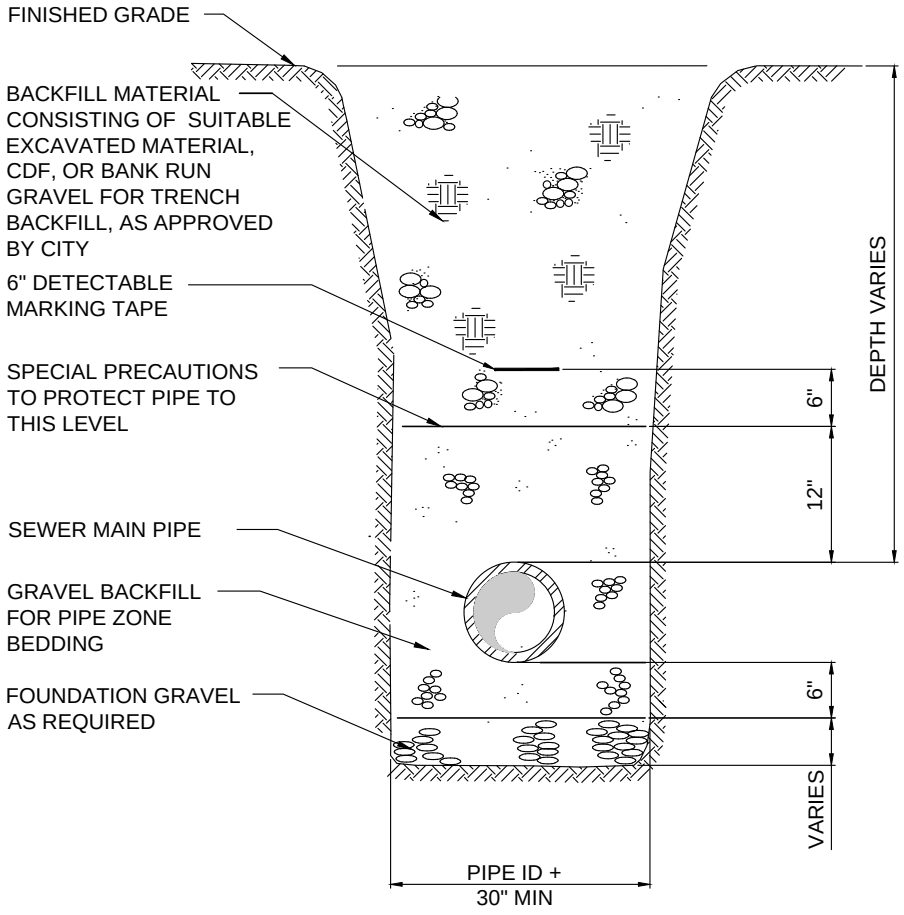
W-13
WATER SAMPLING STATION

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SEWER DETAILS

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NOTE:

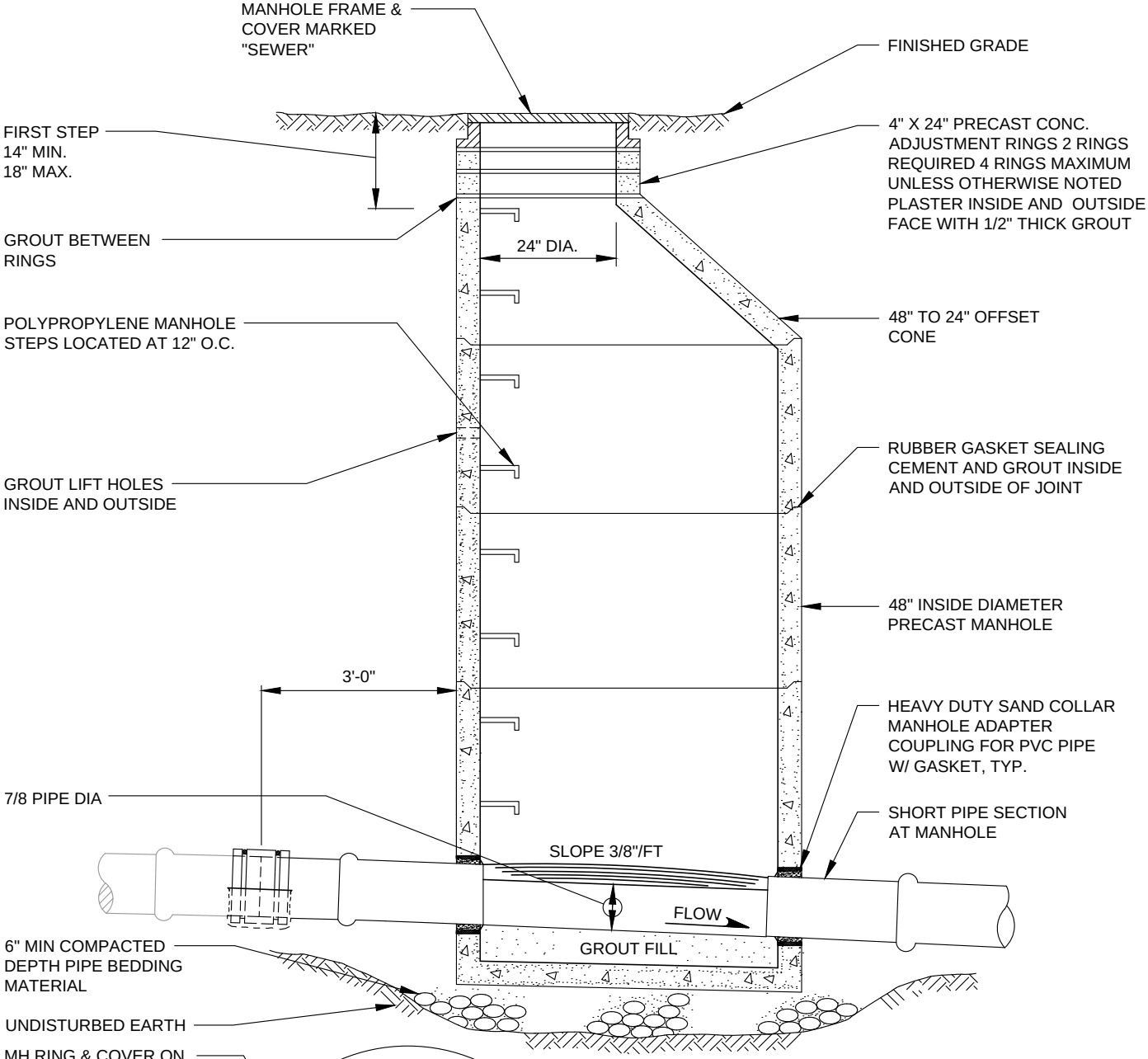
ALL BACKFILL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR, ASTM D1557

BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH THE CITY STANDARDS AND/OR STATE OR COUNTY PERMIT REQUIREMENTS.

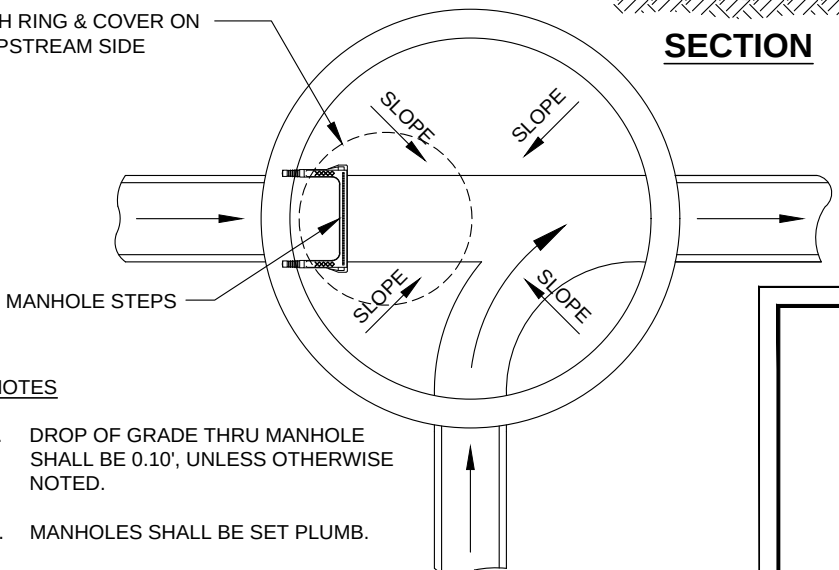
SS-1
SANITARY SEWER MAIN TRENCH SECTION

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SECTION



PLAN

NOTE;

TRANSITION FROM MANHOLE BENCH TO CHANNEL SHALL BE ROUNDED WITH NO SHARP EDGES. PIPE PENETRATIONS AND CHANNELS SHALL PROVIDE A SMOOTH SURFACE THAT SHALL NOT RETAIN ANY WATER.

NOTES

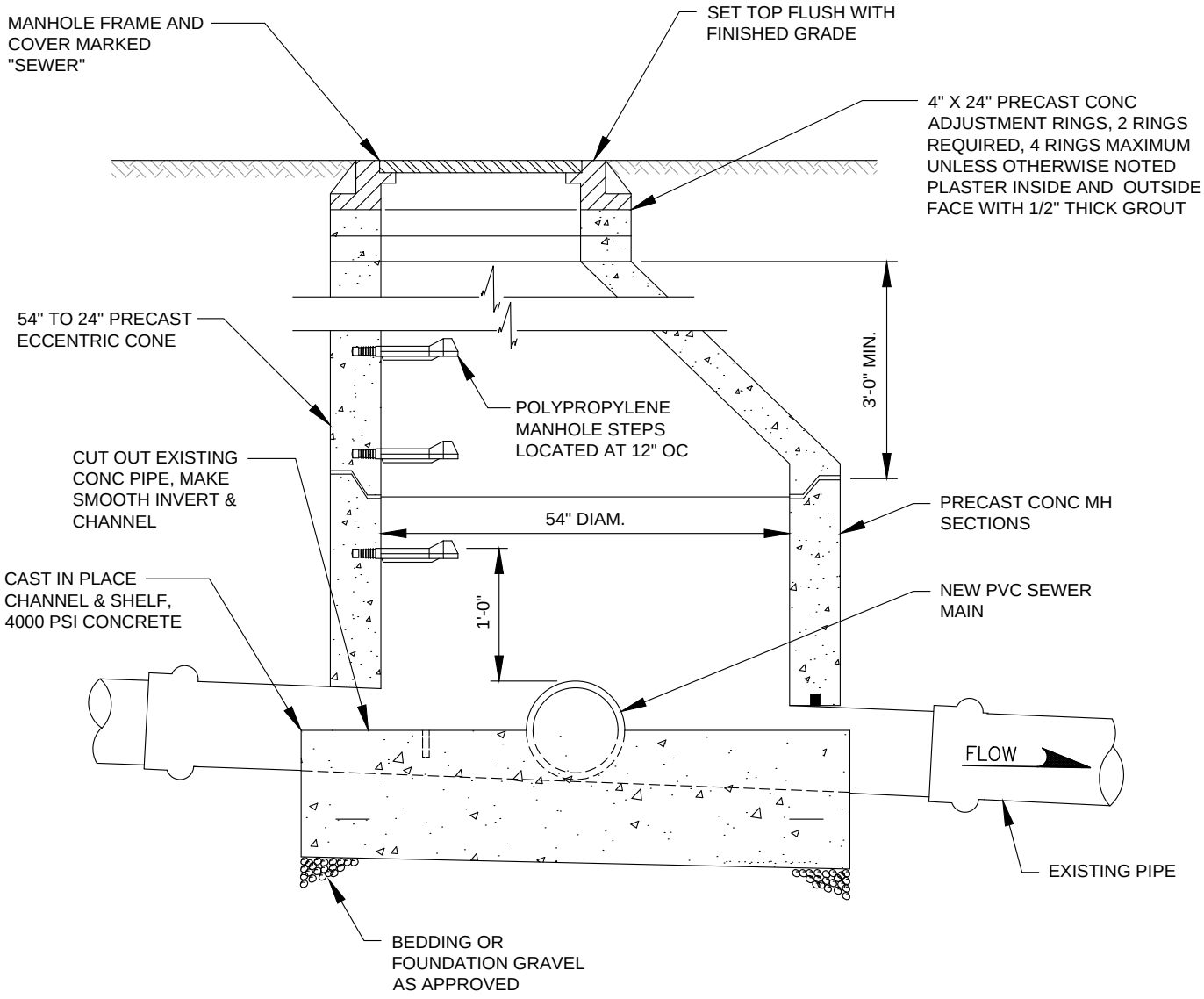
1. DROP OF GRADE THRU MANHOLE SHALL BE 0.10', UNLESS OTHERWISE NOTED.
2. MANHOLES SHALL BE SET PLUMB.
3. FOR CONNECTION OF EXISTING SEWER PIPE TO NEW MANHOLE, PROVIDE 3 LF OF PVC SEWER PIPE AND ROMAC 501 COUPLING, OR EQUAL.

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SS-2
STANDARD 48-INCH MANHOLE

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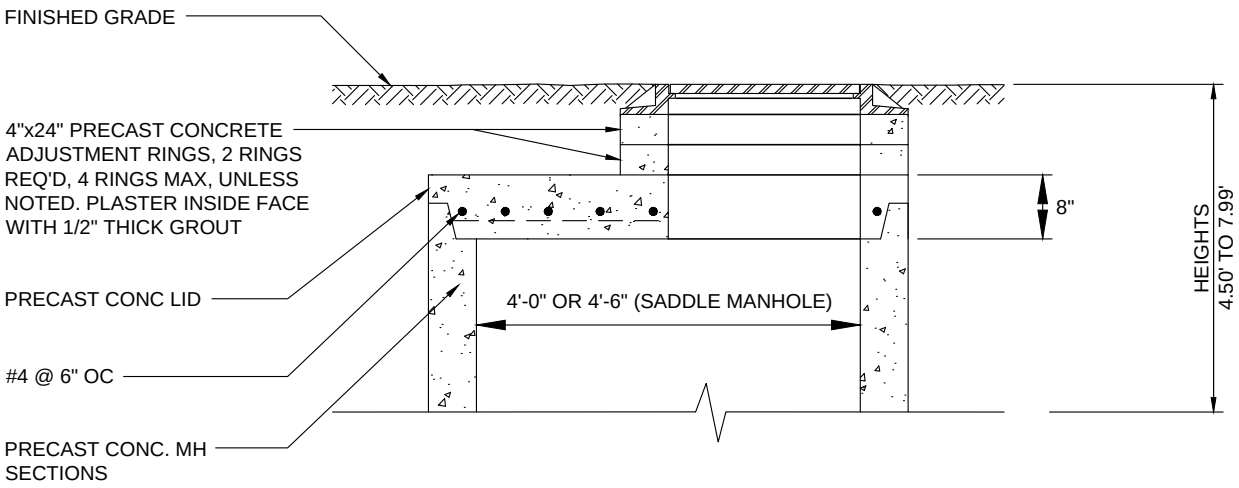
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SS-3
SADDLE MANHOLE

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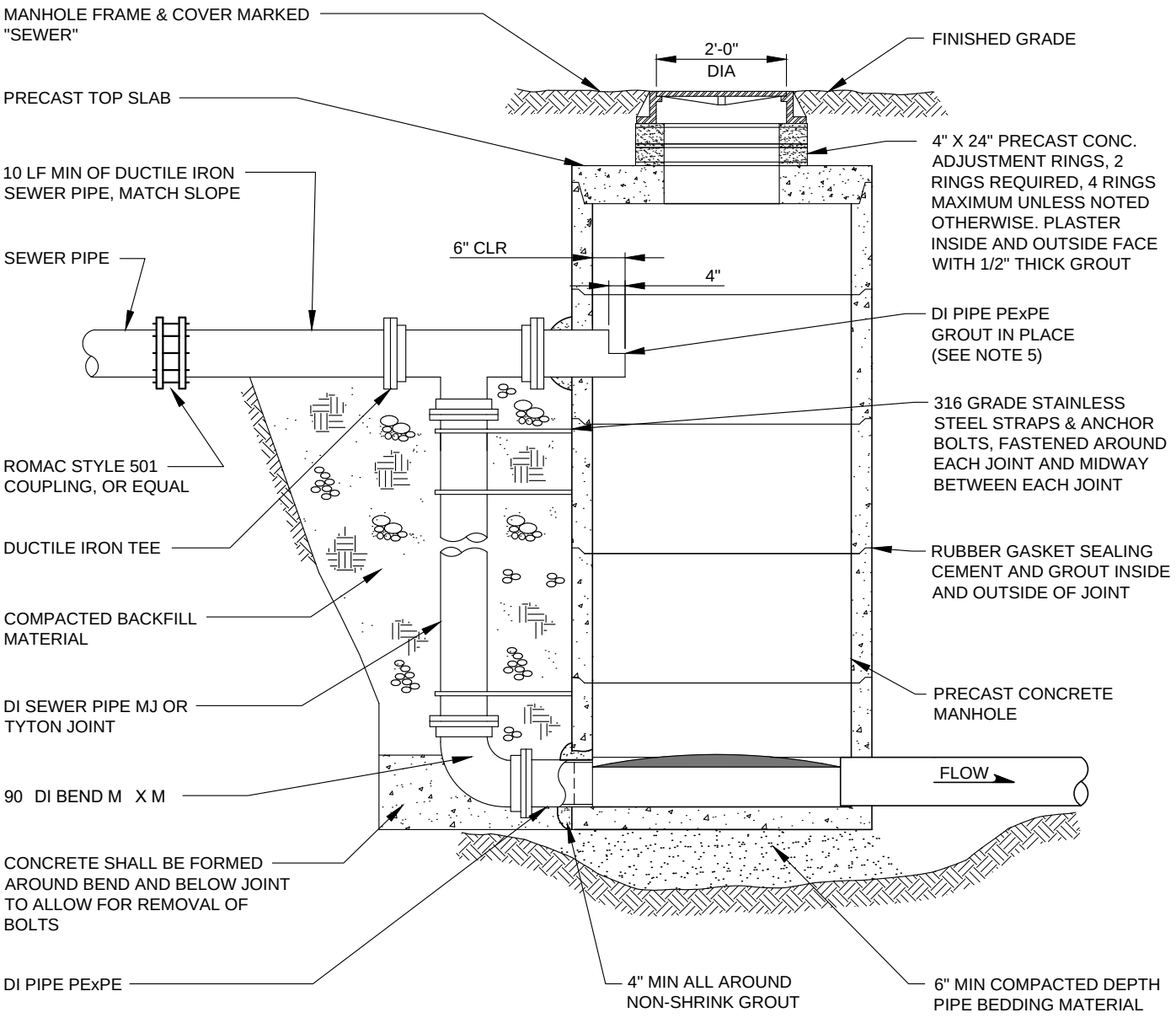
NOTE:

DETAILS OF MH BASE, WALL SECTIONS & STEPS IDENTICAL W/STANDARD 48" MANHOLE AND 54" SADDLE MANHOLE DETAILS.

SS-4
SHALLOW MANHOLE

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NOTES

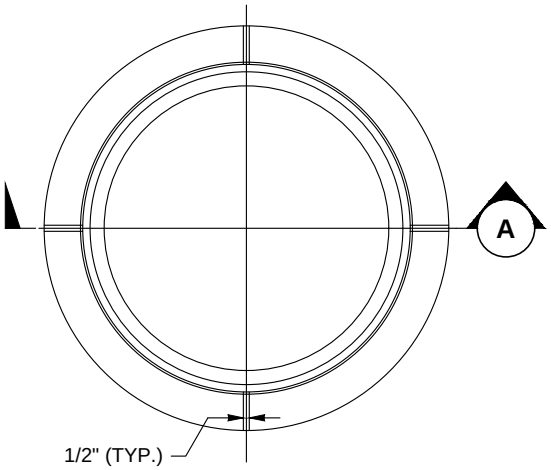
1. MANHOLE STEPS NOT SHOWN FOR CLARITY (TO BE LOCATED 90 FROM DROP CONNECTIONS).
2. MANHOLES SHALL BE SET PLUMB.
3. CONTRACTOR SHALL NOTE THAT DROP MANHOLES MAY HAVE MULTIPLE DROP CONNECTIONS (REFER TO PLANS).
4. MANHOLE FRAME AND COVER NOT SHOWN IN ACTUAL LOCATION (SEE MANHOLE PLAN).
5. CONTRACTOR SHALL CUT PIPE TO PROVIDE 4-INCH HALF PIPE PROTRUSION INTO MANHOLE.

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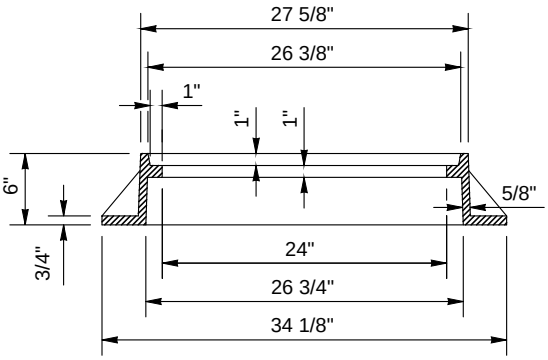
SS-5
DROP MANHOLE CONNECTION

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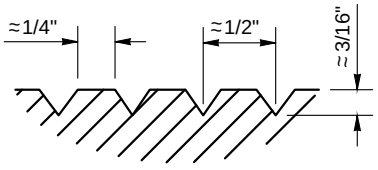
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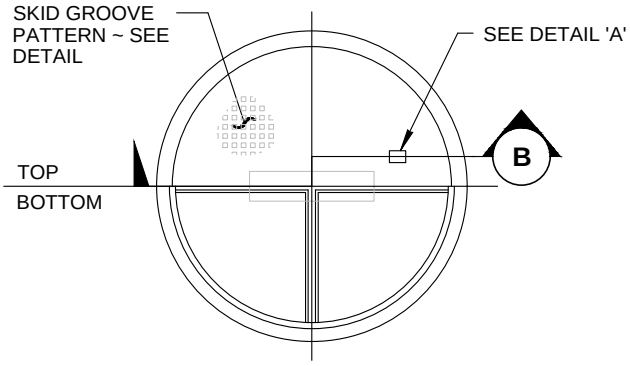
RING PLAN



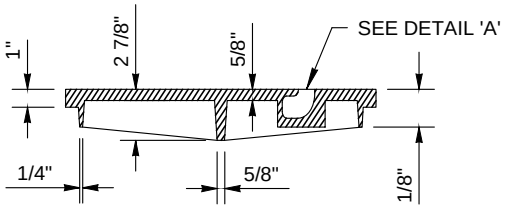
RING SECTION (A)



SKID GROOVE PATTERN DETAIL



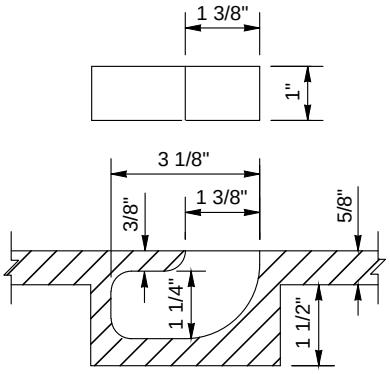
COVER PLAN



COVER SECTION (B)

(SEE NOTE 7)

STANDARD TYPE 1



BLIND PICK NOTCH DETAIL 'A'

NOTES:

1. THE GASKET AND GROOVE MAY BE IN THE SEAT (FRAME) OR IN THE UNDERSIDE OF THE COVER. THE GASKET MAY BE "T" SHAPED IN SECTION. THE GROOVE MAY BE CAST OR MACHINED.
2. BOLT-DOWN CAPABILITY IS REQUIRED ON ALL FRAMES, GRATES, AND COVERS, UNLESS SPECIFIED OTHERWISE IN THE CONTRACT. PROVIDE 3 HOLES IN THE FRAME THAT ARE VERTICALLY ALIGNED WITH THE GRATE OR COVER SLOTS. THE FRAME SHALL ACCEPT THE 304 STAINLESS STEEL (S.S) 5/8" - 11 NC X 2" (IN) ALLEN HEAD CAP SCREW BY BEING TAPPED, OR OTHER APPROVED MECHANISM. LOCATION OF BOLT DOWN HOLES VARIES BY MANUFACTURER.
3. FOR BOLT-DOWN MANHOLE RING AND COVERS THAT ARE NOT DESIGNATED "WATERTIGHT," THE NEOPRENE GASKET, GROOVE, AND WASHER ARE NOT REQUIRED.
4. WASHER SHALL BE NEOPRENE (DETAIL "B").
5. IN LIEU OF BLIND PICK NOTCH FOR MANHOLE COVERS, A SINGLE 1" (IN) PICK HOLE IS ACCEPTABLE. HOLE LOCATION AND NUMBER OF HOLES MAY VARY BY MANUFACTURER.
6. ALTERNATIVE REINFORCING DESIGNS ARE ACCEPTABLE IN LIEU OF THE RIB DESIGN.
7. FOR CLARITY, THE VERTICAL SCALE OF THE COVER SECTION HAS BEEN EXAGGERATED, IT IS 1.5 TIMES THE HORIZONTAL SCALE (1H:1.5V).

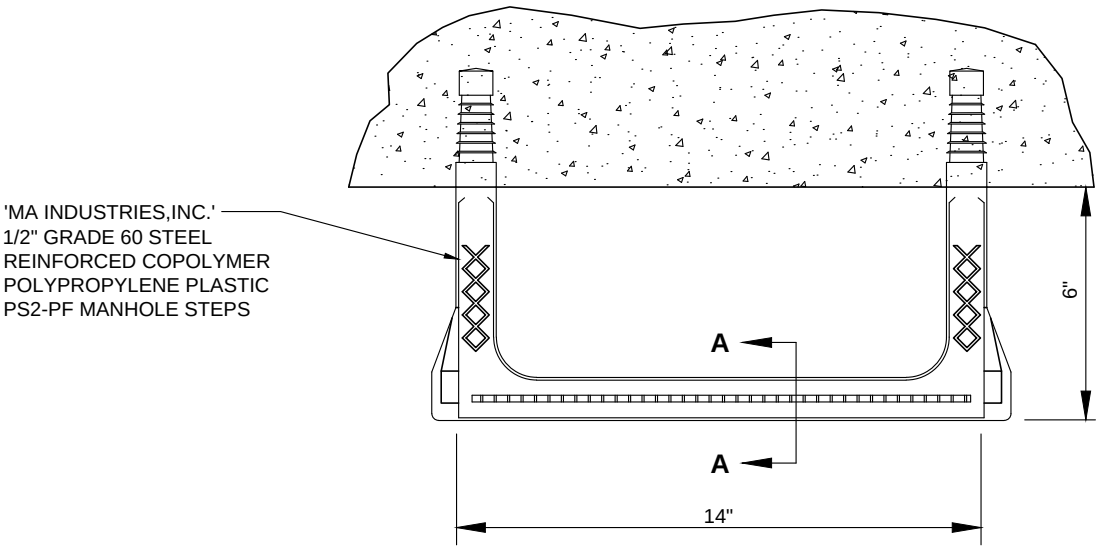
CITY OF OKANOGAN 1907 2007 100 YEARS OF COMMUNITY PRIDE

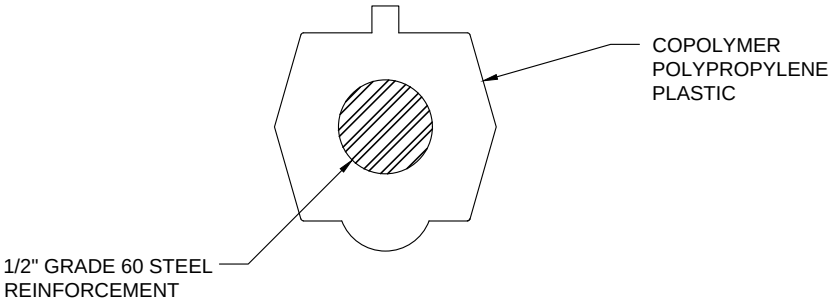
SS-6

STANDARD MANHOLE FRAME AND COVER

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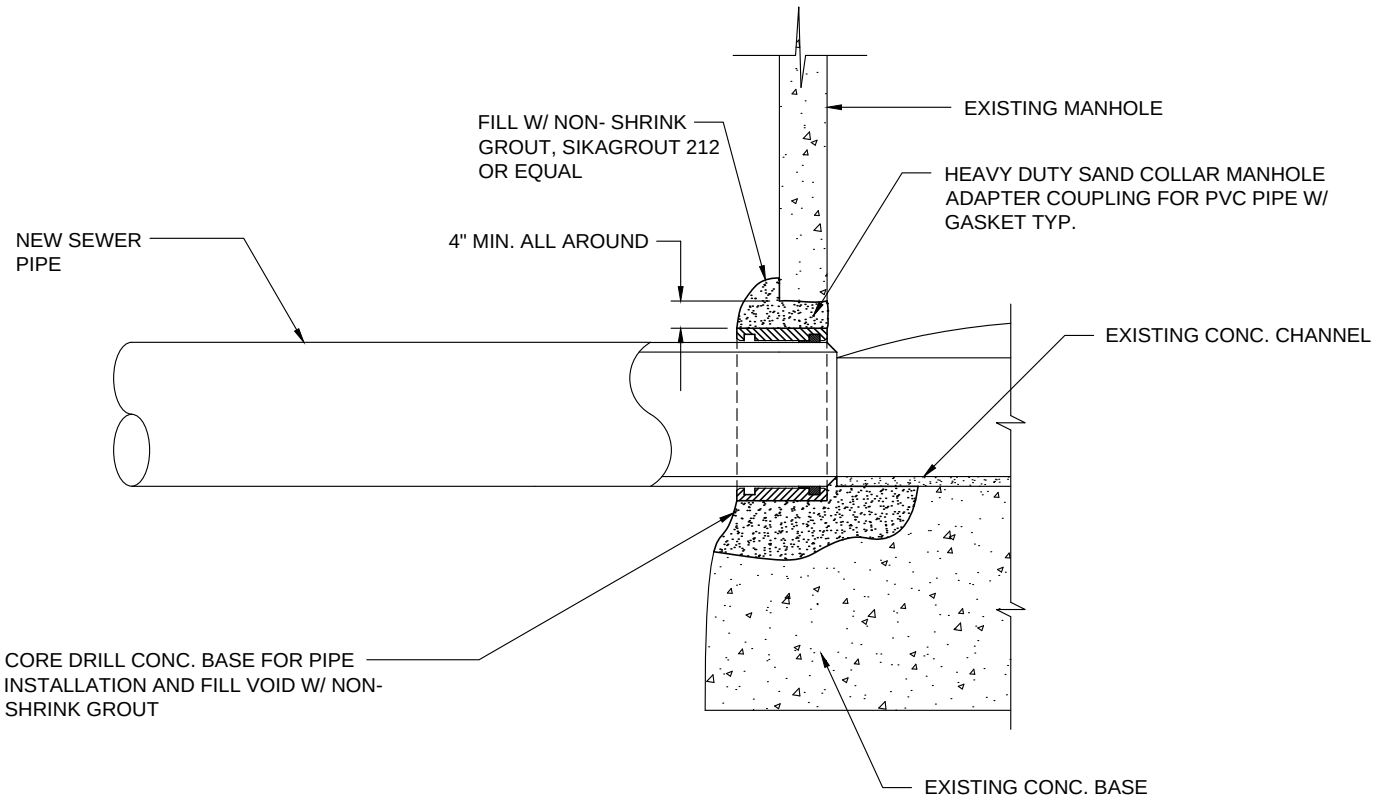


SECTION A-A

SS-7
MANHOLE STEPS

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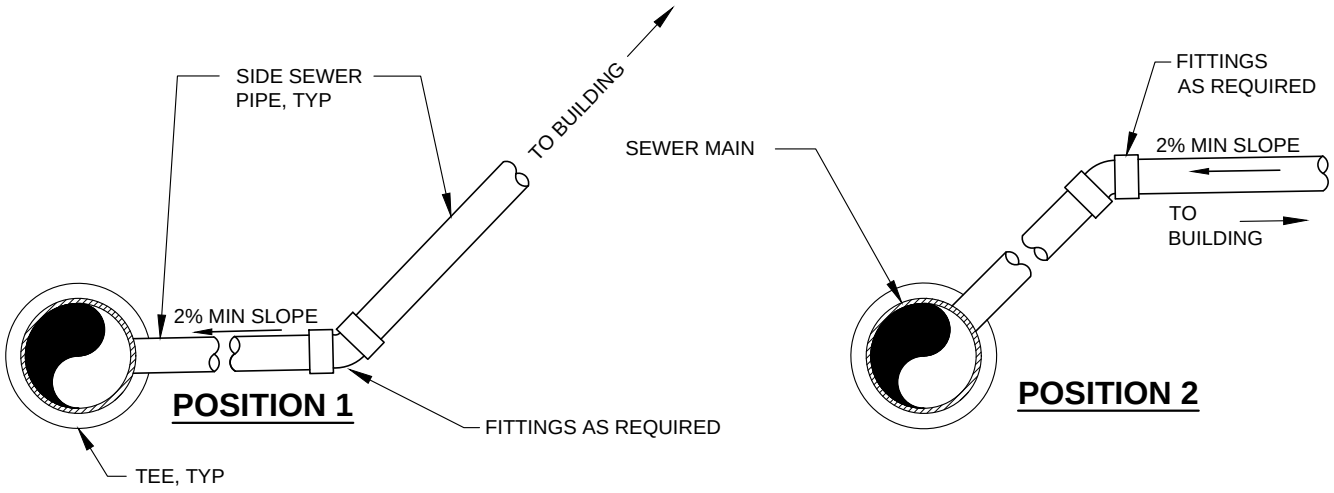


SS-8

CONNECTION TO EXISTING MANHOLE STRUCTURE

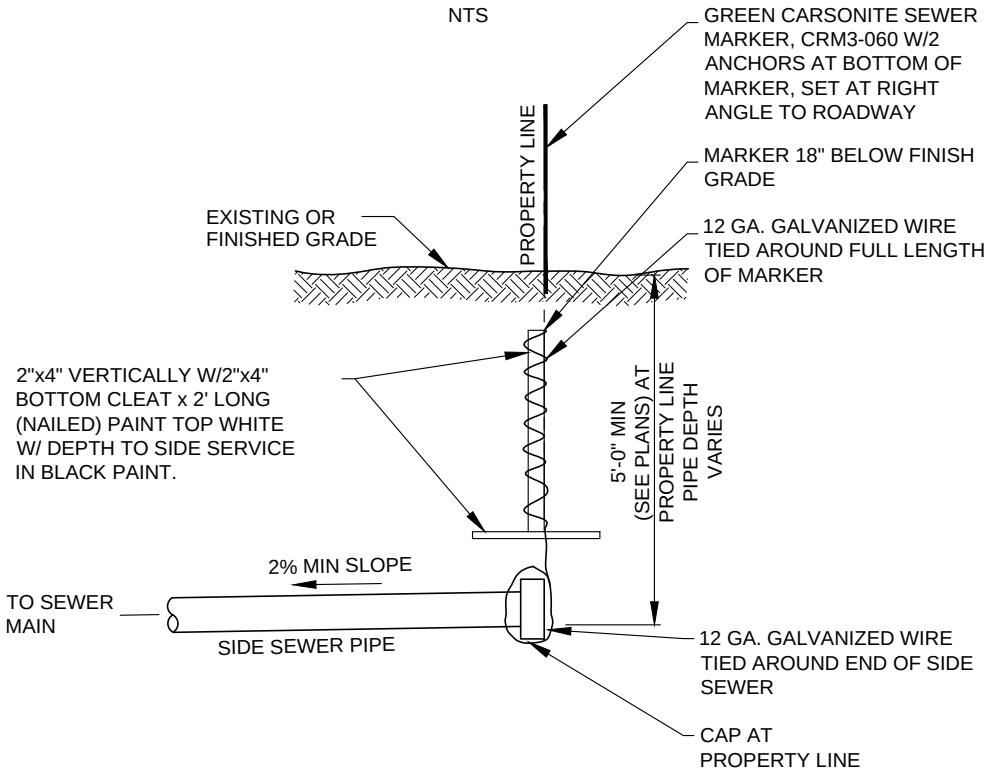
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SIDE SEWER CONNECTION

NTS



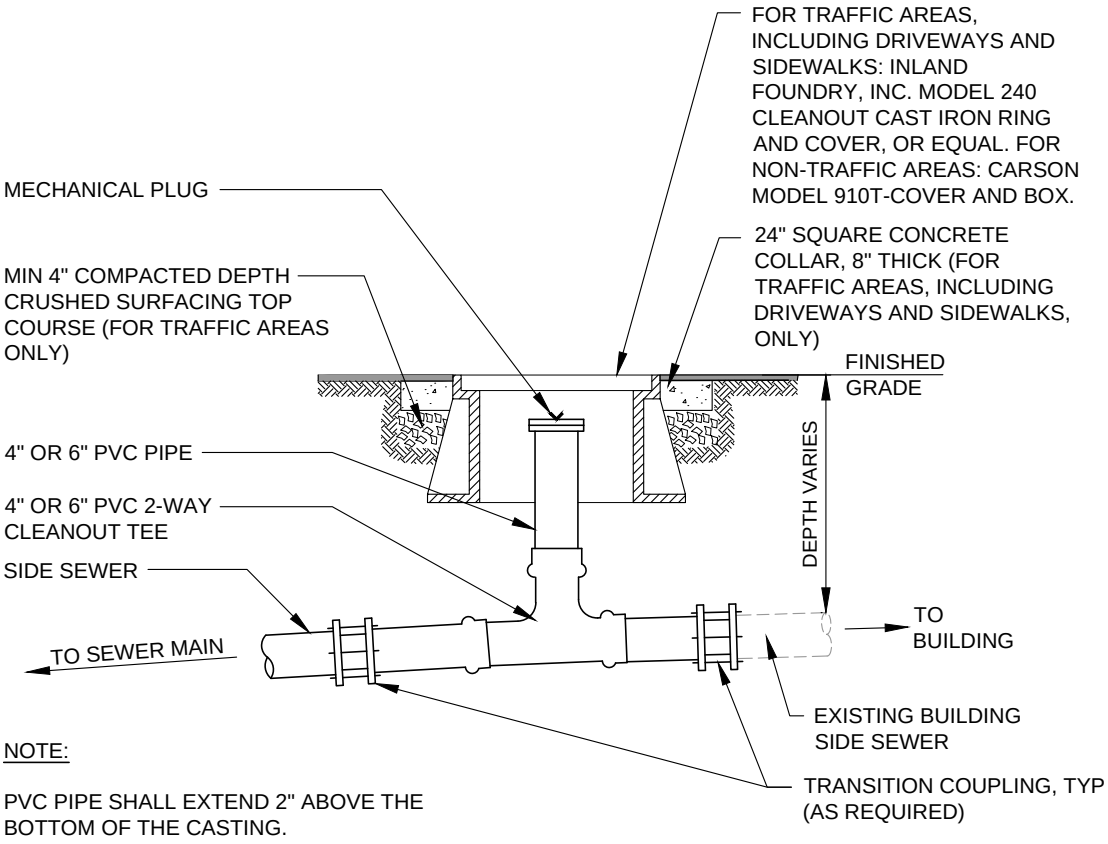
SIDE SEWER STUB

NTS

SS-9
STANDARD SIDE SEWER

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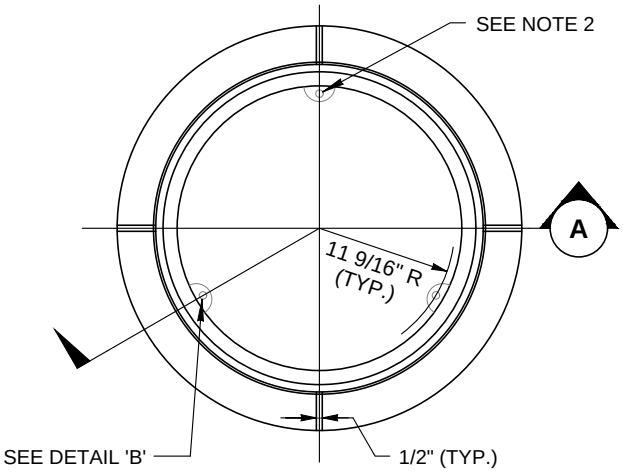
NOTE:

PVC PIPE SHALL EXTEND 2" ABOVE THE BOTTOM OF THE CASTING.

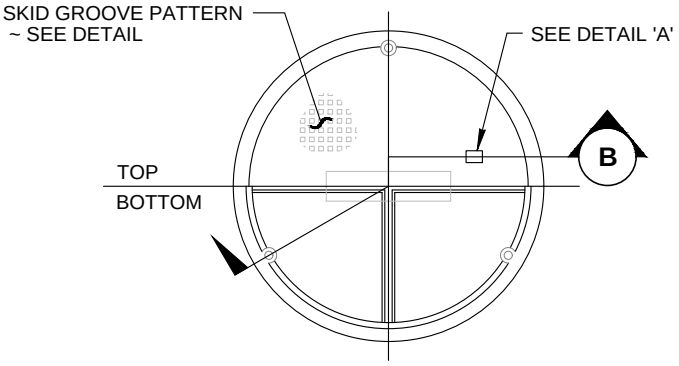
SS-10
SANITARY SEWER CLEANOUT

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CONSULTING ENGINEERS

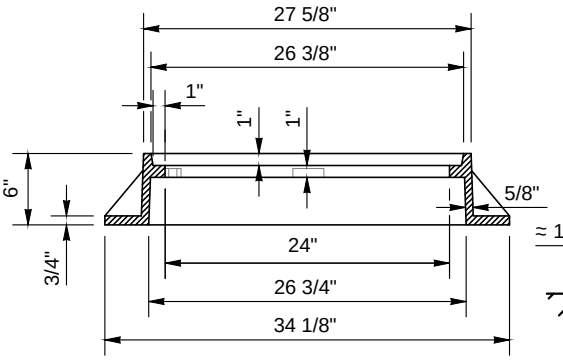
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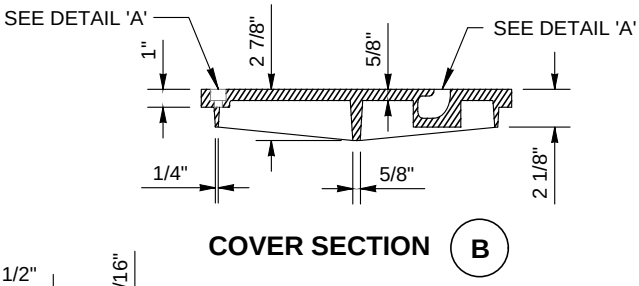
RING PLAN



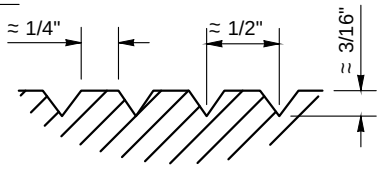
COVER PLAN



RING SECTION (A)

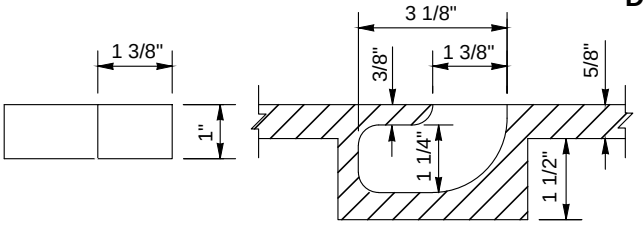


COVER SECTION (B)

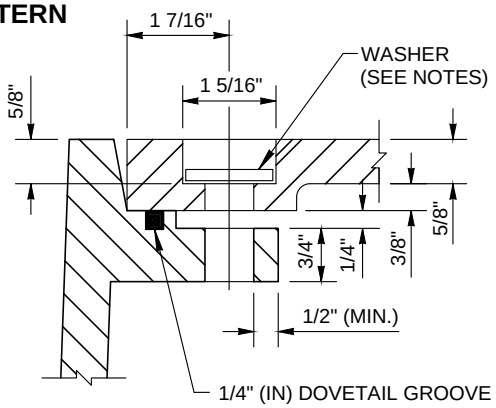


BOLT-DOWN / WATERTIGHT TYPE 2

SKID GROOVE PATTERN DETAIL



BLIND PICK NOTCH DETAIL 'A'



BOLT-DOWN / WATERTIGHT DETAIL 'B'

NOTES:

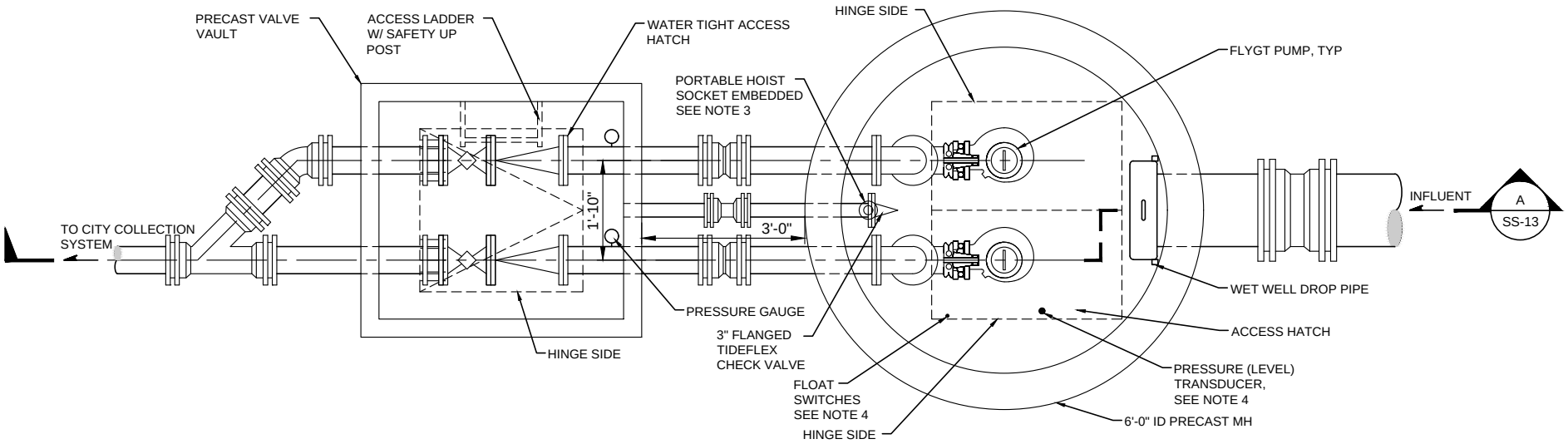
1. THE GASKET AND GROOVE MAY BE IN THE SEAT (FRAME) OR IN THE UNDERSIDE OF THE COVER. THE GASKET MAY BE "T" SHAPED IN SECTION. THE GROOVE MAY BE CAST OR MACHINED.
2. BOLT-DOWN CAPABILITY IS REQUIRED ON ALL FRAMES, GRATES, AND COVERS, UNLESS SPECIFIED OTHERWISE IN THE CONTRACT. PROVIDE 3 HOLES IN THE FRAME THAT ARE VERTICALLY ALIGNED WITH THE GRATE OR COVER SLOTS. THE FRAME SHALL ACCEPT THE 304 STAINLESS STEEL (S.S) 5/8" - 11 NC X 2" (IN) ALLEN HEAD CAP SCREW BY BEING TAPPED, OR OTHER APPROVED MECHANISM. LOCATION OF BOLT DOWN HOLES VARIES BY MANUFACTURER.
3. FOR BOLT-DOWN MANHOLE RING AND COVERS THAT ARE NOT DESIGNATED "WATERTIGHT," THE NEOPRENE GASKET, GROOVE, AND WASHER ARE NOT REQUIRED.
4. WASHER SHALL BE NEOPRENE (DETAIL "B").
5. IN LIEU OF BLIND PICK NOTCH FOR MANHOLE COVERS, A SINGLE 1" (IN) PICK HOLE IS ACCEPTABLE. HOLE LOCATION AND NUMBER OF HOLES MAY VARY BY MANUFACTURER.
6. ALTERNATIVE REINFORCING DESIGNS ARE ACCEPTABLE IN LIEU OF THE RIB DESIGN.
7. FOR CLARITY, THE VERTICAL SCALE OF THE COVER SECTION HAS BEEN EXAGGERATED, IT IS 1.5 TIMES THE HORIZONTAL SCALE (1H:1.5V).

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SS-11
WATER TIGHT MANHOLE FRAME AND COVER

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NOTES:

1. PUMP STATION SHOWN IS A GENERAL ARRANGEMENT DRAWING. EACH DEVELOPER PUMP STATION SHALL BE REVIEWED ON A CASE BY CASE BASIS AND MODIFIED TO MEET THE NEEDS OF THE DEVELOPMENT AND THE CITY.

2, PUMP STATION SHALL BE DESIGNED IN ACCORDANCE WITH CURRENT DEPARTMENT OF ECOLOGY CRITERIA FOR SEWAGE WORKS DESIGN.

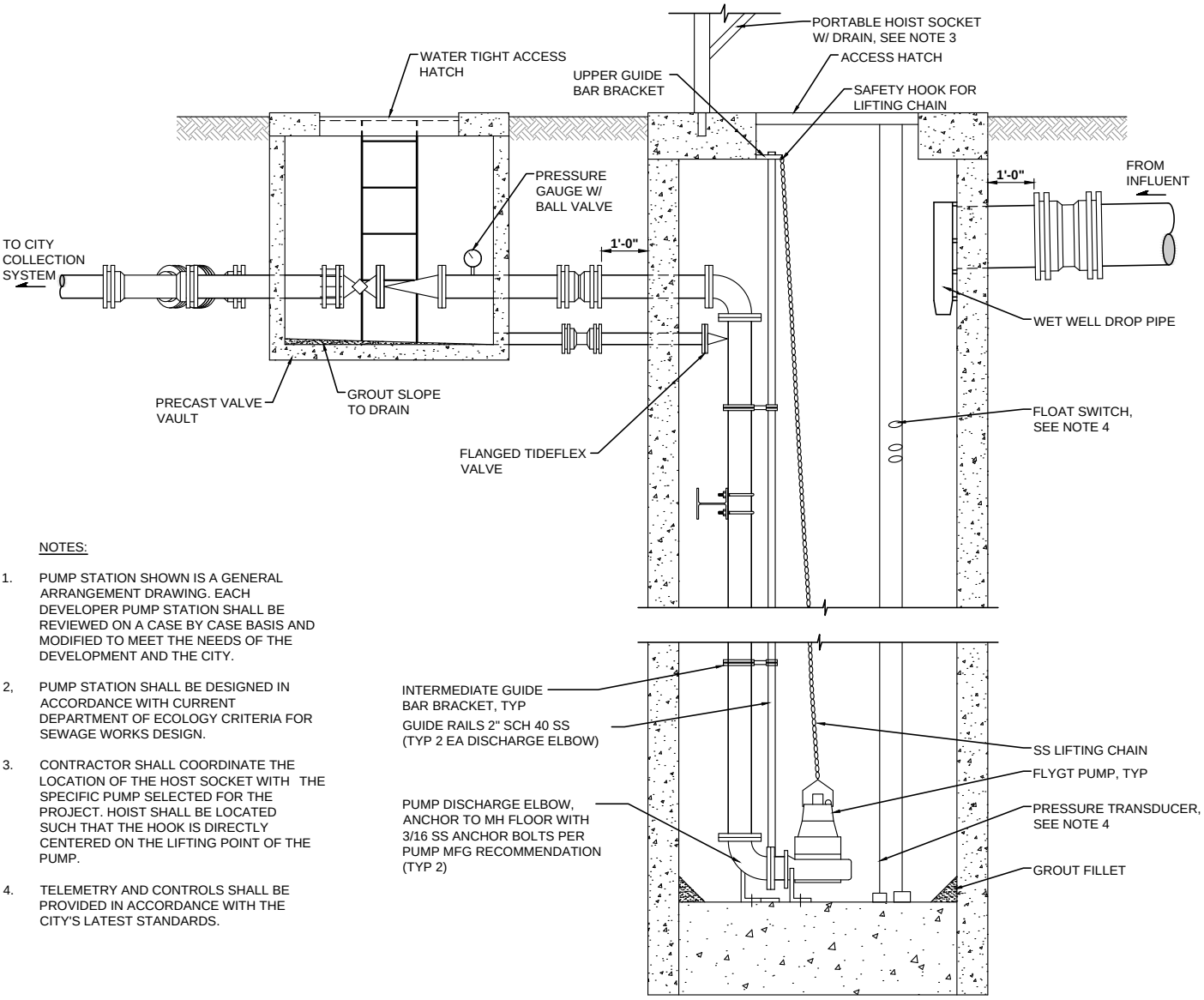
3. CONTRACTOR SHALL COORDINATE THE LOCATION OF THE HOST SOCKET WITH THE SPECIFIC PUMP SELECTED FOR THE PROJECT. HOIST SHALL BE LOCATED SUCH THAT THE HOOK IS DIRECTLY CENTERED ON THE LIFTING POINT OF THE PUMP.

4. TELEMETRY AND CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH THE CITY'S LATEST STANDARDS.

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SS-12
COLLECTION SYSTEM PUMP STATION

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CONSULTING ENGINEERS



NOTES:

1. PUMP STATION SHOWN IS A GENERAL ARRANGEMENT DRAWING. EACH DEVELOPER PUMP STATION SHALL BE REVIEWED ON A CASE BY CASE BASIS AND MODIFIED TO MEET THE NEEDS OF THE DEVELOPMENT AND THE CITY.
2. PUMP STATION SHALL BE DESIGNED IN ACCORDANCE WITH CURRENT DEPARTMENT OF ECOLOGY CRITERIA FOR SEWAGE WORKS DESIGN.
3. CONTRACTOR SHALL COORDINATE THE LOCATION OF THE HOST SOCKET WITH THE SPECIFIC PUMP SELECTED FOR THE PROJECT. HOIST SHALL BE LOCATED SUCH THAT THE HOOK IS DIRECTLY CENTERED ON THE LIFTING POINT OF THE PUMP.
4. TELEMETRY AND CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH THE CITY'S LATEST STANDARDS.

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1907 2007
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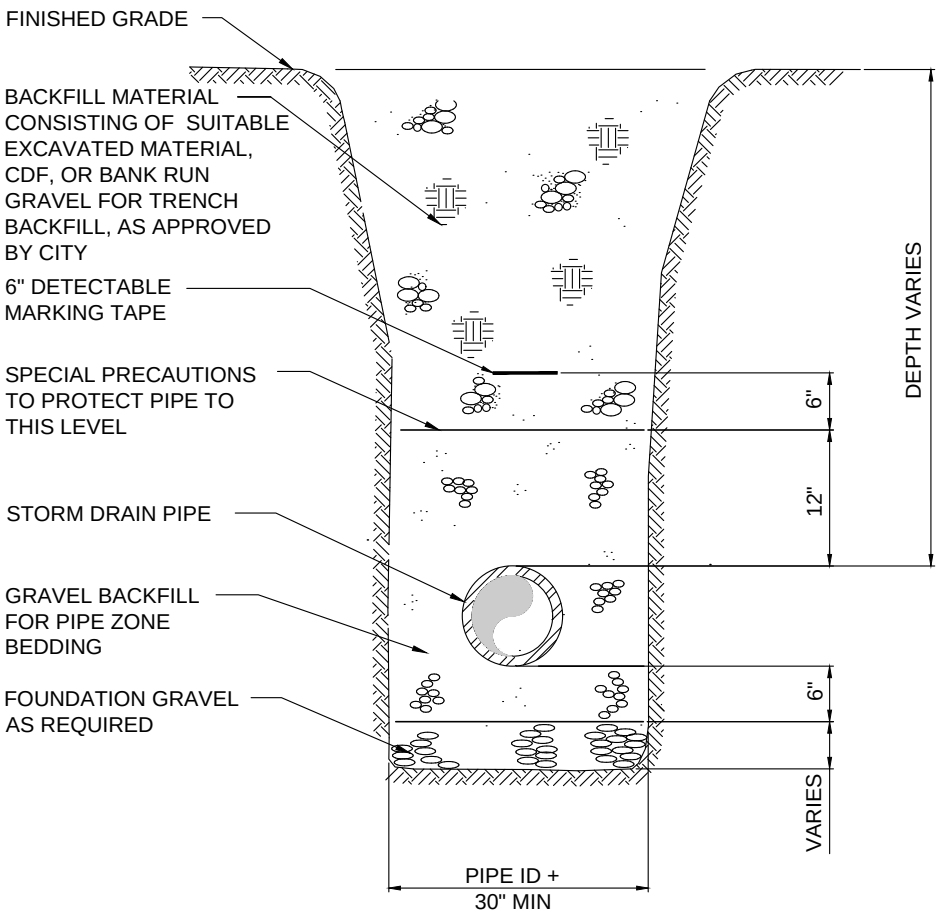
SS-13
COLLECTION SYSTEM PUMP STATION SECTION

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STORM DRAIN DETAILS

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NOTE:

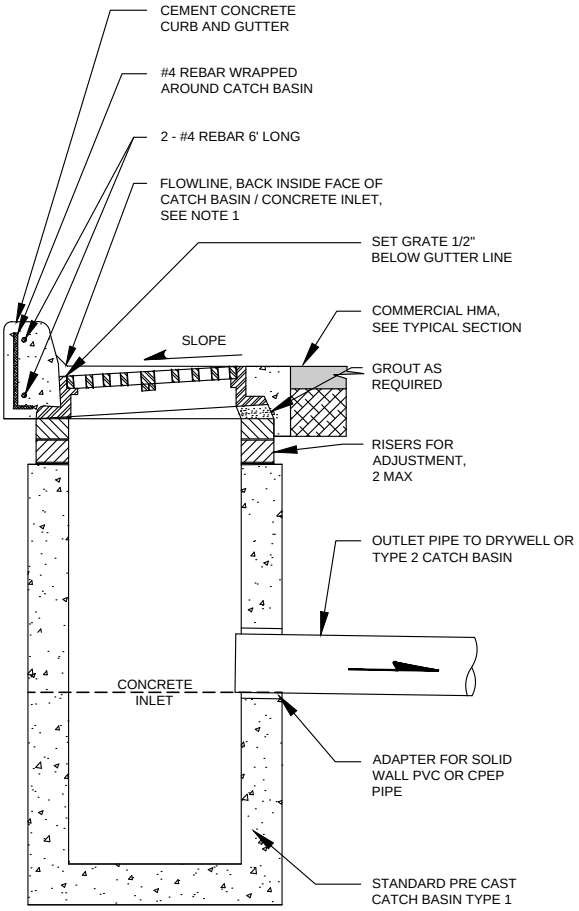
ALL BACKFILL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR, ASTM D1557

BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH THE CITY STANDARDS AND/OR STATE OR COUNTY PERMIT REQUIREMENTS.

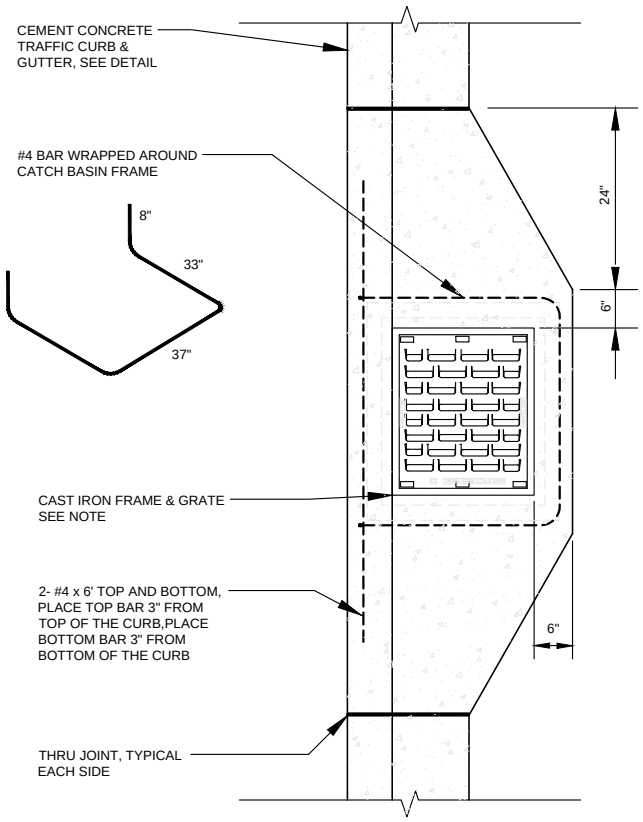
SD-1
STORM DRAIN TRENCH SECTION

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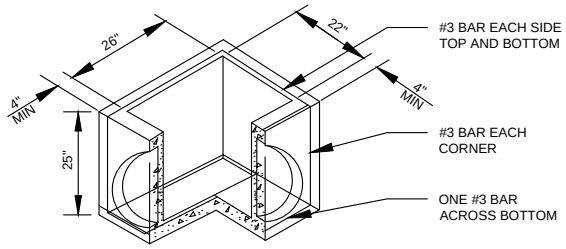
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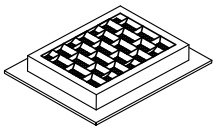
SECTION



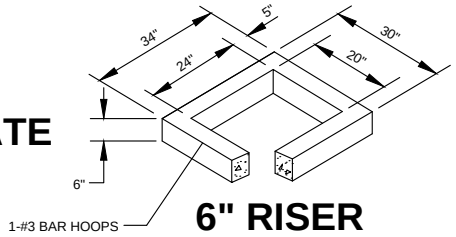
PLAN



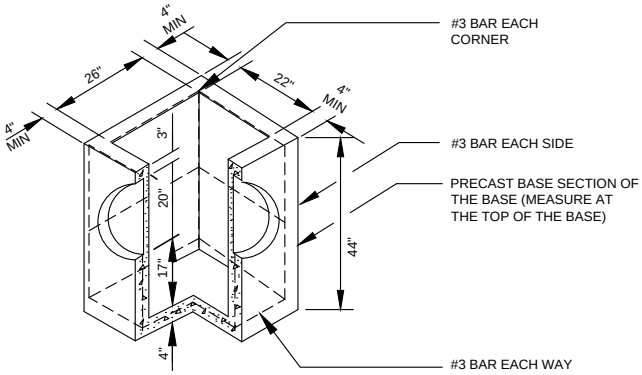
CONCRETE INLET



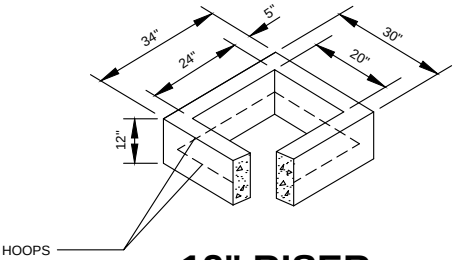
FRAME & GRATE



6" RISER



CATCH BASIN TYPE 1



12" RISER

NOTES:

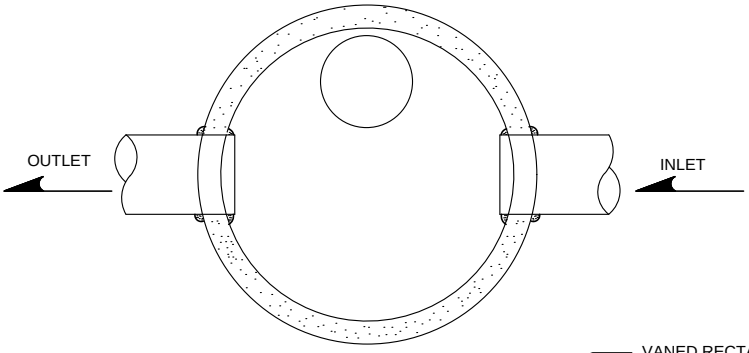
1. OFFSET DISTANCE FOR CATCH BASINS TYPE 1 AND/OR CONCRETE INLETS IS ℄ OF ROAD TO FLOWLINE, BACK INSIDE FACE OF CATCH BASIN / CONCRETE INLET.
2. CONTRACTOR SHALL USE BI-DIRECTIONAL GRATE WHERE FLOW COMES FROM GUTTER TO GRATE FROM BOTH DIRECTIONS.
3. BOLT-DOWN CAPABILITY IS REQUIRED ON ALL FRAMES, GRATES, AND COVERS UNLESS OTHERWISE DIRECTED BY THE CITY.

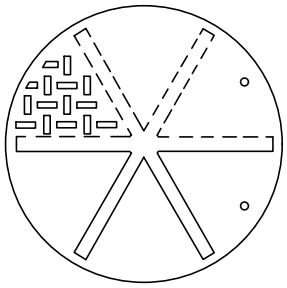
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SD-2
CATCH BASIN TYPE 1

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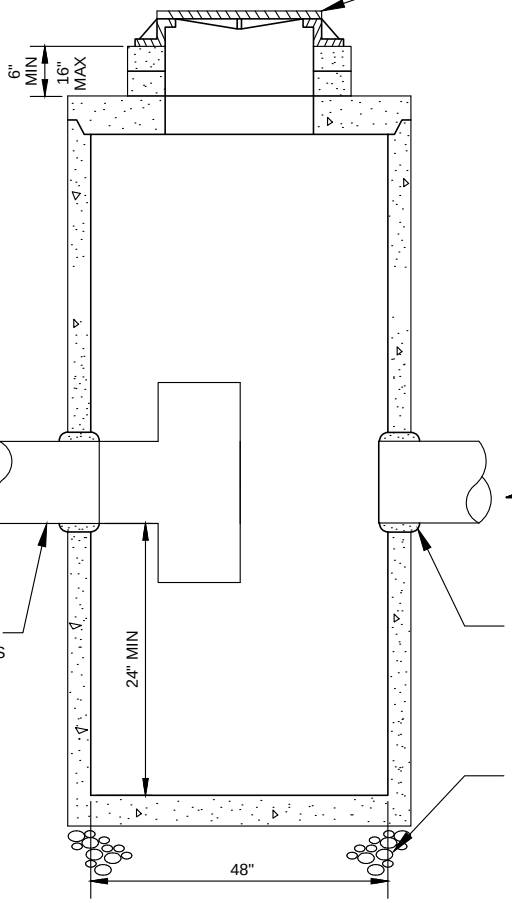
NON-SKID PATTERN SHALL BE CAST INTEGRAL ON TOP OF COVER, PATTERN NOT SHOWN FOR CLARITY

1" CORE, 1 HOLE TYP

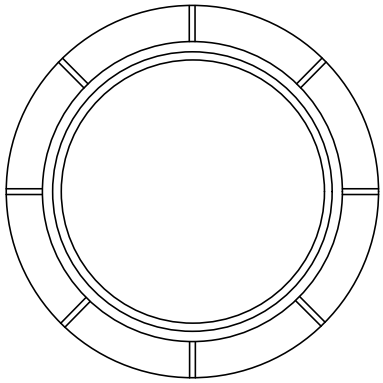
VANED RECTANGULAR COVER IF IN CURB & GUTTER.

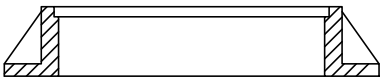
OR

ROUND SOLID COVER MARKED "STORM" WITH LOCKING BOLTS IF IN ROADWAY.









FRAME AND COVER

NOTES:

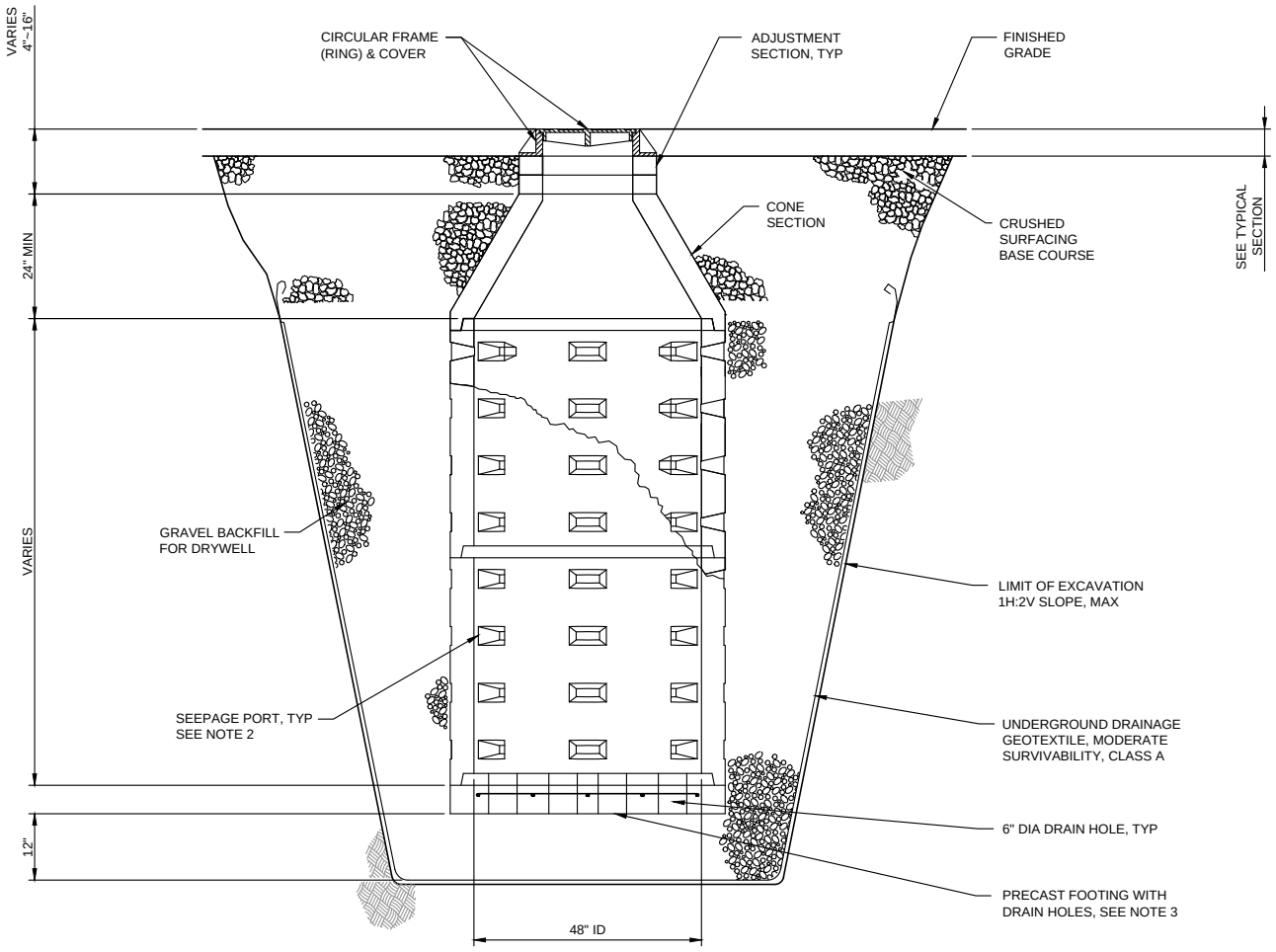
1. CATCH BASINS AND CONCRETE INLETS TO BE CONSTRUCTED TO ASTM C 478 (AASHTO M 199) AND ASTM C 890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS.
2. AS AN ACCEPTABLE ALTERNATE TO REBAR, WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A 497 (AASHTO M 221). WIRE FABRIC SHALL NOT BE PLACED IN THE KNOCKOUTS.
3. THE BOTTOM OF THE PRECAST BASE SECTION MAY BE ROUNDED
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
5. KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAXIMUM DIAMETER OF 20". KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPE. PIPE TO BE INSTALLED IN FACTORY SUPPLIED KNOCKOUTS.
6. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER

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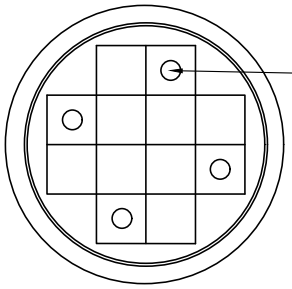
SD-3
CATCH BASIN TYPE 2

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ELEVATION



PRECAST FOOTING DETAIL

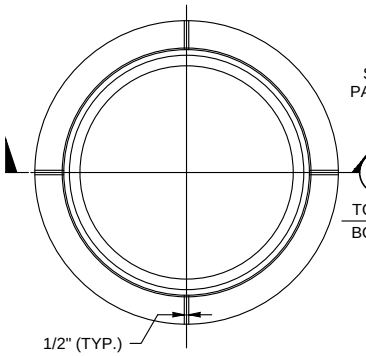
NOTES:

1. PRECAST CONCRETE CONE SECTIONS MAY BE ECCENTRIC OR CONCENTRIC.
2. SEEPAGE PORT ORIENTATION VARIES AMONG MANUFACTURERS.
3. FOR DEPTHS OVER 15' USE 72" X 8" ALTERNATIVE PRECAST FOOTING.

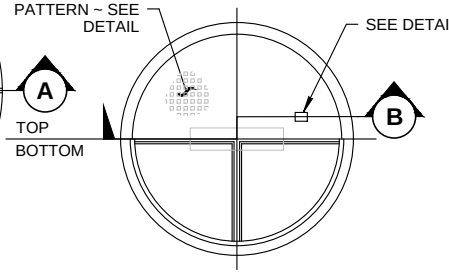
SD-4
PRECAST CONCRETE DRYWELL

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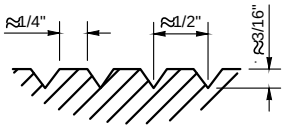
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RING PLAN



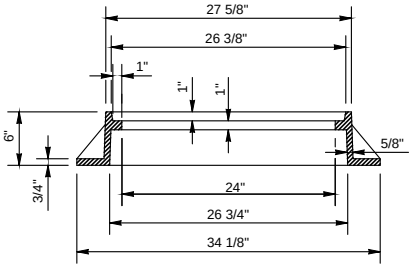
COVER PLAN



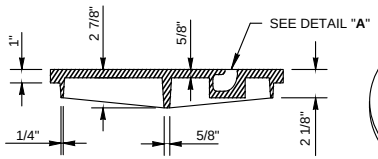
SKID GROOVE PATTERN DETAIL

NOTES:

1. THE GASKET AND GROOVE MAY BE IN THE SEAT (FRAME) OR IN THE UNDERSIDE OF THE COVER. THE GASKET MAY BE "T" SHAPED IN SECTION. THE GROOVE MAY BE CAST OR MACHINED.
2. BOLT-DOWN CAPABILITY IS REQUIRED ON ALL FRAMES, GRATES, AND COVERS, UNLESS SPECIFIED OTHERWISE IN THE CONTRACT. PROVIDE 3 HOLES IN THE FRAME THAT ARE VERTICALLY ALIGNED WITH THE GRATE OR COVER SLOTS. THE FRAME SHALL ACCEPT THE304 STAINLESS STEEL (S.S) 5/8" - 11 NC X 2" (IN) ALLEN HEAD CAP SCREW BY BEING TAPPED, OR OTHER APPROVED MECHANISM. LOCATION OF BOLT DOWN HOLES VARIES BY MANUFACTURER.
3. FOR BOLT-DOWN MANHOLE RING AND COVERS THAT ARE NOT DESIGNATED "WATERTIGHT," THE NEOPRENE GASKET, GROOVE, AND WASHER ARE NOT REQUIRED.
4. WASHER SHALL BE NEOPRENE (DETAIL "B").
5. IN LIEU OF BLIND PICK NOTCH FOR MANHOLE COVERS, A SINGLE 1" (IN) PICK HOLE IS ACCEPTABLE. HOLE LOCATION AND NUMBER OF HOLES MAY VARY BY MANUFACTURER.
6. ALTERNATIVE REINFORCING DESIGNS ARE ACCEPTABLE IN LIEU OF THE RIB DESIGN.
7. FOR CLARITY, THE VERTICAL SCALE OF THE COVER SECTION HAS BEEN EXAGGERATED, IT IS 1.5 TIMES THE HORIZONTAL SCALE (1H:1.5V).

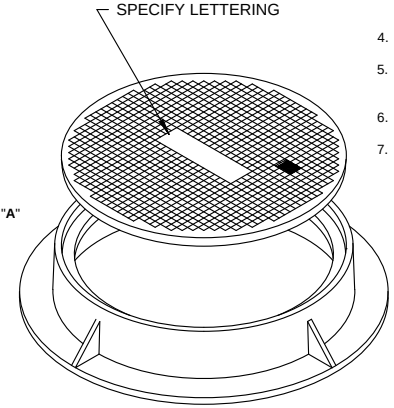


RING SECTION (A)

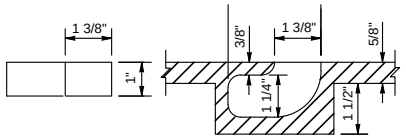


COVER SECTION (B)
(SEE NOTE 7)

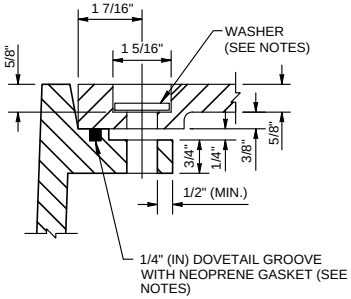
STANDARD TYPE 1



ISOMETRIC VIEW



BLIND PICK NOTCH DETAIL 'A'



BOLT-DOWN / WATERTIGHT DETAIL 'B'

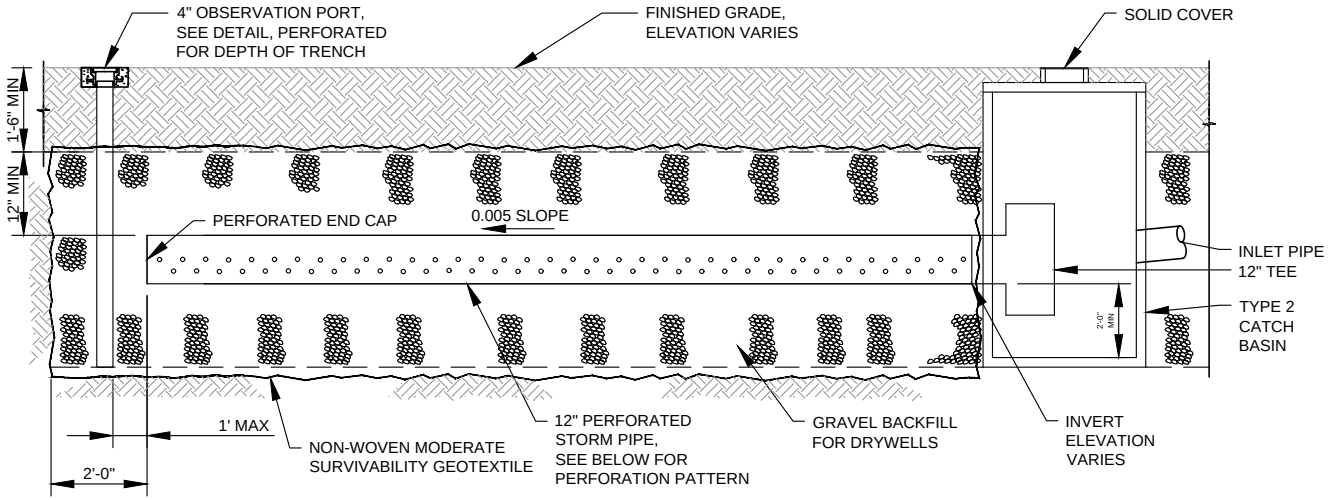
STANDARD DRYWELL FRAME & COVER

NTS

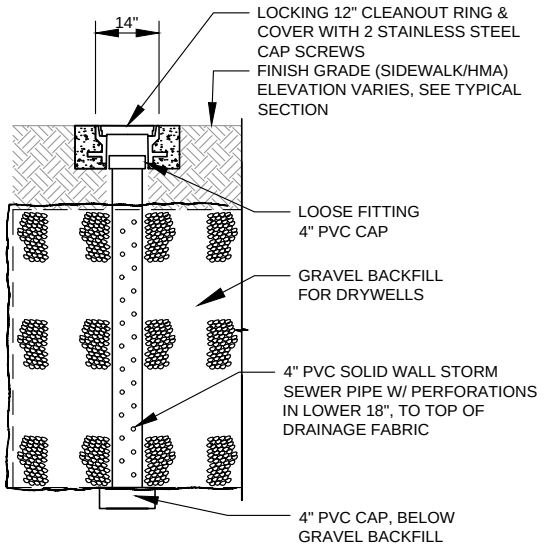
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SD-5
STANDARD DRYWELL FRAME AND COVER

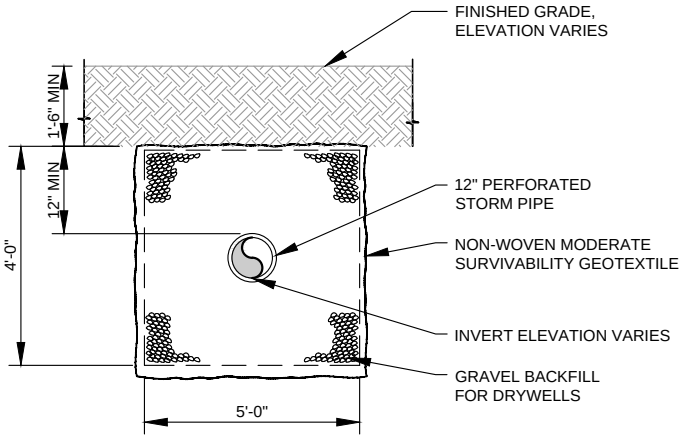
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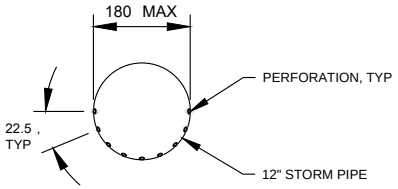
SIDE VIEW



OBSERVATION PORT



SECTION VIEW



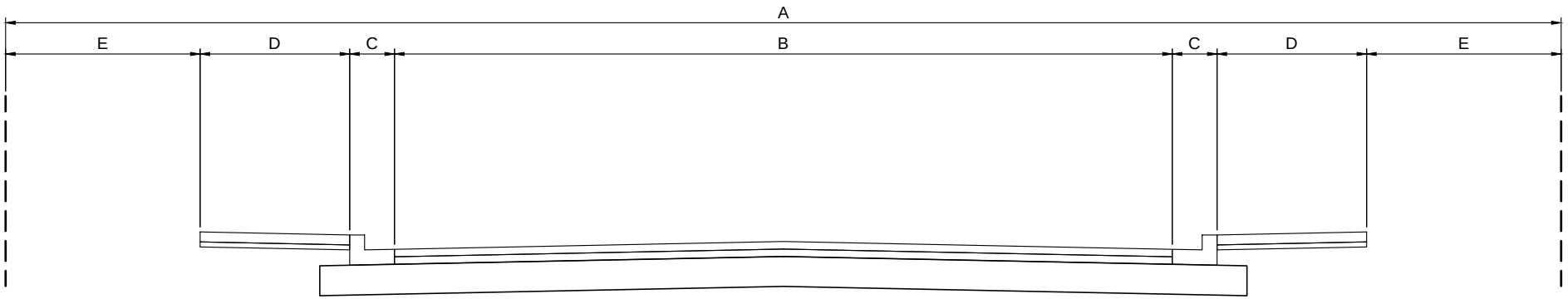
PERFORATION PATTERN

SD-6
INFILTRATION TRENCH

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STREET DETAILS

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TYPICAL STREET SECTION TABLE

STREET CLASSIFICATION & ZONING (IF APPLICABLE)	A RIGHT-OF-WAY WIDTH	B PAVEMENT WIDTH (GUTTER LIP TO GUTTER LIP)	C CURB AND GUTTER TYPE (& WIDTH)	D SIDEWALK WIDTH	E UTILITY CORRIDOR / BUFFER
PRINCIPAL ARTERIAL STREET: COMMERCIAL AND/OR INDUSTRIAL ZONING DISTRICTS	80'	44'	VERTICAL (1.5') BOTH SIDES	12' BOTH SIDES	4.5' BOTH SIDES
MINOR ARTERIAL STREET: RESIDENTIAL ZONING DISTRICTS	70'	42'	VERTICAL (1.5') BOTH SIDES	7' BOTH SIDES	5.5' BOTH SIDES
MAJOR COLLECTOR STREET	60'	38'	VERTICAL (1.5') BOTH SIDES	5' BOTH SIDES	4.5' BOTH SIDES
MINOR COLLECTOR STREET	60'	30'	VERTICAL (1.5') BOTH SIDES	5' BOTH SIDES	8.5' BOTH SIDES
LOCAL ACCESS STREET	60'	30'	VERTICAL (1.5') BOTH SIDES	5' ONE SIDE DESIGNATED BY CITY	VARIES

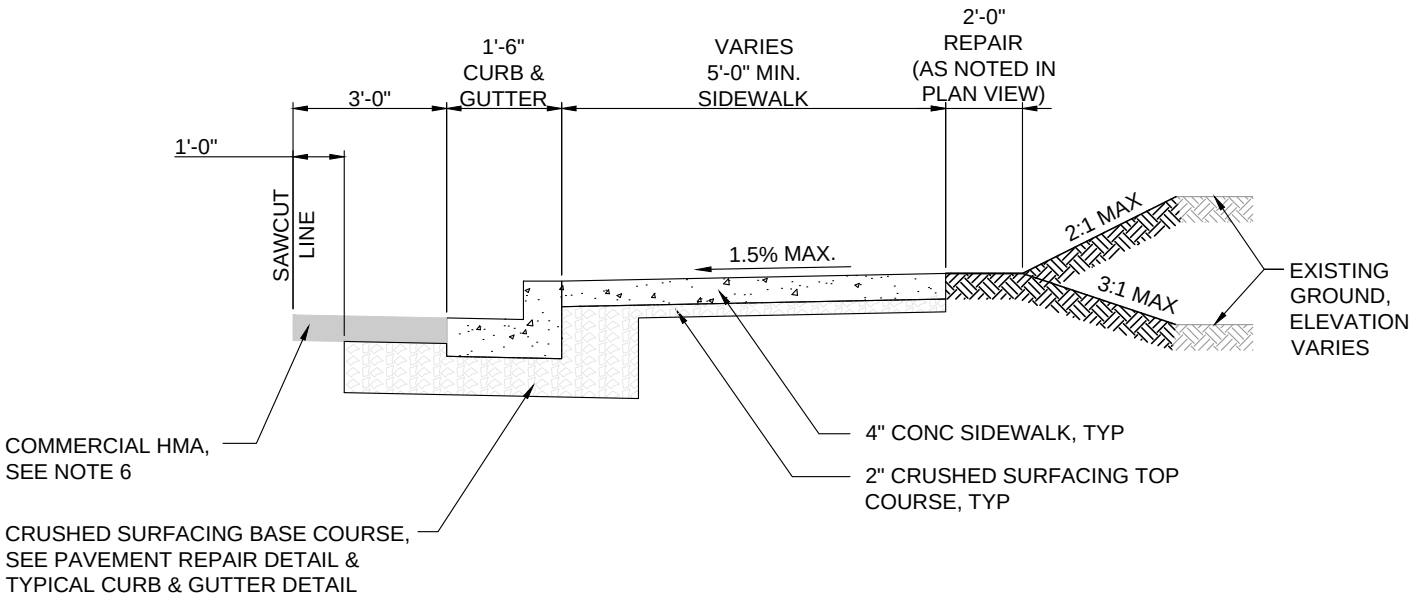
NOTES:

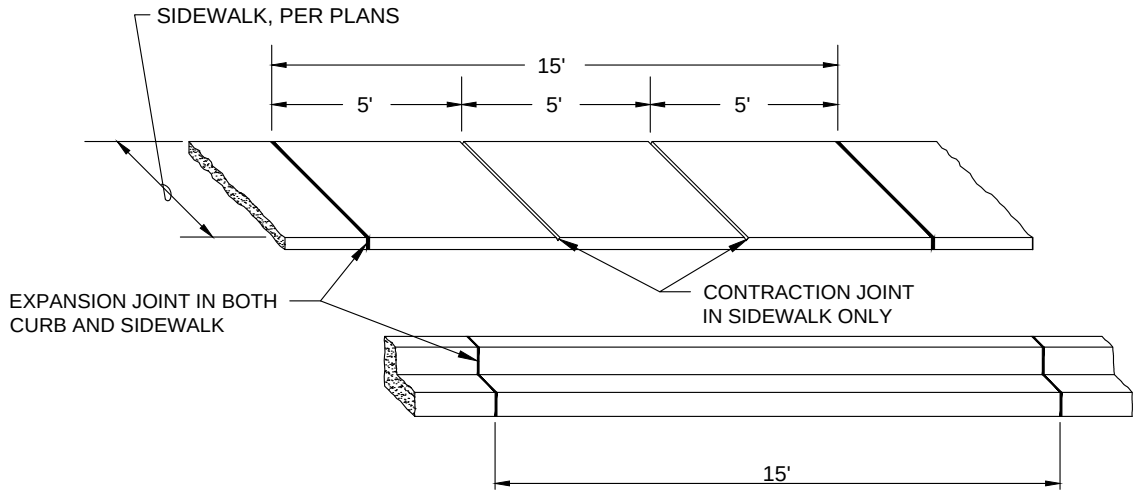
1. ROADWAY SECTION DEPTHS MUST BE DETERMINED FROM A GEOTECHNICAL INVESTIGATION PERFORMED BY A LICENSED GEOTECHNICAL ENGINEER.
2. SIDEWALKS WILL BE REQUIRED WHERE EXTENDING CITY DESIGNATED WALKING ROUTES AND WHERE REQUIRED BY CITY TO SERVE PROPOSED PEDESTRIAN GENERATORS.
3. NO ON-STREET PARKING SHALL BE ALLOWED, UNLESS APPROVED BY THE CITY.
4. BIKE LANES WILL BE REQUIRED WHERE EXTENDING CITY DESIGNATED BIKE ROUTES AND WHERE REQUIRED BY CITY TO SERVE PROPOSED GENERATORS.

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ST-1
TYPICAL ROADWAY SECTION

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NOTES

1. EXPANSION/CONTRACTION JOINTS SHALL BE 3/8" ASPHALT SATURATED FELT TO FULL DEPTH OF CONCRETE PLACED AT 15' O.C. AND AT POINTS OF TANGENCY ON CURVES, AT CATCH BASINS/INLETS, AND AT EDGES OF ALLEYS, DRIVEWAYS, AND CURB RAMPS.

2. V-GROOVE MARKS SHALL BE 1/8" DEEP AND 1/4" WIDE PLACED AT 5' OC FOR 5' SIDEWALKS.

3. ALL JOINTS SHALL BE CLEAN AND EDGED TO A 1/4" RADIUS. JOINTS SHALL BE FLUSH WITH THE FINISHED SURFACE.

4. SIDEWALK SHALL CONSIST OF 4" DEPTH CEMENT CONC. PLACED ON 2" COMPACTED DEPTH CRUSHED SURFACING BASE COURSE.

5. SIDEWALK SHALL MEET ADA REQUIREMENTS AND SHALL HAVE NO LESS THAN FIVE FEET OF WIDTH SHALL BE THE MINIMUM PEDESTRIAN ACCESSIBLE ROUTE FREE OF VERTICAL AND HORIZONTAL OBSTRUCTIONS. GRATINGS, ACCESS COVERS, JUNCTION BOXES, CABLE VAULTS, PULL BOXES AND OTHER APPURTENANCES WITHIN THE SIDEWALK MUST HAVE SLIP RESISTANT SURFACES, BE FLUSH WITH SURFACE, AND MATCH GRADE OF THE SIDEWALK.

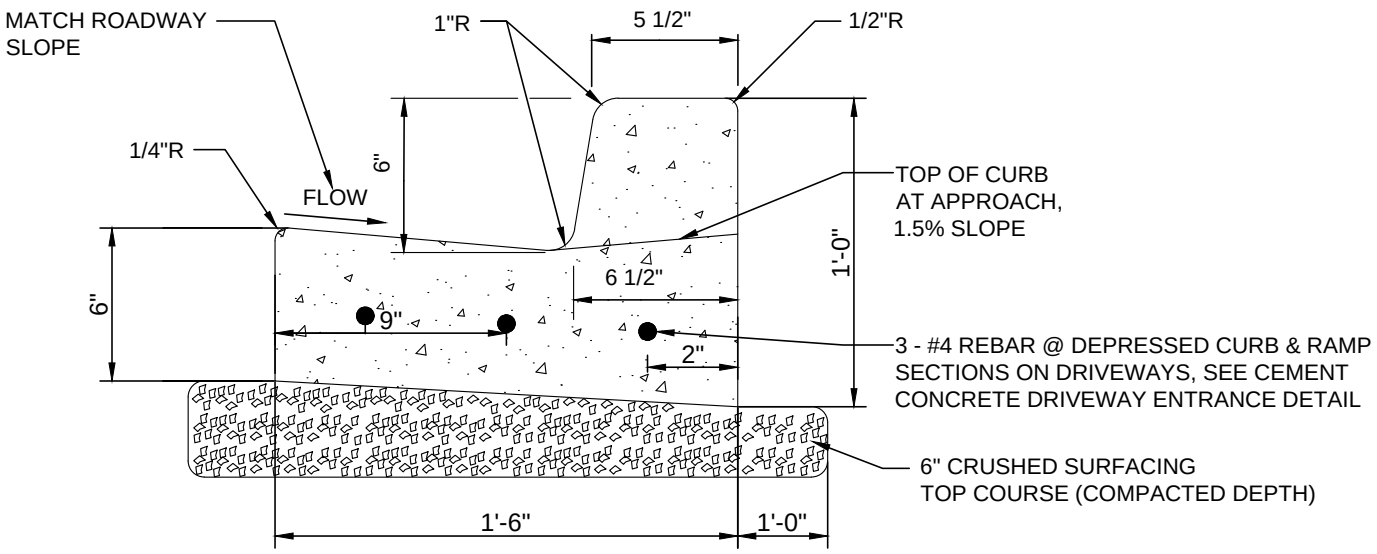
6. COMMERCIAL HMA PER TYPICAL ROADWAY SECTION FOR NEW CONSTRUCTION OR COMMERCIAL HMA PER TRENCH PATCH DETAIL (SEE WATER DETAILS) IF ADDING SIDEWALK TO AN EXISTING ROADWAY.

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ST-2
TYPICAL CONCRETE SIDEWALK

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NOTES:

1. EXPANSION JOINT MATERIAL SHALL BE 3/8" THICK PREMOLDED JOINT FILLER FULL THICKNESS OF CONCRETE SPACING.

2. FORMS AND SUBGRADE INSPECTION AND APPROVAL BY THE CONTRACTING AGENCY REQUIRED PRIOR TO POURING CONCRETE.

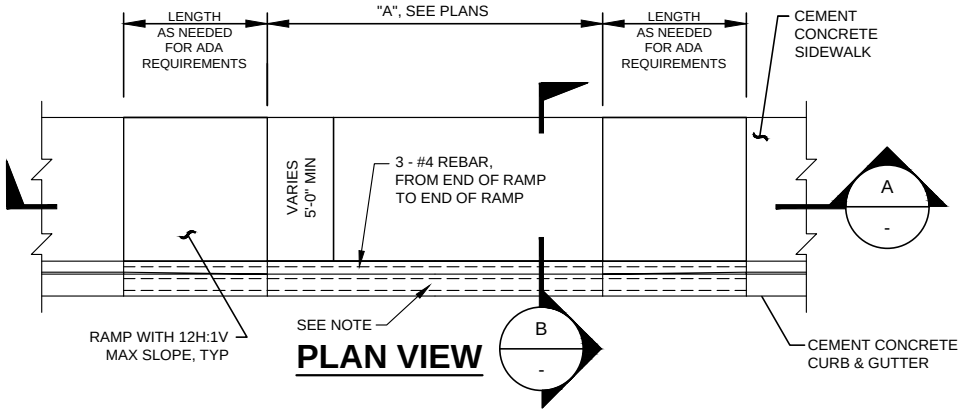
3. THE TOP, FACE & GUTTER SHALL BE BROOM FINISHED PARALLEL TO THE ROADWAY.

4. 3 - #4 REBAR AT DRIVEWAYS AND DEPRESSIONS.

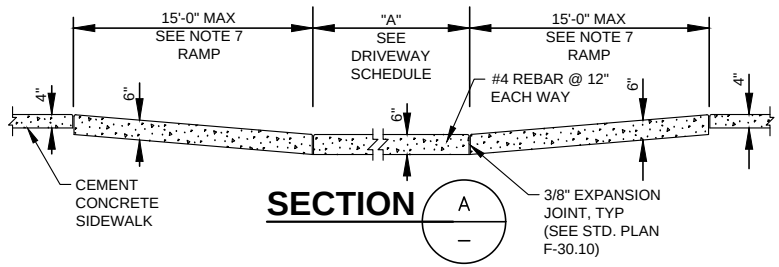
ST-3
TYPICAL CURB AND GUTTER

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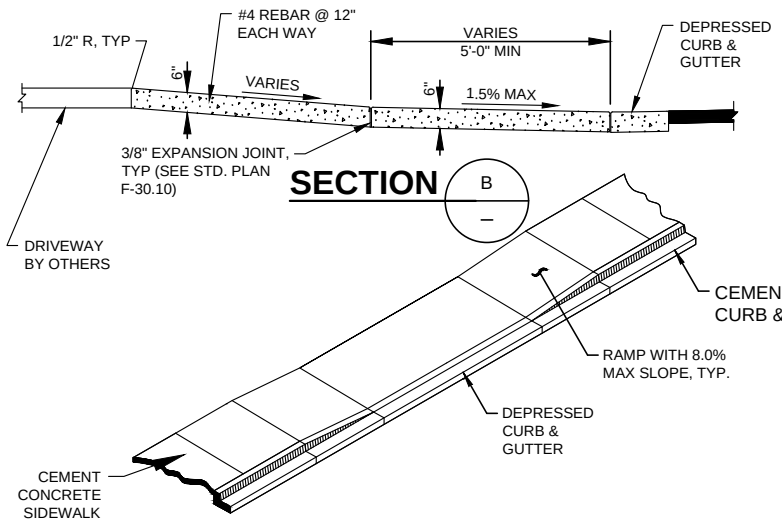
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PLAN VIEW



SECTION



SECTION

NOTES:

1. WHEN THE DRIVEWAY WIDTH EXCEEDS 10 FEET, CONSTRUCT A FULL DEPTH EXPANSION JOINT, SEE WSDOT STANDARD PLAN F-30.10 WITH 3/8" JOINT FILLER ALONG THE DRIVEWAY CENTERLINE. CONSTRUCT EXPANSION JOINTS PARALLEL WITH THE CENTERLINE AS REQUIRED AT 15' MAX SPACING WHEN DRIVEWAY WIDTHS EXCEED 30'.
2. COMPACT NATIVE MATERIAL TO 95%.
3. 6" CEMENT CONCRETE CLASS 4000.
4. 2" CRUSHED SURFACING TOP COURSE FOR BASE. CRUSHED SURFACING MATERIAL BENEATH CONCRETE DRIVEWAY NOT SHOWN FOR CLARITY.
5. CONCRETE DRIVEWAYS SHALL INCLUDE #4 REBAR AS SHOWN.
6. AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF DRIVEWAY ENTRANCES.
7. THE CURB RAMP MAXIMUM RUNNING SLOPE SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15' (FT) TO AVOID CHASING THE SLOPE INDEFINITELY WHEN CONNECTING TO STEEP GRADES. WHEN APPLYING THE 15' (FT) MAX LENGTH, THE RUNNING SLOPE OF THE CURB RAMP SHALL BE AS FLAT AS FEASIBLE.
8. RAMPS SHALL BE ADA COMPLIANT.

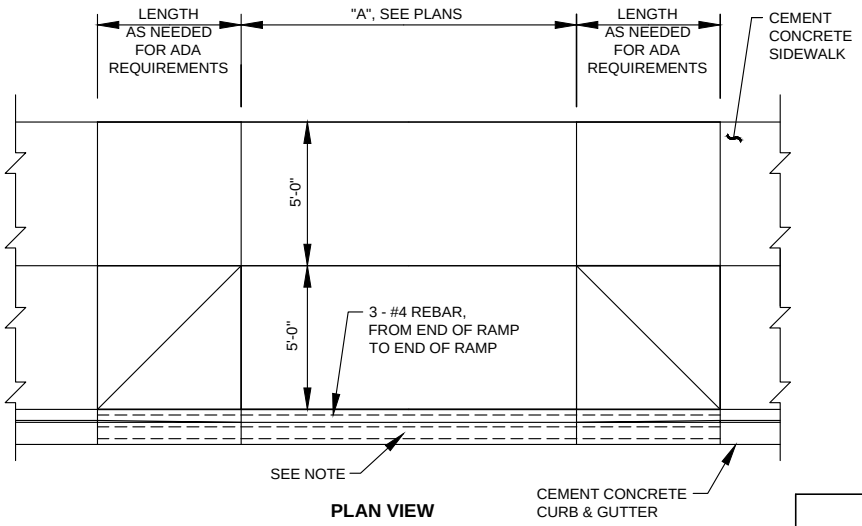
DRIVEWAY SEPARATION (MEASURED FROM BOTTOM OF THE TAPERS)

	PRIMARY ARTERIAL	MINOR ARTERIAL	MAJOR COLLECTOR	MINOR COLLECTOR	LOCAL ACCESS
DISTANCE FROM INTERSECTIONS	100 FEET	75 FEET	50 FEET	30 FEET	30 FEET
DISTANCE FROM INTERIOR LOT LINES	30 FEET	20 FEET	20 FEET	TAPER LENGTH	TAPER LENGTH
SEPARATION BETWEEN DRIVEWAYS ON ONE LOT	100 FEET	75 FEET	60 FEET	12 FEET	12 FEET

DRIVEWAY WIDTH
SINGLE - 10 FEET MIN
DUPLEX - 30 FEET MAX

ST-4
CONCRETE DRIVEWAY ENTRANCE
OPTION A

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PLAN VIEW

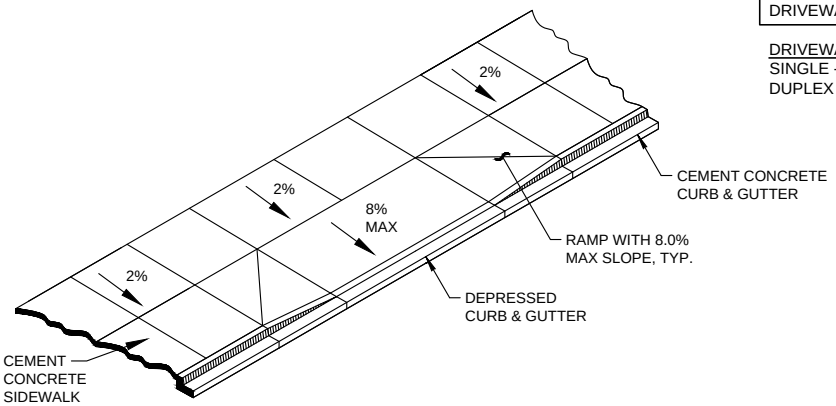
NOTES:

1. WHEN THE DRIVEWAY WIDTH EXCEEDS 10 FEET, CONSTRUCT A FULL DEPTH EXPANSION JOINT, SEE WSDOT STANDARD PLAN F-30.10 WITH 3/8" JOINT FILLER ALONG THE DRIVEWAY CENTERLINE. CONSTRUCT EXPANSION JOINTS PARALLEL WITH THE CENTERLINE AS REQUIRED AT 15' MAX SPACING WHEN DRIVEWAY WIDTHS EXCEED 30'.
2. COMPACT NATIVE MATERIAL TO 95%.
3. 6" CEMENT CONCRETE CLASS 4000.
4. 2" CRUSHED SURFACING TOP COURSE FOR BASE. CRUSHED SURFACING MATERIAL BENEATH CONCRETE DRIVEWAY NOT SHOWN FOR CLARITY.
5. CONCRETE DRIVEWAYS SHALL INCLUDE #4 REBAR AS SHOWN.
6. AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF DRIVEWAY ENTRANCES.
7. THE CURB RAMP MAXIMUM RUNNING SLOPE SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15' (FT) TO AVOID CHASING THE SLOPE INDEFINITELY WHEN CONNECTING TO STEEP GRADES. WHEN APPLYING THE 15' (FT) MAX LENGTH, THE RUNNING SLOPE OF THE CURB RAMP SHALL BE AS FLAT AS FEASIBLE.
8. RAMPS SHALL BE ADA COMPLIANT.

DRIVEWAY SEPARATION (MEASURED FROM BOTTOM OF THE TAPERS)

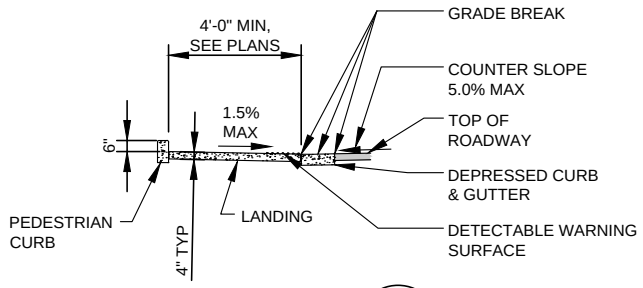
	PRIMARY ARTERIAL	MINOR ARTERIAL	MAJOR COLLECTOR	MINOR COLLECTOR	LOCAL ACCESS
DISTANCE FROM INTERSECTIONS	100 FEET	75 FEET	50 FEET	30 FEET	30 FEET
DISTANCE FROM INTERIOR LOT LINES	30 FEET	20 FEET	20 FEET	TAPER LENGTH	TAPER LENGTH
SEPARATION BETWEEN DRIVEWAYS ON ONE LOT	100 FEET	75 FEET	60 FEET	12 FEET	12 FEET

DRIVEWAY WIDTH
SINGLE - 10 FEET MIN
DUPLEX - 30 FEET MAX

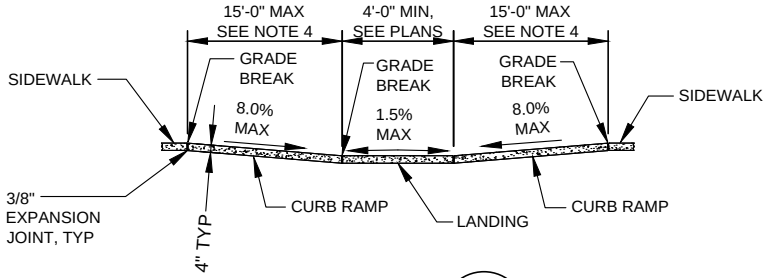


ST-5
CONCRETE DRIVEWAY ENTRANCE
OPTION B

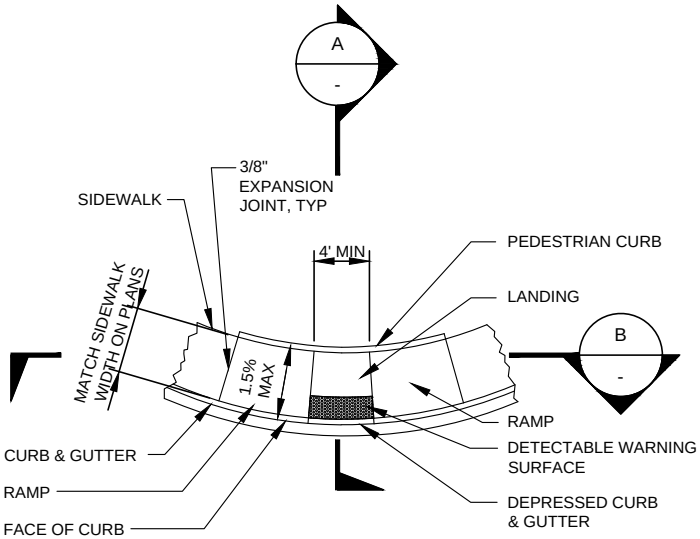
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SECTION B – B



SECTION A – A



PLAN VIEW

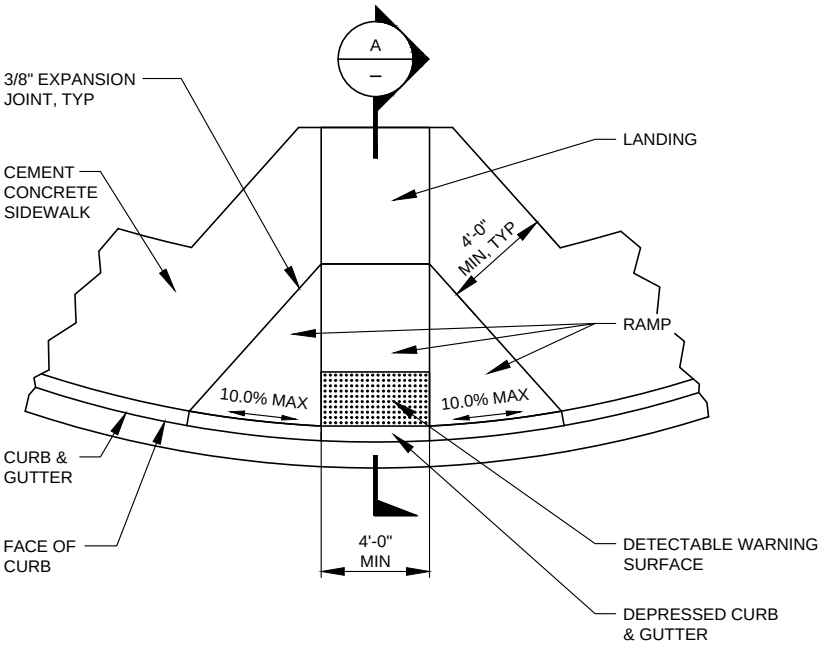
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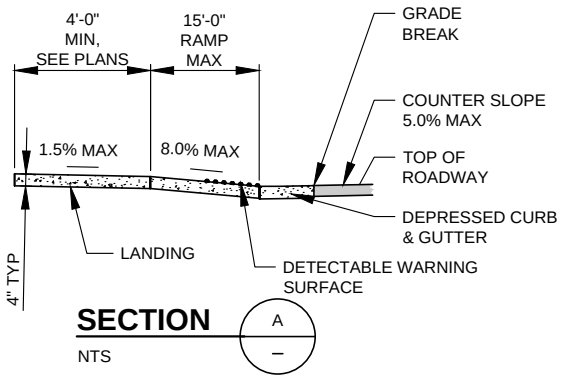
1. PROVIDE A SEPARATE CURB RAMP FOR EACH MARKED OR UNMARKED CROSSWALK. CURB RAMP LOCATION SHALL BE PLACED WITHIN THE WIDTH OF THE ASSOCIATED CROSSWALK.
2. WHERE "GRADE BREAK" IS CALLED OUT, THE ENTIRE LENGTH OF THE GRADE BREAK BETWEEN THE TWO ADJACENT SURFACE PLANES SHALL BE FLUSH.
3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES IN FRONT OF THE CURB RAMP OR ON ANY PART OF THE CURB RAMP OR LANDING.
4. THE CURB RAMP MAXIMUM RUNNING SLOPE SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15 FEET TO AVOID CHASING THE SLOPE INDEFINITELY WHEN CONNECTING TO STEEP GRADES. WHEN APPLYING THE 15 FOOT MAX LENGTH, THE RUNNING SLOPE OF THE CURB RAMP SHALL BE AS FLAT AS FEASIBLE.
5. CURB RAMP, LANDING, & FLARES SHALL RECEIVE BROOM FINISH.
6. DETECTABLE WARNING SURFACE SHALL MEET REQUIREMENTS OF WSDOT STANDARD DETAIL F45.10-02.
7. WHERE ADA REQUIREMENTS CANNOT BE MET, THE DEVELOPER SHALL PROVIDE JUSTIFICATION FOR THE DESIGN USED AND STATE WHY IT WAS CONSTRUCTED TO THE MAXIMUM EXTENT FEASIBLE. THE FORMAT FOR THE EXPLANATION SHALL BE AS REQUIRED BY WSDOT AT THE TIME THE RAMP IS CONSTRUCTED.

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ST-6
PARALLEL SIDEWALK RAMP

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NOTES:

1. PROVIDE A SEPARATE CURB RAMP FOR EACH MARKED OR UNMARKED CROSSWALK. CURB RAMP LOCATION SHALL BE PLACED WITHIN THE WIDTH OF THE ASSOCIATED CROSSWALK.
2. WHERE "GRADE BREAK" IS CALLED OUT, THE ENTIRE LENGTH OF THE GRADE BREAK BETWEEN THE TWO ADJACENT SURFACE PLANES SHALL BE FLUSH.
3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES IN FRONT OF THE CURB RAMP OR ON ANY PART OF THE CURB RAMP OR LANDING.
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5. CURB RAMP, LANDING, & FLARES SHALL RECEIVE BROOM FINISH.
6. DETECTABLE WARNING SURFACE SHALL MEET REQUIREMENTS OF WSDOT STANDARD DETAIL F45.10-02.
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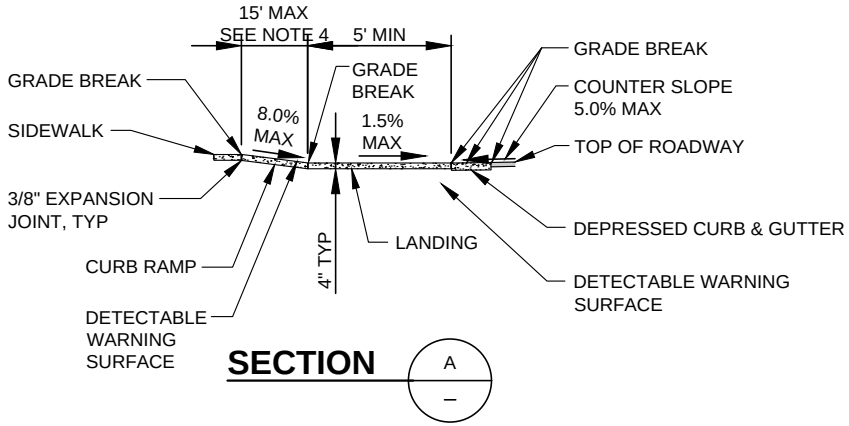
CITY OF OKANOGAN 1907 2007 100 YEARS OF COMMUNITY PRIDE

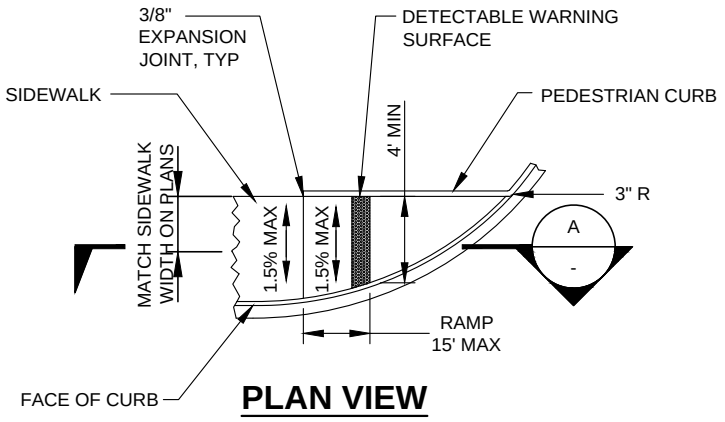
ST 7

PERPENDICULAR SIDEWALK RAMP

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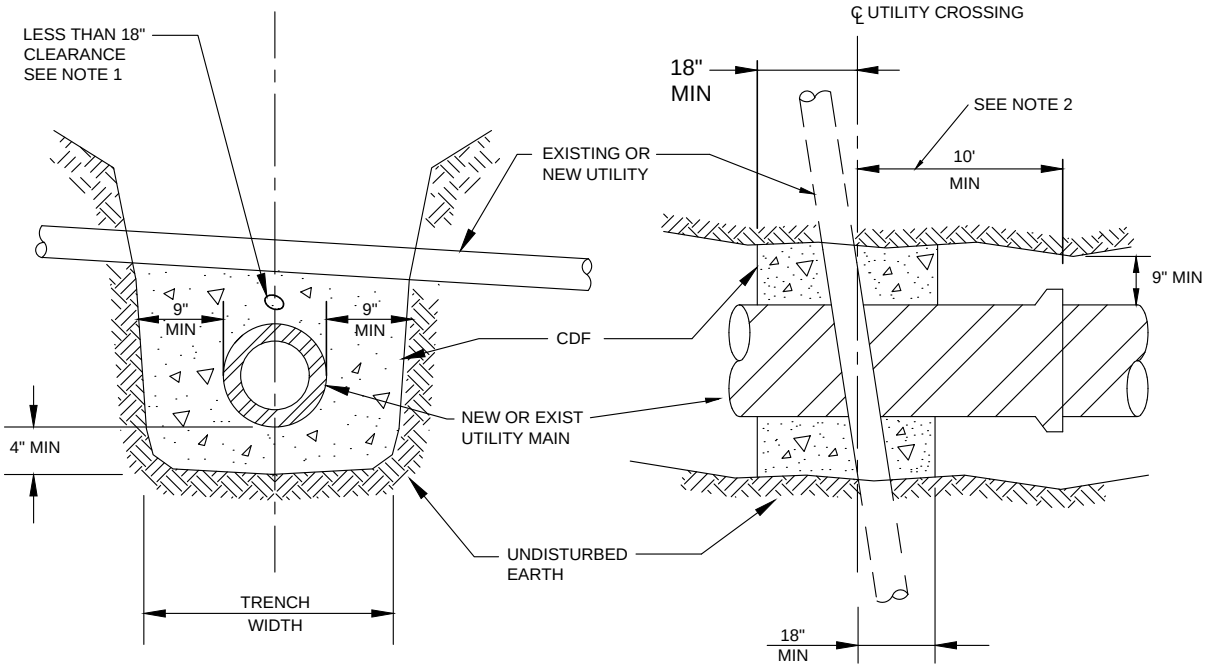
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2. WHERE "GRADE BREAK" IS CALLED OUT, THE ENTIRE LENGTH OF THE GRADE BREAK BETWEEN THE TWO ADJACENT SURFACE PLANES SHALL BE FLUSH.
3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES IN FRONT OF THE CURB RAMP OR ON ANY PART OF THE CURB RAMP OR LANDING.
4. THE CURB RAMP MAXIMUM RUNNING SLOPE SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15 FEET TO AVOID CHASING THE SLOPE INDEFINITELY WHEN CONNECTING TO STEEP GRADES. WHEN APPLYING THE 15 FOOT MAX LENGTH, THE RUNNING SLOPE OF THE CURB RAMP SHALL BE AS FLAT AS FEASIBLE.
5. CURB RAMP, LANDING, & FLARES SHALL RECEIVE BROOM FINISH.
6. DETECTABLE WARNING SURFACE SHALL MEET REQUIREMENTS OF WSDOT STANDARD DETAIL F45.10-02.
7. WHERE ADA REQUIREMENTS CANNOT BE MET, THE DEVELOPER SHALL PROVIDE JUSTIFICATION FOR THE DESIGN USED AND STATE WHY IT WAS CONSTRUCTED TO THE MAXIMUM EXTENT FEASIBLE. THE FORMAT FOR THE EXPLANATION SHALL BE AS REQUIRED BY WSDOT AT THE TIME THE RAMP IS CONSTRUCTED.

CITY OF OKANOGAN
1907 2007
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ST-8
SINGLE DIRECTION CURB RAMP

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NOTES:

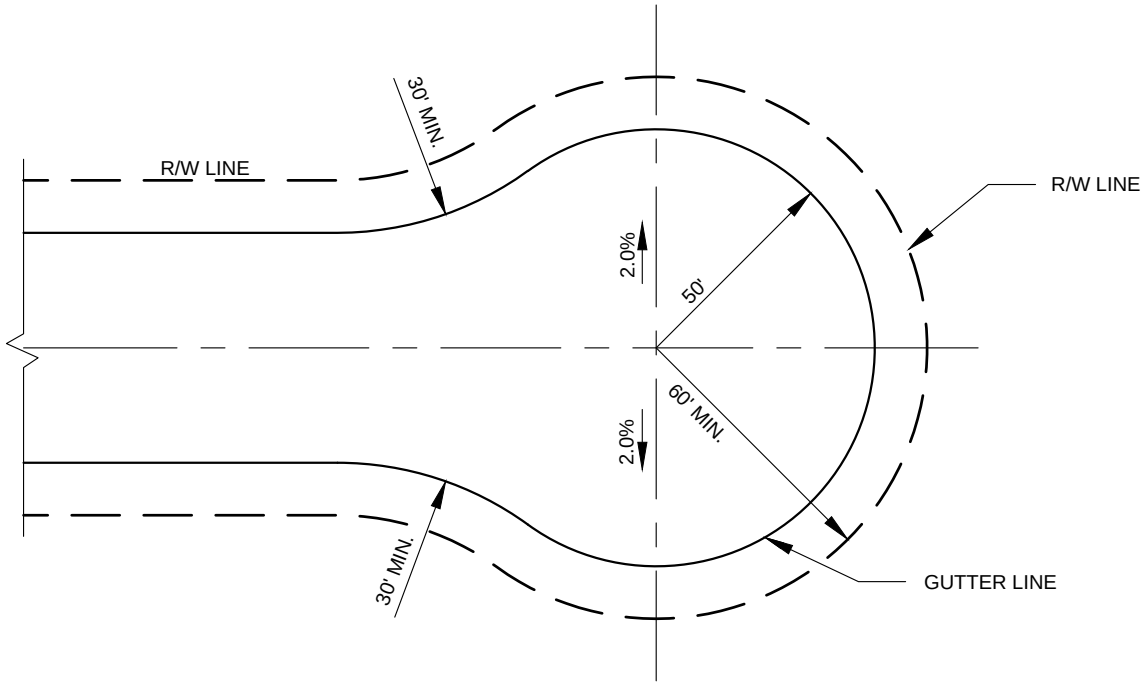
1. CONTRACTOR SHALL PROVIDE CONTROLLED DENSITY FILL PIPE ENCASEMENT AT ALL EXISTING UTILITY CROSSINGS IN THE EVENT THAT AN 18" SEPARATION CANNOT BE PROVIDED. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE SITE UTILITIES TO ANTICIPATE PROVIDING AND INSTALLING CONCRETE ENCASEMENTS WHERE NECESSARY. THIS SHALL ALSO APPLY AT NEW STORM DRAIN STRUCTURES NEAR EXISTING WATER MAINS. SEE DEPARTMENT OF ECOLOGY CRITERIA FOR SEWAGE WORKS DESIGN SECTION C1-9.1 AND THE DEPARTMENT OF HEALTH WATER SYSTEM DESIGN MANUAL SECTION 8.4.4.

2. CONTRACTOR SHALL NOT CONSTRUCT ANY NEW PIPE JOINT WITHIN 10 FEET OF THE EXISTING CENTERLINE OF THE UTILITY CROSSING.

ST-9
TYPICAL UTILITY CROSSING

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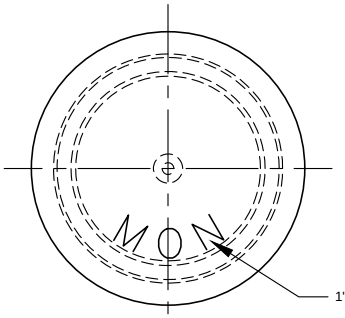
NOTE:

ALTERNATIVE DEAD-END STREET DESIGNS SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL FIRE CODE, FIRE APPARATUS ACCESS ROADS, AND SHALL BE SUBJECT TO APPROVAL BY THE CITY.

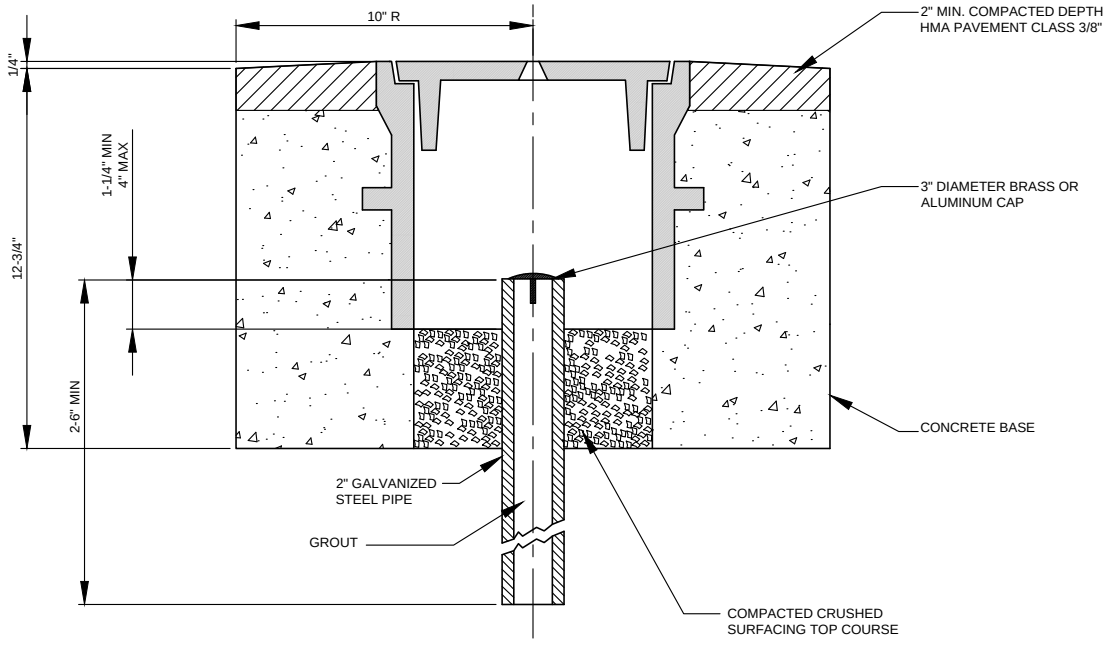
ST-10
CUL-DE-SAC STANDARD

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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COVER

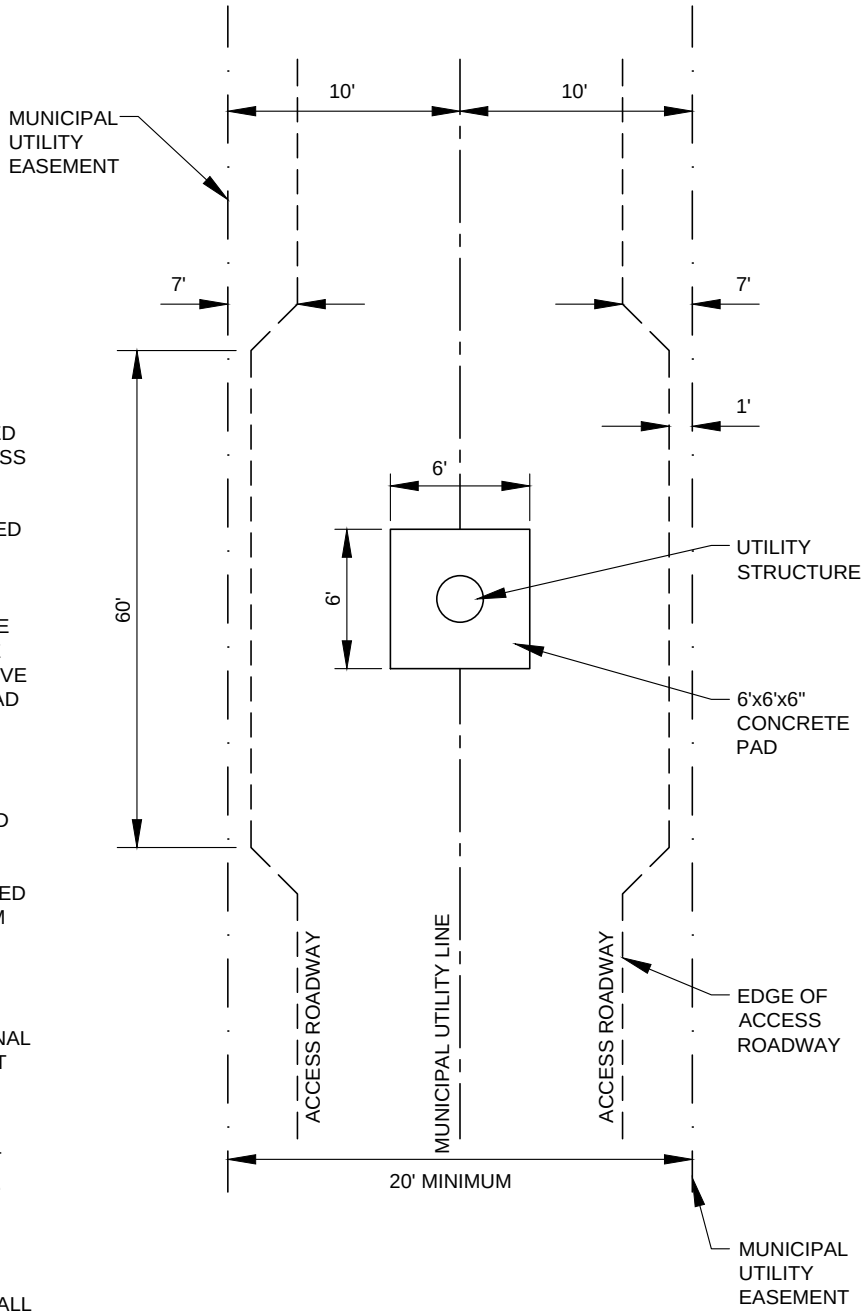


SECTION

ST-11
MONUMENT CASE AND COVER

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NOTES:

1. MUNICIPAL UTILITIES SHALL BE INSTALLED WITHIN DEDICATED RIGHT-OF-WAY UNLESS A DEVIATION IS APPROVED.
2. MUNICIPAL UTILITIES THAT ARE APPROVED TO BE INSTALLED OUTSIDE OF THE RIGHT-OF-WAY SHALL BE INSTALLED WITHIN A MUNICIPAL EASEMENT AND ACCESS ROADWAY PER THIS DETAIL. THE DEVELOPER MAY SUBMIT AN ALTERNATE PLAN FOR APPROVAL. THE CITY MAY WAIVE THE REQUIREMENT FOR AN ACCESS ROAD IF ALL UTILITY STRUCTURES CAN BE SERVICED BY AN APPROVED ROADWAY.
3. ACCESS ROADWAY SHALL BE CSBC OR CSTC, MINIMUM 3" DEPTH, AND DESIGNED FOR 50,000 lb MAINTENANCE VEHICLES.
4. UTILITY STRUCTURES SHALL BE CENTERED WHERE POSSIBLE AND AT LEAST 1' FROM THE OUTER EDGE OF RIGHT-OF-WAY OR MUNICIPAL EASEMENT.
5. UTILITY STRUCTURES THAT ARE MORE THAN 10' DEEP SHALL REQUIRE ADDITIONAL RIGHT-OF-WAY OR MUNICIPAL EASEMENT WIDTHS.
6. 6'x6'x6" CONCRETE PADS ARE REQUIRED AROUND ALL UTILITY STRUCTURES THAT ARE INSTALLED IN NON-ASPHALT AREAS.
7. ACCESS ROADWAY SHALL DRAIN AWAY FROM UTILITY STRUCTURE.
8. ALL CONSTRUCTION AND MATERIALS SHALL MEET THE WSDOT SPECIFICATIONS AND BE APPROVED BY THE CITY.

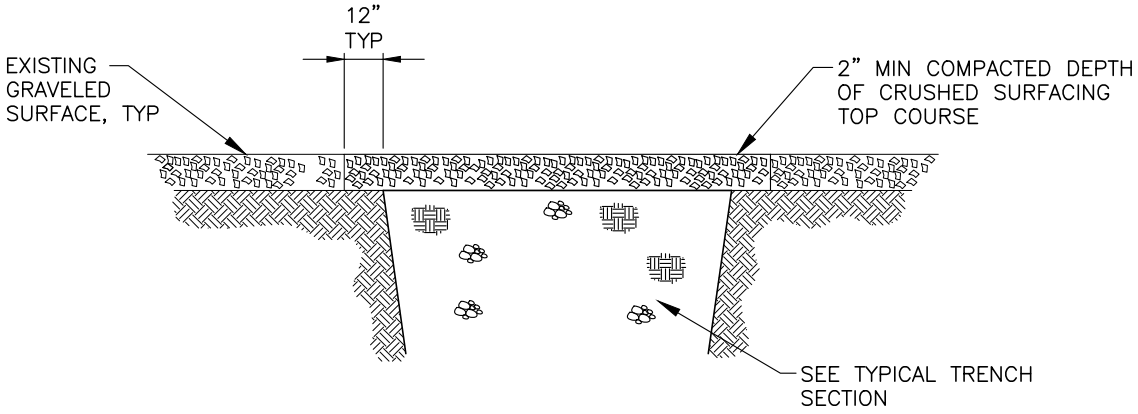
ST-12
ACCESS EASEMENT AND ROADWAY FOR MUNICIPAL UTILITIES

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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STREET REPAIR DETAILS

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CRUSHED SURFACING TOP COURSE REPAIR

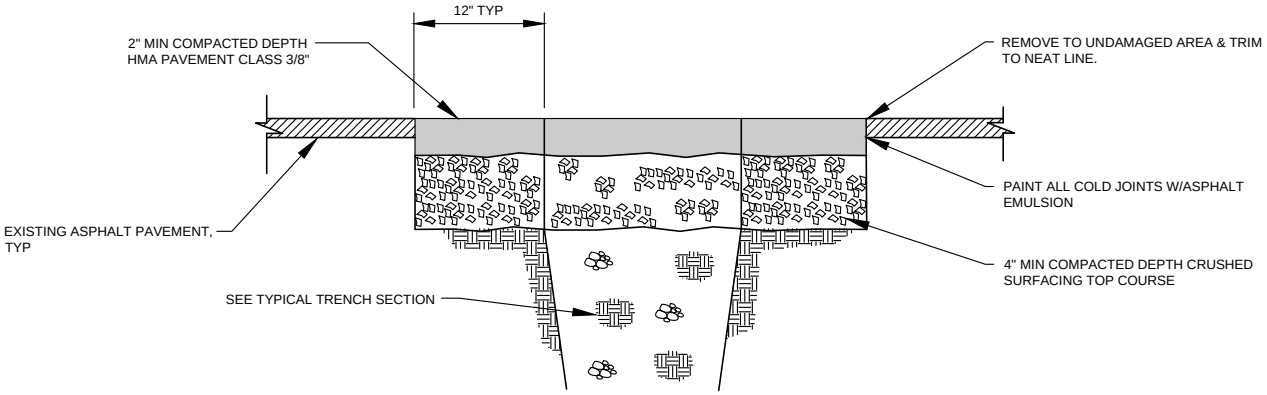
NTS

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SR-1
CSTC REPAIR DETAIL

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HMA PAVEMENT REPAIR

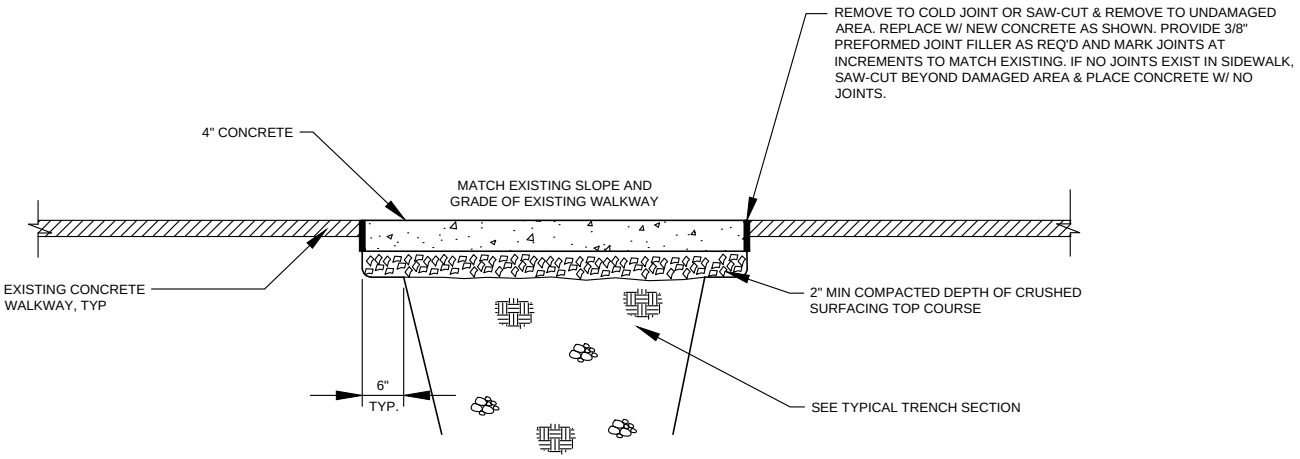
NTS

CITY OF OKANOGAN
1907 2007
100 YEARS OF COMMUNITY PRIDE

SR-2
HMA PAVEMENT REPAIR DETAIL

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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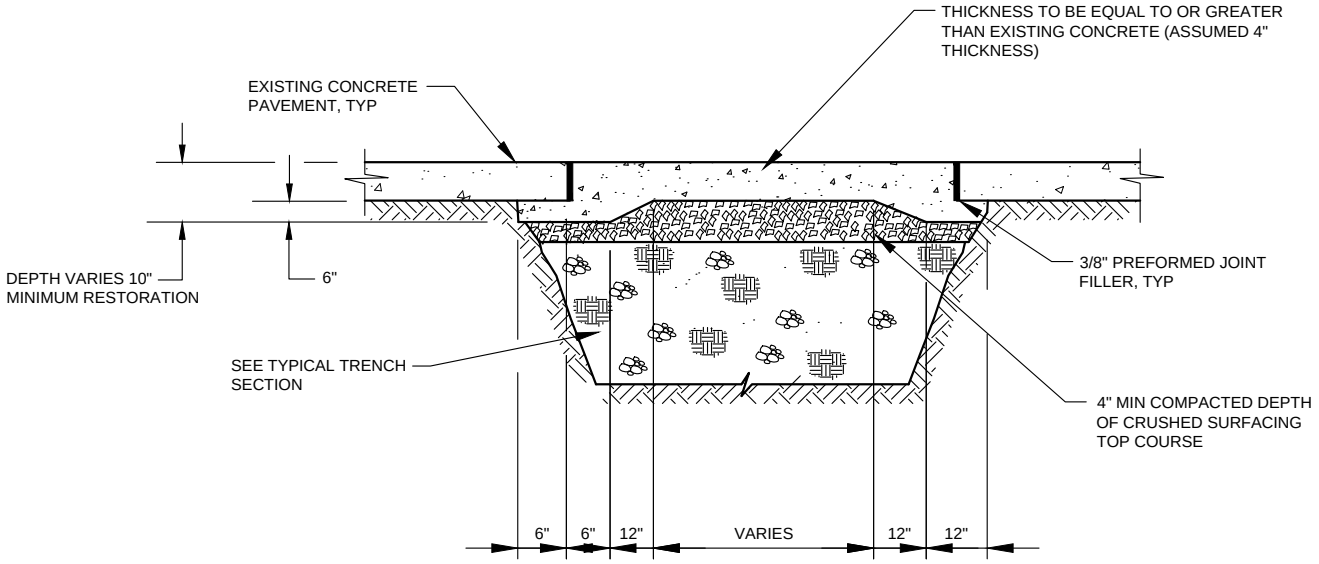
CEMENT SIDEWALK REPAIR DETAIL

NTS

SR-3
CEMENT SIDEWALK REPAIR DETAIL

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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CEMENT CONCRETE PAVEMENT REPAIR

NTS

SR-4
CEMENT CONCRETE PAVEMENT REPAIR DETAIL

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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APPENDIX P

SANITARY SURVEY

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
EASTERN DRINKING WATER REGIONAL OPERATIONS
Temporary Mailing Address: 2714 N. Mayfair St., Spokane, WA 99207
(509) 329-2100 • 711 Washington Relay Service

December 31, 2024

Shawn Davisson, Public Works Director
City of Okanogan
PO Box 752
Okanogan, WA 98840

Subject: Okanogan, City of; PWS #63200; Okanogan County
Routine Sanitary Survey Inspection Report – Survey Date: August 21, 2024

Dear Mr. Davisson:

Thank you to Barry Featherly for spending time with me to describe and show me the city's drinking water facilities. This letter documents the information collected during the survey. The sanitary survey is a periodic inspection of water system facilities, operations, and records. We use it to identify conditions that may present a sanitary or public health risk. Washington State drinking water rules require all Group A public drinking water systems to have a routine sanitary survey once every three to five years.

During the survey, if DOH identifies defects in your water system facilities or operations that need immediate attention, we label those items as *significant deficiencies* or *significant findings*. A deficiency has the potential of causing an immediate risk to the health of the water system customers. A finding has the potential of immediate risk to the physical safety, security, or reliability of the public water supply.

Congratulations! I did not find any significant deficiencies or significant findings during the sanitary survey.

The following are items that we discussed or that I want to share to improve the overall technical and managerial capacity of the city's water system:

Observations – your system does not meet the following regulatory requirements:

Item	How to Comply
Water Operator Staffing	Additional staff with certification(s) to ensure routine maintenance and cross connection control program oversight. Support employee training and certifications or utilize other means to ensure trained coverage. Succession planning is critical. Our state, as well as the nation, is looking at a shortage of water system operators. Visit Workforce Development | Washington State Department of Health for ideas. If you are not able to hire new staff, consider developing mutual aid agreements with neighboring utilities and Washington Water/Wastewater Agency Response Network.
Consumer Confidence Report	The annual consumer confidence report must include any and all measured contaminants from the last monitoring results. Please visit Preparing a Consumer Confidence Report (CCR) | Washington State Department of Health for guidance.

	There is a new EPA rule with revisions to the requirements for CCRs starting in 2027.

Referrals – you will receive follow-up by a DOH program specialist concerning the following:

Item	Area(s) of Concern
Potential System/Source	Sports complex well seasonal use primarily irrigation but also serves water to restrooms and fountains. Tested monthly when in use but not on the city's water facilities inventory. May be a Group A or B public water system.

Recommendations – to improve your technical, managerial, or financial capacity:

Checklist #	Recommended Action
Cybersecurity	Cybersecurity for small water utilities is critical. If you have operational technology (OT) and information technology (IT) systems, review Top Cyber Actions for Securing Water Systems (cisa.gov) for actions to help protect your assets. If you contract out this service, make sure the contractor is following best practices. Ask questions to ensure your system is secure.
Cross Connection Control Program	Without a chlorine barrier in the distribution, it is important to place resources on implementation of the cross-connection control program (education and devices) to ensure non-potable water does not contaminate the distribution.
Reservoir Planning	Long term plan for the West 1 Reservoir. The roof structure will become increasingly difficult to maintain in a manner that does not add material to the drinking water.

Water System Plan
Thank you for working on your water system plan update as the plan contains many items we discuss and review during the sanitary survey.

Water Facilities Inventory (WFI) Form
We ask for updates once a year but please make sure to update immediately when there is a change in contact information. Visit Water Facilities Inventory (WFI) | Washington State Department of Health for information. We will be moving to a new data system in the next couple of years which will alter this form and how you access it.

Water Quality Monitoring Schedule (WQMS)
I recommend checking the WQMS at least quarterly to verify sample results have been received and new requirements have not been added. Please contact our Regional Source Water Quality Program Manager, Anna Duron, at anna.duron@doh.wa.gov if you have questions on any of the well related monitoring requirements. For more information: refer to Water Quality Monitoring Schedule (WQMS) Instructions. The form is typically not available for the first two months of the year.

New Rules
The lead (water) service line inventory was due on October 16, 2024. Visit Lead Service Line Inventory—EPA's Lead and Copper Rule Revisions | Washington State Department of Health for information. Look for DOH emails regarding follow-up actions required for this new rule. In October, EPA finalized its Lead and Copper Rule Improvements (LCRI) regulation. There is a three-year period for compliance with the LCRI. Please watch for changes to the current lead and copper monitoring and treatment reporting.

In April, EPA announced a final federal rule that regulates six PFAS in drinking water (visit Per- and Polyfluoroalkyl Substances (PFAS). This will require a change to our current State Action Levels

discussed here PFAS in Drinking Water—Monitoring and Analysis | Washington State Department of Health and require budgeting for routine monitoring for PFAS.

House Bill 1329 prohibits water companies from involuntarily terminating utility service to any residential user due to lack of payment on any day for which the National Weather Service has issued a heat-related alert. Visit Utility Extreme Heat Shutoff Moratorium – Washington State Department of Commerce for information.

Electronic Communications
We conduct all business electronically. To ensure we receive your correspondence, reports, forms, submittals, and any other information you are trying to get to us, please send it to us by email or you can request a Box.com folder (over 25 mb) through our administrative staff.

Admin eroadmin@doh.wa.gov
Chlorination and Nitrate DOHDWChlorination@doh.wa.gov
Consumer Confidence Reports CCR.ERO@doh.wa.gov
Engineering and Planning eroadmin@doh.wa.gov
Ownership/Operational Changes wfi.ero@doh.wa.gov
Water Quality ero.Waterquality@doh.wa.gov

We publish a newsletter every two months. Visit ODW Newsletter | Washington State Department of Health to sign up and read past newsletters.

By completing this sanitary survey, your water system met the requirements in WAC 246-290-416. DOH will notify you of your next sanitary survey in three to five years. Please note that you should not interpret satisfying the requirements of the sanitary survey as meeting other applicable local, state, or federal statutes, ordinances, and regulations. Accordingly, address other DOH requirements separately from the sanitary survey.

As provided by WAC 246-290-990 (3)(c), a fee is charged to help recover the cost of conducting a sanitary survey. The Department of Health's (DOH) total cost to complete this sanitary survey is $1,425.82. The office of Drinking Water has used state and federal funds to pay $558.82 of this amount. An invoice for the remaining amount due of $867.00 is enclosed.

Thank you again for your cooperation in the successful completion of the sanitary survey. If you have any questions regarding this letter, please contact me at (509) 329-2123 or by email at sheri.miller@doh.wa.gov.

Sincerely,



Sheri Miller, PE
Regional Engineer
Office of Drinking Water
Division of Environmental Health

Attachments: Invoice

Survey Checklist
Water Facilities Inventory

cc: Okanogan County Public Health
Barry Featherly, Water System Manager
Mark Steward, DOH Sanitary Survey Program Manager

Office of Drinking Water
Third Party Sanitary Survey Form (Checklist)

System Name:	**Okanogan, City of**			Survey Date:	**08/21/2024**
PWS ID#:	**63200**	County:	**Okanogan**	System Type:	**Community**
Persons Attending Inspection:	**Barry Featherly, Water System Manger**				
Inspector's Name:	**Sheri Miller**				

PART A: SUMMARY OF SIGNIFICANT DEFICIENCIES AND SIGNIFICANT FINDINGS

The following is a completed sanitary survey checklist and summary of inspection findings. This completed sanitary survey checklist is the basis for the cover letter you receive from your local health jurisdiction or from the WA Dept. of Health (DOH). The cover letter documents any significant deficiencies or significant findings that must be corrected. The cover letter may also summarize observations concerning compliance with certain rules and offer recommendations you can use to make improvements to the operation and management of your water system. Contact your DOH regional office with any questions you have about this survey.

Bolded and highlighted checklist items represent significant deficiencies that, if left uncorrected, create a significant public health risk. Highlighted checklist items represent significant findings that, if left uncorrected, create a significant risk to the physical safety, security, or reliability of the public drinking water supply. You will be required to take some sort of corrective action for each checklist answer that is **bolded and highlighted** or highlighted.

Significant deficiencies and significant findings identified during this sanitary survey:

None.

Significant deficiencies or significant findings identified in the previous sanitary survey that remain unaddressed:

None.

Observations and recommendations identified during this survey

In compliance with water system planning requirements. While their plan recently expired in 2023, their engineer is working on the update and a pre-plan meeting has been conducted.

Additional staff with certification(s) to ensure routine maintenance and cross-connection control program oversight.

Consumer confidence report needs to include all detected contaminants.

Long term plan for the West 1 Reservoir. The roof structure has too much surface area to maintain to avoid adding to the stored water below.

Sports complex well seasonal primarily irrigation but also serves water to restrooms and fountains. Tested monthly but not on the water facilities inventory. Referral to determine if public water system.

PART B: GENERAL WATER SYSTEM DESCRIPTION

Provide a general description of the water system including changes, updates, connections, source(s), storage, number of pressure zones, treatment, and control system(s) and alarm(s). Make corrections and updates to the purveyor's water facilities inventory form (WFI).

The city of Okanogan serves over 1,200 connections and a residential population of approx. 2,400 via four wells, three booster pump stations, five tanks with a total of approx. 1.7 million gallons of storage, and approx. 24 miles of distribution piping. One well has arsenic treatment using oxidation filtration treatment. The other wells are not treated.

PART C: OPERATIONS and MANAGEMENT

1. Was the system operator, who is most knowledgeable about the system's day-to-day operations, present for the survey?	☒Yes ☐No ☐NA
2. Were water system records available for your review?	☐Yes ☐No ☒Partial

3. Has the purveyor developed and implemented either a Small Water System Management Program or a Water System Plan?	☒Yes ☐No
3a. If no, are the following planning documents complete and up to date:	
Service Area and Facility Map	☐Yes ☐No ☐Partial
Cross-Connection Control Program	☐Yes ☐No ☐Partial
Source Water Protection Program	☐Yes ☐No ☐Partial
Emergency Response Plan	☐Yes ☐No ☐Partial
Operation and Maintenance Program	☐Yes ☐No ☐Partial
Coliform Monitoring Plan	☐Yes ☐No ☐Partial
Component Inventory and Assessment	☐Yes ☐No ☐Partial
Asset Replacement and Other System Improvements	☐Yes ☐No ☐Partial
Budget	☐Yes ☐No ☐Partial
4. Does the purveyor plan to make capital improvements in the next 1-3 years? If yes, describe below	☒Yes ☐No
5. Is there a backup operator available if the regular one is not available? If yes, provide contact info below	☒Yes ☐No
6. Were the water system's current and future water quality monitoring requirements reviewed?	☒Yes ☐No
7. Was water quality sample results and trends reviewed with the purveyor?	☒Yes ☐No
8. Does the system have emergency power?	☒Yes ☐No
9. Does the system experience frequent power outages (>2 per year)? If yes, explain below	☐Yes ☒No
10. Does the system experience frequent water outages (>2 per year)? If yes, explain below	☐Yes ☒No
11. Does there appear to be adequate reliability provided for this system? If no, explain below	☒Yes ☐No

Describe the general level of planning and management documents developed by this water system and any recommendations for additional development, including updates, system management practices and processes, water rates, etc.

City council and mayor. Public works handles water and wastewater, streets, parks.

Water system plan expired recently (March 17, 2023). A pre-plan meeting was conducted on January 30, 2024, with Gray & Osborne engineering.

CIP project replacing main – extending the 8" to replace a 3" bottleneck.

Water use efficiency reporting approx. 12% three-year average distribution leakage.

Adding generator to Well 4.

PART D: SOURCES (This page may be reproduced to add more sources)

12. Did you observe a source connected to the water system that is NOT listed on the WFI and in active use?				☐Yes ☒No	
13. DOH Source Number:				SO #**02**	SO #**03**
14. Source Name from the WFI: (For example, North Well; Well #2; ABC334.)				Well 2	Well 3
15. Dept of Ecology Well Tag Number: (Use Well tag ID#, None or Not readable)				ABR535	AGJ158
16. Source Use:	P - Permanent	S - Seasonal	E - Emergency	P	S
17. **If this is an emergency source, should it be disconnected?**				☐**Yes** ☐No ☒NA	☐**Yes** ☐No ☒NA
18. *Is the source a potential GWI source?*				☐*Yes* ☒*No*	☐*Yes* ☒*No*
WELL (if there is no well, skip to question 34)					
19. Is the Sanitary Control Area (SCA) free of unmitigated potential sources of contamination?				☒Yes ☐**No**	☒Yes ☐**No**
20. Is the wellhead located in a pit or vault?				☐Yes ☒No	☐Yes ☒No
21. Is the wellhead at risk of submergence?				☐**Yes** ☒No	☐**Yes** ☒No
22. Is the well cap sealed, watertight, and free of unprotected openings?				☒Yes ☐**No**	☒Yes ☐**No**

23. Is the well casing free of any unprotected openings?	☒Yes ☐**No**	☒Yes ☐**No**
24. Is there a vent on the well?	☒Yes ☐No	☒Yes ☐No
24a. If yes, is the vent protected? (24 non-corrodible mesh screen or slots)	☒Yes ☐**No**	☒Yes ☐**No**
25. Are conduits and junction boxes sealed to prevent contaminant entry?	☒Yes ☐**No**	☒Yes ☐**No**
26. Is the well unreasonably at risk to physical damage?	☐Yes ☒No	☐Yes ☒No
27. Is there a raw water source sample tap?	☒Yes ☐No	☒Yes ☐No
28. Is the source metered?	☒Yes ☐No	☒Yes ☐No
28a. If yes, is the source meter read at least monthly?	☒Yes ☐No	☒Yes ☐No
28b. If yes, are the water production records maintained?	☒Yes ☐No	☒Yes ☐No
29. Is the wellhouse properly constructed and maintained? If no, explain below	☒Yes ☐No	☒Yes ☐No
30. Is there any evidence of infestation by rodents or other pests?	☐Yes ☒No	☐Yes ☒No
31. Is the wellhouse and well adequately protected from unauthorized access and tampering?	☒Yes ☐No	☒Yes ☐No
32**. Is there a pump control valve or vacuum relief valve without an air gap on the valve discharge pipe?**	☐**Yes** ☒No ☐NA	☐**Yes** ☒No ☐NA
33. Are the source pump and pump controls operational and adequate to prevent chronic water outages or premature pump failure? If no explain below	☒Yes ☐**No**	☒Yes ☐**No**
ADDITIONAL WELLS		
13. DOH Source Number:	SO #**04**	SO #**06**
14. Source Name from the WFI: (For example, North Well; Well #2; ABC334.)	Well 4	Well 5
15. Dept of Ecology Well Tag Number: (Use Well tag ID#, None or Not readable)	AGJ157	AGJ156
16. Source Use: P - Permanent S - Seasonal E - Emergency	S	P
17. **If this is an emergency source, should it be disconnected?**	☐**Yes** ☐No ☒NA	☐**Yes** ☐No ☒NA
18. *Is the source a potential GWI source?*	☐*Yes* ☒*No*	☐*Yes* ☒*No*
WELL (if there is no well, skip to question 34)		
19. Is the Sanitary Control Area (SCA) free of unmitigated potential sources of contamination?	☒Yes ☐**No**	☒Yes ☐**No**
20. Is the wellhead located in a pit or vault?	☐Yes ☒No	☐Yes ☒No
21. Is the wellhead at risk of submergence?	☐**Yes** ☒No	☐**Yes** ☒No
22. Is the well cap sealed, watertight, and free of unprotected openings?	☒Yes ☐**No**	☒Yes ☐**No**
23. Is the well casing free of any unprotected openings?	☒Yes ☐**No**	☒Yes ☐**No**
24. Is there a vent on the well?	☒Yes ☐No	☒Yes ☐No
24a. If yes, is the vent protected? (24 non-corrodible mesh screen or slots)	☒Yes ☐**No**	☒Yes ☐**No**
25. Are conduits and junction boxes sealed to prevent contaminant entry?	☒Yes ☐**No**	☒Yes ☐**No**
26. Is the well unreasonably at risk to physical damage?	☐Yes ☒No	☐Yes ☒No
27. Is there a raw water source sample tap?	☒Yes ☐No	☒Yes ☐No
28. Is the source metered?	☒Yes ☐No	☒Yes ☐No
28a. If yes, is the source meter read at least monthly?	☒Yes ☐No	☒Yes ☐No
28b. If yes, are the water production records maintained?	☒Yes ☐No	☒Yes ☐No
29. Is the wellhouse properly constructed and maintained? If no, explain below	☒Yes ☐No	☒Yes ☐No
30. Is there any evidence of infestation by rodents or other pests?	☐Yes ☒No	☐Yes ☒No
31. Is the wellhouse and well adequately protected from unauthorized access and tampering?	☒Yes ☐No	☒Yes ☐No
32**. Is there a pump control valve or vacuum relief valve without an air gap on the valve discharge pipe?**	☐**Yes** ☒No ☐NA	☐**Yes** ☒No ☐NA

33. Are the source pump and pump controls operational and adequate to prevent chronic water outages or premature pump failure? If no explain below	☒Yes ☐**No**	☒Yes ☐**No**

Describe and evaluate the source facilities including maintenance, operations, sanitary and security observations and any major change made to the source such as pump replacement, deepening or reconstruction:

Well 3 S03 (high susc), Well 4 (low susc) – seasonal. Well 2 S02 and Well 5 S06 - high susc; main production wells.

Well 2 – inside wellhouse, submersible pump, roads and parking within SCA, feeds east side of river, on Colville reservation.

Well 3 – inside wellhouse, submersible pump, good SCA, recalked around well head penetrations.

Well 4 – largest producer well, used in summer, 500 gpm, pitless adapter, within 100-year flood, road and parking within SCA.

Well 5 used in winter; 300 gpm, pitless adapter, interruptible water rights, drought influenced, fenced, good SCA.

Open intervals are between 90 and 120 feet.

Sports complex well seasonal primarily irrigation but also serves water to restrooms and fountains. Tested monthly but not on the water facilities inventory. Referral to determine if public water system.

PART E: DISINFECTION

(if no disinfection, answer question 41 and skip rest of Part E)

41. *Does the operator batch chlorinate the source, the distribution system, or the reservoir just before collecting routine or repeat coliform samples? If yes, provide details below.*	☐*Yes* ☒*No*
42. Did you observe disinfection treatment connected to the water system in active use that is NOT listed on the WFI? If yes, explain below	☐Yes ☒No
43. Is ultraviolet light (UV) used for disinfecting a drinking water source? If no, skip to question 46.	☐Yes ☒No
46. Is there continuous chlorination? If no, skip to Part F	☐Yes ☒No

PART F: TREATMENT

53. Is there any treatment other than chlorination or UV in use? If no, skip Part F.	☒Yes ☐No
54. Did you observe a treatment process connected to the water system in active use that is NOT listed on the WFI? If yes, describe below.	☐Yes ☒No
55. **Is there a water supply line plumbed directly into a chemical solution tank (e.g., fluoride saturator) without a reduced pressure backflow assembly on the supply line?**	☐**Yes** ☐No ☒NA
56. Are primary contaminant treatment facilities (e.g., nitrate, corrosion control, arsenic) operating properly? If no, describe below	☒Yes ☐**No**
57. Do the water treatment chemicals meet NSF/ANSI Standard 60?	☒Yes ☐No ☐NA
58. Is there a post-treatment sample tap?	☒Yes ☐No

Describe the treatment facilities including purpose for treatment, concerns with maintenance or operations, purveyor's record keeping of monthly reports, and sanitary and security observations:

Treatment for removal of arsenic from Well 4 at 550gpm using Filtronics filtration. Inject ferric chloride 39% and sodium hypochlorite 12.5% prior to filter. Backwash based on time or manual. Pressure gauges on filters. Backwash water pumped and taken to wastewater plant for drying and later disposal in landfill.

PART G: BOOSTER PUMPING FACILITIES and CONTROLS

59. Are there any booster pumps in use? If no, skip Part G	☒Yes ☐No
60. Are the booster pumps in good working condition? If no, explain below	☒Yes ☐No
61. Are pump and pump controls operational and adequate to prevent chronic water outages or premature pump failure? If no explain below	☒Yes ☐**No**
62. If there is a booster pump house/pump station, is it secure against unauthorized entry? If no, explain below	☒Yes ☐**No** ☐NA
63. Is the booster pump house/pump station properly constructed and maintained? If no, explain below	☒Yes ☐No

Describe and evaluate the pump facilities and controls including maintenance, operations, sanitary and security observations:

Three booster stations.

PART H: PRESSURE TANKS

64. Are there any pressure tanks in use? If no, skip Part H	☐Yes ☒No

PART I: FINISHED WATER STORAGE

69. Is there a finished water storage tank in use? If no, skip Part I		☒Yes ☐No
70. If unable to physically inspect the storage tank hatch, vent, roof, or overflow outlet, select the method you discussed with the purveyor to document their condition:		
a ☒ Reviewed and discussed maintenance records and recent photos		
b ☐ Photos will be taken and mailed by purveyor; additional follow-up required by DOH		
c ☐ Purveyor unable or unwilling to document; additional follow-up required by DOH		
Insert Tank Names	East concrete	North concrete
71. Is the storage tank protected from unauthorized entry or vandalism? If no, explain below	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
72. Is the reservoir roof free of any unprotected openings? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
73. Is the access hatch constructed and sealed to prevent the entry of contaminants? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
74. If able to open hatch, is the stored water free of visible contaminants? If no, explain below	☐Yes ☐No ☒unk	☐Yes ☐No ☒unk
75. Is there a dedicated air vent on the storage tank?	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
75a. If yes, is the air vent constructed to prevent the entry of contaminants? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
76. Is the overflow line constructed to prevent contaminants from entering the tank? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
77. Does the overflow line discharge near ground level?	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
78. Is the overflow line discharge area protected from potential erosion?	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
79. Does the overflow line discharge into a storm drain or surface water?	☐Yes ☒No ☐unk	☐Yes ☒No ☐unk
79a. If yes, is there an air gap at the discharge of the overflow OR does the overflow drop at least 34 vertical feet measured from the overflow connection to the reservoir down to the receiving water body?	☐Yes ☐**No** ☐unk	☐Yes ☐**No** ☐unk
80. Does the overflow line discharge directly into a sanitary sewer without an air gap?	☐**Yes** ☒No ☐unk	☐**Yes** ☒No ☐unk
81. Can the reservoir be isolated from the rest of the water system and be drained through a dedicated drain line?	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
82. When was the tank inspected last? Explain below if necessary	Every year	Every year
83. What is the tank cleaning frequency? Explain below if necessary	2018-2019	2018-2019
84. Does the tank size, operation, and internal piping configuration appear to provide adequate water turnover (i.e. separate inlet/outlet, baffling or mixing to reduce stagnant water)? If no, explain below	☐Yes ☐No ☒unk	☐Yes ☐No ☒unk
85. Does the tank show signs of excessive leakage, significant structural cracking, or an advanced concrete spalling?	☐Yes ☒No	☐Yes ☒No
ADDITIONAL STORAGE		
Insert Tank Names	Highland concrete	West 1 concrete buried with wood truss roof
71. Is the storage tank protected from unauthorized entry or vandalism? If no, explain below	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
72. Is the reservoir roof free of any unprotected openings? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
73. Is the access hatch constructed and sealed to prevent the entry of contaminants? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
74. If able to open hatch, is the stored water free of visible contaminants? If no, explain below	☐Yes ☐No ☒unk	☐Yes ☒No ☐unk
75. Is there a dedicated air vent on the storage tank?	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk

75a. If yes, is the air vent constructed to prevent the entry of contaminants? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
76. Is the overflow line constructed to prevent contaminants from entering the tank? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
77. Does the overflow line discharge near ground level?	☐Yes ☐No ☐unk	☒Yes ☐No ☐unk
78. Is the overflow line discharge area protected from potential erosion?	☐Yes ☐No ☐unk	☒Yes ☐No ☐unk
79. Does the overflow line discharge into a storm drain or surface water?	☒Yes ☐No ☐unk	☐Yes ☒No ☐unk
79a. If yes, is there an air gap at the discharge of the overflow OR does the overflow drop at least 34 vertical feet measured from the overflow connection to the reservoir down to the receiving water body?	☒Yes ☐**No** ☐unk	☐Yes ☐**No** ☐unk
80. Does the overflow line discharge directly into a sanitary sewer without an air gap?	☐**Yes** ☒No ☐unk	☐**Yes** ☒No ☐unk
81. Can the reservoir be isolated from the rest of the water system and be drained through a dedicated drain line?	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
82. When was the tank inspected last? Explain below if necessary	Every year	Every year
83. What is the tank cleaning frequency? Explain below if necessary	2018-2019	2018-2019
84. Does the tank size, operation, and internal piping configuration appear to provide adequate water turnover (i.e. separate inlet/outlet, baffling or mixing to reduce stagnant water)? If no, explain below	☒Yes ☐No ☐unk	☐Yes ☐No ☒unk
85. Does the tank show signs of excessive leakage, significant structural cracking, or an advanced concrete spalling?	☐Yes ☒No	☐Yes ☒No
ADDITIONAL STORAGE		
Insert Tank Names	West 2 concrete partially buried	
71. Is the storage tank protected from unauthorized entry or vandalism? If no, explain below	☒Yes ☐No ☐unk	☐Yes ☐No ☐unk
72. Is the reservoir roof free of any unprotected openings? If no, explain below	☒Yes ☐**No** ☐unk	☐Yes ☐**No** ☐unk
73. Is the access hatch constructed and sealed to prevent the entry of contaminants? If no, explain below	☒Yes ☐**No** ☐unk	☐Yes ☐**No** ☐unk
74. If able to open hatch, is the stored water free of visible contaminants? If no, explain below	☐Yes ☒No ☐unk	☐Yes ☐No ☐unk
75. Is there a dedicated air vent on the storage tank?	☒Yes ☐No ☐unk	☐Yes ☐No ☐unk
75a. If yes, is the air vent constructed to prevent the entry of contaminants? If no, explain below	☒Yes ☐**No** ☐unk	☐Yes ☐**No** ☐unk
76. Is the overflow line constructed to prevent contaminants from entering the tank? If no, explain below	☒Yes ☐**No** ☐unk	☐Yes ☐**No** ☐unk
77. Does the overflow line discharge near ground level?	☒Yes ☐No ☐unk	☐Yes ☐No ☐unk
78. Is the overflow line discharge area protected from potential erosion?	☒Yes ☐No ☐unk	☐Yes ☐No ☐unk
79. Does the overflow line discharge into a storm drain or surface water?	☐Yes ☒No ☐unk	☐Yes ☐No ☐unk
79a. If yes, is there an air gap at the discharge of the overflow OR does the overflow drop at least 34 vertical feet measured from the overflow connection to the reservoir down to the receiving water body?	☐Yes ☐**No** ☐unk	☐Yes ☐**No** ☐unk
80. Does the overflow line discharge directly into a sanitary sewer without an air gap?	☐**Yes** ☒No ☐unk	☐**Yes** ☐No ☐unk
81. Can the reservoir be isolated from the rest of the water system and be drained through a dedicated drain line?	☒Yes ☐No ☐unk	☐Yes ☐No ☐unk
82. When was the tank inspected last? Explain below if necessary	Every year	Every year
83. What is the tank cleaning frequency? Explain below if necessary	2018-2019	2018-2019

84. Does the tank size, operation, and internal piping configuration appear to provide adequate water turnover (i.e. separate inlet/outlet, baffling or mixing to reduce stagnant water)? If no, explain below	☐Yes ☐No ☒unk	☐Yes ☐No ☐unk
85. Does the tank show signs of excessive leakage, significant structural cracking, or an advanced concrete spalling?	☐Yes ☒No	☐Yes ☐No

Describe and evaluate the finished water storage facilities including volume, operational drawdown, configuration of the inlet/outlet piping, any concerns about operations and maintenance, and sanitary and security observations:

Five tanks. All at same elevation. East, North, West 1 are all showing age.

Visual unknown white floating material in West 1 and 2 storage.

PART J: DISTRIBUTION SYSTEM

86. Is a complete, up to date and accurate map of the distribution system maintained?	☒Yes ☐No
87. *Does the system provide adequate pressure throughout the distribution system? If no, explain below.*	☒Yes ☐No
88. Are proper procedures followed for disinfection of new construction or repairs?	☒Yes ☐No
89. *Are there any air relief or vacuum relief valves subject to submersion?*	☐Yes ☒No
90. Does the purveyor seasonally or annually flush the distribution system? If yes, describe below	☐Yes ☒No
91. Does the purveyor exercise its distribution system valves? If yes, describe below	☒Yes ☐No

Describe and evaluate the distribution system including maintenance, operational, sanitary and security observations:

PART K: CROSS CONNECTION CONTROL (CCC)

92. Does the water system serve a single connection? If yes, refer the purveyor to the Uniform Plumbing Code and skip Part K	☐Yes ☒No
93. Is the water system known to serve one or more high health hazard premises, such as those listed in Table 9 in WAC 246-290-490? If yes, describe the premise(s) below.	☒Yes ☐No
94. Has the purveyor established the legal authority to implement a CCC program (i.e., formally adopted an ordinance, resolution, by-laws, or other document defining the purveyor's CCC program requirements, and empowering the purveyor to enforce them)?	☒Yes ☐No
95. Has the purveyor designated a CCC Specialist (CCS) to be in responsible charge of the CCC program?	☒Yes ☐No
95a. If yes, has the CCS conducted a hazard evaluation to identify high health hazard premises?	☒Yes ☐No
95b. If yes, has the purveyor completed installation of a backflow prevention assembly on the service line to each identified high health hazard premise?	☒Yes ☐No ☐NA
96. Has each testable backflow prevention assembly installed for premises isolation been tested by a DOH certified backflow assembly tester (BAT) within the past 12 months?	☒Yes ☐No ☐NA
97. Did you observe the end of a hose connected to the potable water system submerged in a pool, hot tub, watering trough, or other non-potable body of water observed during the survey?	☐**Yes** ☒No
98. <u>This question only applies to a facility operating a sewage dump station</u>: Is there a sewage dump station without a reduced pressure backflow assembly on the water supply at the dump station?	☐**Yes** ☐No ☒NA

Additional cross connection control program comments:

Active program. Barry is the CCS. Some parcels served by separate irrigation water. Lots adjacent to the river may pose a risk if able to pump from surface water.

PART L: OPERATOR

99. Is the operator of the water system certified?	☒Yes ☐No

100. Describe the operator's certification level (if certified), duration of employment with this water system, relationship with the system (e.g., contract operator, SMA, direct hire employee, volunteer, temporary, or owner), and duties and responsibilities.

Barry Featherly WTPO1, WDM2, CCS 013198

101. Does the operator conduct self-inspections of the water system? If yes, describe frequency and scope of these self-inspections below.	☒Yes ☐No

102. *Is the operator performing measurements and calibration of water treatment monitoring equipment consistent with manufacturer recommendations? If no, describe below.*	☒Yes ☐No ☐NA
103. *Is the operator using proper inputs to treatment plant operations reports, such as correct volume, peak flow rate, time, and making the proper calculations? If no, describe below.*	☒Yes ☐No ☐NA
104. *Does the operator take compliance water quality samples at the proper location? If no, describe below.*	☒Yes ☐No ☐NA

Additional operator comments:

Barry is the water manager and lead operator. He is assisted by staff that do other city duties. Recommend additional city employees obtaining water certifications.

In compliance with sampling requirements. Collects three coliform per month. Lead and copper reduced schedule next due 2026. Disinfection by-products reduced schedule collected one set per year in Sept.

Well 4 is treated for arsenic removal.

PART M: FIELD NOTES AND OTHER

Descriptions of any water quality tests, physical measurements, or simple repairs completed during the inspection:

None.

PART N: SUPPLEMENTAL NOTES AND SAFETY CONCERNS

Supplemental comments from other parts of the checklist, and documentation of field safety concerns:

None.

If you need this publication in an alternative format, call 800.525.0127 (TDD/TTY call 711). This and other publications are available at www.doh.wa.gov/drinkingwater.

PHOTOS TAKEN DURING SANITARY SURVEY



Murray booster pump station.



Well 2 (S02)

	
Well 3 (S03)	Well 3 (S03)
	
Well 5 (S06)	Well 5 (S06)
	
Well 4 (S04)	Well 4 (S04)



Arsenic treatment.



Arsenic treatment.



Chemical injection.



Ferric chloride chemical and injection pump.





Treatment data collection.	Sodium hypochlorite chemical and injection pump.
	
Chemicals used.	Backwash tank.
	
East Reservoir.	North Reservoir and Highland booster pump station.
	
Highland Reservoir.	Progressive Flat booster pump station.



West Reservoir 1 – pipe showing is not in service.



West Reservoir 1 – building screens.



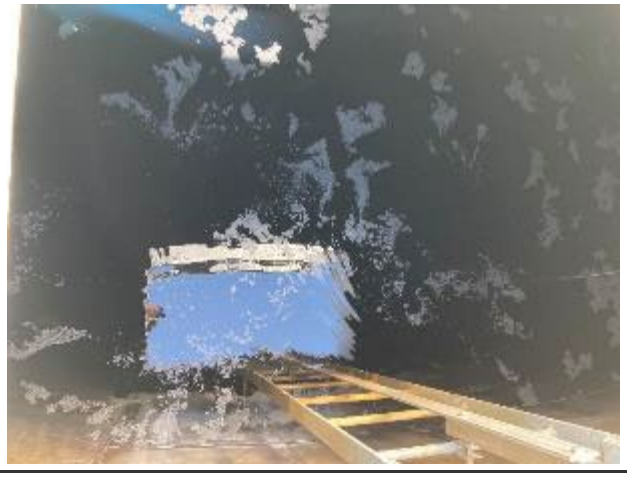
West Reservoir 1 – trussed roof.



West Reservoir 1 – water surface; some white floating material.



West Reservoir 2 and vent screen.



West Reservoir 2 – water surface; some white floating material.

APPENDIX Q

WATER NESTING PERMISSION

Sorrel Camacho

From: Christian Weishaar <cweishaar@g-o.com>
Sent: Monday, September 30, 2024 10:37 AM
To: 'Shawn Davisson'
Cc: 'Brad Armstrong'; 'David Ellis'; 'Chris Johnson'
Subject: RE: [External] Re: Okanogan | Water System Plan | Storage Analysis

Shawn,

Every municipality that Dave and I have worked with has taken the nesting approach, the other approach would be to not nest which would cause FSS and SB storage to be additive. The WAC does not allow for other reservoir storage volumes to be nested.

Best,

Christian Weishaar | *(509) 453-4833, Ext 1424*
Gray & Osborne, Inc. | *180 Iron Horse Court, Yakima, WA 98901*

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From: Shawn Davisson <publicworks@okanogancity.com>
Sent: Monday, September 30, 2024 8:50 AM
To: Christian Weishaar <cweishaar@g-o.com>
Cc: Brad Armstrong <fire41@okanogancity.com>; David Ellis <dellis@g-o.com>; Chris Johnson <chrisj@methowsalmon.org>
Subject: RE: [External] Re: Okanogan | Water System Plan | Storage Analysis

Christian,

Good morning, I am comfortable with this approach. Do you see where other municipalities have done it differently which may be better?

Shawn Davisson
Public Works Director
City of Okanogan
509-422-3600 Ext. 17
publicworks@okanogancity.com

Quality On Tap!
Our Commitment Our Profession

From: Christian Weishaar <cweishaar@g-o.com>
Sent: Monday, September 30, 2024 7:21 AM
To: Shawn Davisson <publicworks@okanogancity.com>
Cc: Brad Armstrong <fire41@okanogancity.com>; David Ellis <dellis@g-o.com>
Subject: RE: [External] Re: Okanogan | Water System Plan | Storage Analysis

[External Email]

Shawn,

Do you concur with the nesting approach noted below, as done in the previous plan?

Best,

Christian Weishaar | *(509) 453-4833, Ext 1424*
Gray & Osborne, Inc. | *180 Iron Horse Court, Yakima, WA 98901*

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From: Brad Armstrong <fire41@okanogancity.com>
Sent: Saturday, September 28, 2024 6:18 PM
To: Christian Weishaar <cweishaar@g-o.com>
Subject: [External] Re: Okanogan | Water System Plan | Storage Analysis

Sounds good to me, I have researched the WAC and if that is what Shawn is comfortable with, I am also.

Thanks,
Brad

Sent via the Samsung Galaxy S23 Ultra 5G, an AT&T 5G smartphone
Get Outlook for Android

From: Christian Weishaar <cweishaar@g-o.com>
Sent: Thursday, September 26, 2024 10:54:42 AM
To: Brad Armstrong <fire41@okanogancity.com>
Cc: David Ellis <dellis@g-o.com>; Shawn Davisson <publicworks@okanogancity.com>
Subject: Okanogan | Water System Plan | Storage Analysis

[External Email]

Hello Fire Chief Armstrong,

I am currently updating the City of Okanogan's Water System Plan and would like to discuss nesting. When running the reservoir storage analysis, we would like to nest fire suppression storage and standby storage, as done in the previous plan. Do you concur with this approach?

Here is some background, WAC 246-290-235(4) allows Standby storage and Fire Safety Suppression storage to be nested instead of additive under the condition that the Fire Marshal approves. Currently, without nesting, the water system shows a storage deficit and we don't believe that is necessarily representative of the system as a whole. With nesting, the system shows a storage surplus and can meet demands through the 20-year planning period.

Best,

Christian Weishaar | *(509) 453-4833, Ext 1424*
Gray & Osborne, Inc. | *180 Iron Horse Court, Yakima, WA 98901*

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APPENDIX R

WATER RATES AND FEES

TAXI, PRIVATE SECURITY, ANIMAL and FIRE DEPARTMENT						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
TAXI LICENSE FEES:						
Taxi License						
a) Annual Fee each Vehicle	50.00	50.00	50.00	50.00	50.00	50.00
b) Semi Annual Fee (After 7/1)	25.00	25.00	25.00	25.00	25.00	25.00
PRIVATE SECURITY FEES:						
a) Annual License	120.00	120.00	120.00	120.00	120.00	120.00
b) Annual Registration for each Employee	40.00	40.00	40.00	40.00	40.00	40.00
c) Annual Employee Renewable	25.00	25.00	25.00	25.00	25.00	25.00
ANIMAL FEES:						
Dog Tag - Neutered/Spayed	20.00	20.00	20.00	20.00	20.00	20.00
Dog Tag - Unneutered/Unspayed	65.00	65.00	65.00	65.00	65.00	65.00
License acquired after 1/31 for animal subject to license, add late fee	30.00	30.00	30.00	30.00	15.00	15.00
Replacement Tag	10.00	10.00	10.00	10.00	10.00	10.00
Animal Impound Fee: ***1st Impound $40; 2nd $80; 3rd $160; 4th $200***						
Fees increase progressively for each impound as long as animal is owned by same owner						
Daily Boarding Fee (including 1st & last day, in addition to Impound Fee above)	25.00	25.00	25.00	25.00	25.00	25.00
Potentially Dangerous Dog License	400.00	400.00	500.00	500.00	500.00	500.00
RENEWAL of Potentially Dangerous Dog License	200.00	200.00	250.00	500.00	500.00	500.00
FIRE DEPARTMENT:						
Air Compressor						
a) Fire Dept. SCBA 2216 30 minutes	5.00	5.00	5.00	5.00	5.00	5.00
b) Fire Dept. SCBA 4500 60 minutes	7.00	7.00	7.00	7.00	7.00	7.00
c) Fire Dept. Cascade Bottles	18.00	18.00	18.00	18.00	18.00	18.00
d) Private SCBA 2216 30 minutes	8.00	8.00	8.00	8.00	8.00	8.00
e) Private SCBA 4500 60 minutes	12.00	12.00	12.00	12.00	12.00	12.00
f) Private	30.00	30.00	30.00	30.00	30.00	30.00
Fire Department Report Fees	10.00	10.00	10.00	10.00	10.00	10.00
Civil Infractions						
a) 1st Offense	50.00	50.00	50.00	50.00	50.00	50.00
b) 2nd Offense	100.00	100.00	100.00	100.00	100.00	100.00
c) 3rd Offense	150.00	150.00	150.00	150.00	150.00	150.00

MISCELLANEOUS FEES:	2019	2020	2021	2022	2023	2024
Off Road Vehicle Fines (See Washington Court Rule IRLJ 6.2 plus Statutory Assessments)						
Building Permit Past Due Fee - Assessed when permit payment is 30 days past due	20.50	21.00	25.00	25.00	25.00	25.00
Burn Permits	20.00	20.00	20.00	20.00	25.00	25.00
Outdoor Burning Violation (OMC 8.36.070 Per Fee Schedule)	600.00	600.00	600.00	600.00	250.00	250.00
Camping						
a) Non-Motorized	7.00	7.00	7.00	10.00	10.00	10.00
b) Motorized	18.00	18.00	18.00	10.00	10.00	10.00
Copy Fee - Black & White (per copy)	0.30	0.30	0.30	0.30	0.30	0.30
Copy Fee - Color (per copy)	1.00	1.00	1.00	1.00	1.00	1.00
Copy Fee - 2 sided (single sheet - black & white)	0.50	0.50	0.50	0.50	0.50	0.50
Copy Fee - 2 sided (single sheet - color)						1.25
Bill Reprint						1.00
Council Chamber Rental (NON-REFUNDABLE) Mayor/Clerk has the authority to waive this fee	30.00	30.00	30.00	30.00	30.00	30.00
Delinquency Disconnect Charge/Actual Disconnect or Posting Fee	65.00	65.00	70.00	70.00	75.00	75.00
Delinquent Letter Fee	20.00	20.00	20.00	20.00	20.00	20.00
Delinquent/Penalty Charge	20%	20%	20%	20%	20%	0.20
Delinquency Reconnection Charge						
Fireworks Display Permit	40.00	40.00	40.00	40.00	40.00	40.00
Fireworks Seller Permit	40.00	40.00	40.00	40.00	40.00	40.00
Franchise Fee	1250.00	1250.00	1250.00	1250.00	1250.00	1250.00
Lien Fee	200.00	200.00	200.00	200.00	200.00	200.00
Lien Filing/Releasing Fees as set by the County	county	county	county	county	county	county
New Account Fee	8.00	8.00	8.00	9.00	9.00	10.00
NSF/Charge Back Check Fee	40.00	40.00	40.00	40.00	40.00	30.00
NSF Online Utility Payments Charge Back Fees Debit/Credit Card - Plus actual charge from vendor	60.00	60.00	60.00	60.00	60.00	30.00
NSF Online Utility Payments Charge Back Fees Echecks - Plus actual charge from vendor	55.00	60.00	60.00	60.00	60.00	30.00
Public Records Act Fees RCW 42.56.120						Per RCW
Unauthorized Turn-On/Turn-Off OMC Code 13.04.100 & 13.04.160	200.00	300.00	350.00	350.00	350.00	350.00

WATER RATES AND CHARGES						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
City of Okanogan is charged the base water rate	51.09	57.00	59.00	61.07	65.89	67.93
Monthly Water Rates (each unit):						
Residential Rate in City - first 3,000 gallons	51.09	57.00	59.00	61.07	65.89	67.93
Each additional 1,000 gallons	2.25	2.50	2.59	2.68	2.89	2.98
Multi-family/Commercial in City Rate - first 3,000 gallons (each unit whether occupied or not)	51.09	57.00	59.00	61.07	65.89	67.93
Each additional 1,000 gallons	2.25	2.50	2.59	2.68	2.89	2.98
Rural Residential Rate - first 3,000 gallons	89.25	114.00	118.00	122.13	131.78	135.87
Each additional 1,000 gallons	4.20	5.00	5.18	5.36	5.78	5.96
Rural Multi-family/Commercial - first 3,000 gallons (Whether occupied or not)	89.25	114.00	118.00	122.13	131.78	135.87
Each additional 1,000 gallons	4.20	5.00	5.18	5.36	5.78	5.96
Water Availability Fee - This fee is applicable to all Water Customers if meter is OFF.	20.00	20.00	20.00	25.00	25.00	25.00
Monthly Charge - Whether services are being used or not. All Shared meters shall receive						
monthly base rate on both units and share overages equally.						
Delinquency/Penalty Charge	20%	20%	20%	20%	20%	20%
Water Service Call Charge:						
a) During Normal Working Hours (fee for one turn off and subsequent turn on)	0.00	0.00	0.00	0.00	0.00	0.00
b) Outside of Normal Working Hours (Separate Charge for each call out to turn off or on)	110.00	110.00	115.00	115.00	125.00	125.00
c) Turn off for delinquencies (Whether or not service is actually physically disconnected)	65.00	65.00	70.00	70.00	75.00	75.00
to include Bank owned homes.						

WATER INSTALLATION CHARGES and TEMPORARY HYDRANT PERMIT						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
Installation of Services:						
a) 3/4 x 5/8 inch Water Service	2100.00	2100.00	2100.00	2100.00	2289.00	2359.96
b) 1 inch Water Service	2350.00	2350.00	2350.00	2350.00	2561.50	2640.91
c) 1 1/2 inch Water Service	2450.00	2450.00	2450.00	2450.00	2670.50	2753.29
d) 2 inch Water Service	2600.00	2600.00	2600.00	2600.00	2834.00	2921.85
e) General Facilities Charge	1500.00	1500.00	1500.00	1500.00	1500.00	1500.00
f) Per ERU	500.00	500.00	500.00	500.00	500.00	500.00
g) Fire Suppression Line/Connection Costs Incurred	500.00	500.00	500.00	500.00	500.00	500.00
** All connection fees are based on a standard type connection. Additional materials, road crossings, boring pipe under roadway or labor, will be an additional charge to the connection fee.						
* Live Tap Connection Fee up to 12 inch in diameter X 1 inch. Additional cost for larger sizes.						550.00
*** Connection to Developer Provided Water Connection**						
a) 3/4 x 5/8 inch Water Service	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
b) General Facilities Charge	1500.00	1500.00	1500.00	1500.00	1500.00	1500.00
c) Per ERU	500.00	500.00	500.00	500.00	500.00	500.00
d) Fire Suppression Line	500.00	500.00	500.00	500.00	500.00	500.00
* This rate applicable where the developer provides the water system connection with City of Okanogan's standard 3/4 inch meter box. Larger water services will be charged additional cost according to size of water meter.						
Authorized Temporary Hydrant Connection and/or Account Setup:						
a) Setup Fee	70.00	70.00	70.00	70.00	73.00	75.26
b) Daily Rental Fee	10.00	10.00	10.00	10.00	11.00	11.34
c) Use rate for each 1000 gallons or portion of 1000 gallons used	5.00	5.00	5.00	5.00	6.00	6.19

SEWER USER CHARGES						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
The City of Okanogan is charged the base sewer rate	51.15	52.95	54.80	56.72	61.20	63.10
Monthly Sewer Rates in Town:						
Single Family Residence (whether occupied or not)	51.15	52.95	54.80	56.72	61.20	63.10
Multi-family (each unit whether occupied or not)	51.15	52.95	54.80	56.72	61.20	63.10
Commercial - first 13,000 gallons (each unit whether occupied or not)	51.15	52.95	54.80	56.72	61.20	63.10
a) Each 1,000 gallons over 13,000 gallons	3.75	3.85	3.95	4.09	4.41	4.55
Monthly Sewer Rates Outside City Limits:						
Rural Single Family Residence (whether occupied or not)	93.65	105.00	109.60	113.44	122.40	126.19
Rural Multi-family (each unit whether occupied or not)	93.65	105.00	109.60	113.44	122.40	126.19
Rural Commercial - first 13,000 gallons (each unit whether occupied or not)	93.65	105.00	109.60	113.44	122.40	126.19
a) Each 1,000 gallons over 13,000 gallons	6.75	7.70	7.90	8.18	8.83	9.10
Sewer Billing Charge/All Users (in City and Rural)	3.75	3.85	3.95	4.09	4.41	4.55

SEWER INSTALLATION CHARGES OMC 13.08 and ROW						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
Building Sewer Permit						
a) Residential and Commercial Service						
b) Establishments Producing Hazardous Wastes						
c) Installation of Service						
d) System Access & Inspection Fee - *Physical connection to the City system by a licensed and bonded contractor who shall be listed on the City of Okanogan's current Small Works Roster; this is the customer's responsibility.*	450.00	450.00	500.00	500.00	500.00	515.00
e) Development Fee per ERU						
f) Damage Deposit for Contractors/Will meet City standards *Refundable	500.00	500.00	500.00	500.00	500.00	500.00
Sewer Inspections Camera Rental - Per Hour Municipalitities Only	150.00	150.00	150.00	150.00	150.00	170.00
ROW - Right of Way Entry Fee/Permit						
***Non-Refundable Fee (Applicable to all Utility Work)**						
a) Administrative Inspection Fees	100.00	100.00	100.00	100.00	100.00	100.00
b) Minor/Adminstrative Misc. Inspection Fee	25.00	25.00	25.00	25.00	25.00	25.00
c) Utility Companies **(Public Entities)**	N/C	N/C	N/C	N/C	N/C	N/C
***Refundable Deposit (Upon Public Works Approval after Inspection)**						
a) Others **(Private Contractors)**	500.00	500.00	500.00	500.00	501.00	500.00
b) Utility Companies						
c) Utility Companies **(Public Entities)**	N/C	N/C	N/C	N/C	N/C	N/C

CEMETERY:						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
Full Lots	450.00	450.00	450.00	450.00	490.00	700.00
Endowment (providing for continued support & maintenance)	40.00	40.00	40.00	40.00	45.00	50.00
Half Lots	300.00	300.00	300.00	300.00	325.00	550.00
Endowment (providing for continued support & maintenance)	40.00	40.00	40.00	40.00	45.00	50.00
Opening and Closing Graves**						
a) Weekdays-During Normal Work Hours & at least 72 Hours Advance Notice	525.00	525.00	525.00	525.00	570.00	700.00
b) Weekend-Holidays or Overtime & at least 72 Hours Advance Notice	735.00	735.00	735.00	735.00	800.00	1000.00
c) Weekdays-Infants and Ashes (Urns) During Normal Work Hours & at least 72 Hours Advance Notice	230.00	230.00	230.00	230.00	250.00	500.00
d) Weekend-Holidays or Overtime (Urns & Infants) & at least 72 Hours Advance Notice	315.00	315.00	315.00	315.00	340.00	675.00
Extra Charge for Winter Full Burials: December 1 - February 29	115.00	115.00	115.00	115.00	125.00	150.00
Extra Charge for Winter (Ashes) Urn or Infant: December 1 - February 29	65.00	65.00	65.00	65.00	70.00	100.00
Setting Headstones						
a) Single Headstone	120.00	120.00	120.00	120.00	130.00	200.00
b) Double Grave of Family Headstone	140.00	140.00	140.00	140.00	150.00	260.00
Exhumation Fee						
a) Full Casket (unlined)	1100.00	1100.00	1100.00	1100.00	1100.00	1400.00
b) Full Casket (with liner)	650.00	650.00	650.00	650.00	650.00	1000.00
c) Cremation Urn	225.00	225.00	225.00	225.00	225.00	350.00
**Fee is charged for each Urn to be placed in grave						

CENTRAL VALLEY SPORTS COMPLEX USER FEES AND DEPOSITS						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
Baseball/Softball Field Use Charges (CITY DOES NOT PROVIDE FIELD PREPARATION)						
Tournaments: Listed Fee is for each day of the tournament						
a) Adult Participants (Over 17 years of age)	110.00	110.00	115.00	115.00	115.00	190.00
One Field	110.00	110.00	115.00	115.00	115.00	190.00
Two Fields	220.00	220.00	230.00	230.00	230.00	305.00
Three Fields	330.00	330.00	345.00	345.00	345.00	420.00
b) Youth Participants (17 years of age and Under)	55.00/Day	55.00/Day	60.00/Day	60.00/Day	60.00/Day	135.00/day
One Field	55.00	55.00	60.00	60.00	60.00	135.00
Two Fields	110.00	110.00	120.00	120.00	120.00	195.00
Three Fields	165.00	165.00	180.00	180.00	180.00	255.00
League: (CITY DOES NOT PROVIDE FIELD PREPARATION)						
a) Adult League Fees per season per team in league	310.00	315.00	320.00	320.00	320.00	350.00
b) ***Senior Teams half of adult league team price***						175.00
c) Youth League Fees per Season per Team in League	65.00	65.00	60.00	60.00	70.00	75.00
Soccer Field Use Charges (CITY DOES NOT PROVIDE FIELD PREPARATION)						
a) Adult League Fees per Season per Team in League	310.00	315.00	320.00	320.00	320.00	350.00
b) Adult League Tournament or Scheduled Use	110.00	110.00	120.00	120.00	120.00	190.00
c) Youth Tournament	55.00	55.00	60.00	60.00	60.00	135.00
d) Youth League Fees per season per Team in League	65.00	70.00	70.00	70.00	70.00	75.00
1. Not including Okanogan School District-Reference District Fees						
OKANOGAN SCHOOL DISTRICT - FEE PER YEAR	650.00	700.00	700.00	700.00	1000.00	1500.00
Sports Complex Concession Stand Rental - Tournament	160.00	160.00	160.00	160.00	160.00	200.00
Sports Complex Concession Stand Rental - Season						300.00
a) Damage Deposit Refundable at Completion of Tournament or Event	80.00	80.00	80.00	80.00	80.00	80.00
The Mayor may adjust authorized fees to accommodate special events. Any fee adjustments shall be in writing and reported to the Council at its next regular meeting.						

SWIMMING POOL CHARGES	2019	2020	2021	2022	2023	2024
General Admission						
Under 18 years of age	2.00	2.00	2.00	2.00	2.00	3.00
Under 18 years of age - **10 Unit Swim Pass**	15.00	10.00	15.00	15.00	15.00	20.00
Parent/Tot Swim **per Child (Parent must be in water with child/children)**	20.00	2.00	2.00	2.00	2.00	3.00
Adult	7.00	5.00	5.00	5.00	5.00	7.00
Adult Lap Swims **(EACH)**		2.00	2.00	2.00	2.00	3.00
Adult Lap Swim Ticket	70.00	70.00	60.00	60.00	60.00	65.00
Adult - **5 Unit Swim Pass**	30.00	20.00	15.00	15.00	15.00	20.00
Season Tickets: Okanogan Residents (Live in City Limits)						
a) First Child in Family	45.00	45.00	40.00	40.00	40.00	45.00
b) Second Child in Family	30.00	30.00	25.00	25.00	25.00	30.00
c) Adult	90.00	90.00	80.00	80.00	80.00	90.00
d) Family	150.00	150.00	135.00	135.00	135.00	150.00
Licensed Day Care						
a) Up to Six Children	100.00	100.00	90.00	90.00	90.00	100.00
b) Each additional Child	20.00	20.00	15.00	15.00	15.00	20.00
Season Tickets: Non-Residents and Rural						
a) First Child in Family	60.00	60.00	50.00	50.00	50.00	60.00
b) Second Child in Family	45.00	45.00	40.00	40.00	40.00	45.00
c) Adult	110.00	110.00	95.00	95.00	95.00	110.00
d) Family	170.00	165.00	150.00	150.00	150.00	170.00
Swim Lessons - ***Price is for the first child in a family; add $10.00 for each additional child***						
a) For Season Ticket Holders	45.00	45.00	40.00	40.00	40.00	50.00
b) Without Season Ticket	55.00	55.00	50.00	50.00	50.00	60.00
Evening Swim Lessons						
a) For Season Ticket Holders	45.00	45.00	40.00	40.00	40.00	50.00
b) Without Season Ticket	55.00	55.00	50.00	50.00	50.00	60.00
League Team Charge (Or in Kind in lieu of League Fees)	70.00	70.00	60.00	60.00	60.00	70.00
PARTIES (book through City Clerk's Office*)						
2 hours	190.00	165.00	150.00	150.00	150.00	190.00
3 hours	285.00	250.00	225.00	225.00	225.00	285.00
4 hours	380.00	320.00	300.00	300.00	300.00	380.00
* Cost is based on 3 lifeguards. If additional guards are required - additional charges will be assessed.						
Swim Practice, Swim Meets & 1 Saturday Swim (2 lifeguards - 90 hours estimated)	1500.00	1500.00	1500.00	1500.00	2000.00	2500.00

AIRPORT

	2019	2020	2021	2022	2023	2024
Aircraft Tie Down (all aircraft except Commercial Use), per aircraft, per day	0.00	0.00	0.00	0.00	0.00	0.00
Aircraft Tie Down (all aircraft except Commercial Use), per aircraft, per month	20.00	20.00	25.00	25.00	25.00	25.00
Monthly Rent - Block Hangar (1)	100.00	105.00	120.00	120.00	120.00	125.00
Hangar Lease - ground lease per sq. ft. per year. Leasehold tax, if any, is additional (2)	0.08	0.12	0.12	0.12	0.12	0.12
Commercial Use (without annual commerical use agreement) per aircraft per month	No Fee	No Fee	No Fee	No Fee	No Fee	No Fee
a) ALL FUEL USED DURING STAY IS PURCHASED FROM CITY FACILITY						
Commercial Use (without annual commerical use agreement) per aircraft per month	40.00	40.00	40.00	40.00	40.00	40.00
a) ALL OTHER FUEL ARRANGEMENTS (3)						
Trailer Space Rental per month (1) **K. Lester Rental Agreement**	200.00	150.00	150.00	150.00	150.00	250.00
Commercial Use Agreement, annual (4)	270.00	200.00	200.00	200.00	200.00	200.00

(1) Due in advance. Payment is for a full month and due on the first day of the month. No prorated adjustments for periods of less than one month (30 days).

(2) Due in advance. Payment due as described in Hangar Lease Agreement.

(3) Commercial use fee is in lieu of daily or monthly tie-down fees. Due in advance. Payment is for a full month and due on the first day of use. No prorated adjustments for periods of less than one month (30 days).

(4) Due in advance. Payment is for a full year. No prorated adjustments for periods of less than one year. Waived if commercial operations owns or rents hangar space.

Aviation Fuel: Wholesale price including taxes and card fees plus $.50 per gallon

BUILDING CODE CONSTRUCTION FEES (UBC) (See Appendix B)						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
1. Building Permit Fees						
2. Grading Permit Fees						
3. Plumbing Permit Fees						
4. Mechanical Permit Fees						
5. **Fire Department Permits**						
a) Automatic Fire-Extinguishing Systems	15.00	15.00	15.00	15.00	15.00	15.00
b) Compressed Gases	15.00	15.00	15.00	15.00	15.00	15.00
c) Fire Alarm and Detection Systems and Related Equipment	15.00	15.00	15.00	15.00	15.00	15.00
d) Fire Pumps and Related Equipment	15.00	15.00	15.00	15.00	15.00	15.00
e) Flammable and Combustible Liquids	15.00	15.00	15.00	15.00	15.00	15.00
f) Hazardous Materials	15.00	15.00	15.00	15.00	15.00	15.00
g) Industrial Ovens	15.00	15.00	15.00	15.00	15.00	15.00
h) LP-Gas	15.00	15.00	15.00	15.00	15.00	15.00
i) Private Fire Hydrants	15.00	15.00	15.00	15.00	15.00	15.00
j) Spraying or Dipping	15.00	15.00	15.00	15.00	15.00	15.00
k) Standpipe Systems	15.00	15.00	15.00	15.00	15.00	15.00
l) Temporary Membrane Structures, Tents, and Canopies	15.00	15.00	15.00	15.00	15.00	15.00
6. **Plan Review Fees:**						
45% of the Permit Fee for routine in-house reviews; 65% of the Permit Fee for complex in-house reviews, plus all costs incurred for use of outside Consultants. Additional plan review required by changes, additions or revisions to plans (minimum charge one-half hour).	50.00	50.00	50.00	50.00	50.00	50.00
7. **Other Inspections and Fees**:						
a) Inspections outside of normal business hours, per hour (minimum charge one-half hour)	50.00	50.00	50.00	50.00	50.00	50.00
b) Re-inspection fees assessed under provisions of Sections 116.6 per inspection	50.00	50.00	50.00	50.00	50.00	50.00
c) Inspections for which no fee is specifically indicated, per hour (minmum charge one-half hour)	50.00	50.00	50.00	50.00	50.00	50.00
d) Additional plan review required by changes, additions or revisions to plans or to plans for which an initial review has been completed (minimum charge one-half hour)	50.00	50.00	50.00	50.00	50.00	50.00
8. **Manufactured/Mobile Home Installation Permits Fees**:						
Including building permits and plan review fee for work pertaining to a home set-up in an approved manufactured home community as a park-set with stoops:						
a) Single Unit Wide	285.00	285.00	285.00	285.00	285.00	285.00
b) Double Unit Wide	315.00	315.00	315.00	315.00	315.00	315.00
c) Triple Unit Wide and Larger	345.00	345.00	345.00	345.00	345.00	345.00
Continued on Next Page						

BUILDING CODE CONSTRUCTION FEES - Continued						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
9. **Manufactured Home Installation Permit Fees:**						
Including building permit and plan review fee for work pertaining to a home set-up on a nominal permanent foundation on an individual lot with stoops:						
a) Single Unit Wide	410.00	410.00	410.00	410.00	410.00	410.00
b) Double Unit Wide	455.00	455.00	455.00	455.00	455.00	455.00
c) Triple Unit Wide or Larger	500.00	500.00	500.00	500.00	500.00	500.00
10. **Moved Building**	55.00	55.00	55.00	55.00	55.00	55.00
Not intended for human occupancy, such as a shed; utility, installation permit fee, NOT including building permit fee and plan review fee for work pertaining to a permanent foundation.						
11. **Commercial Structure/Coach, and/or a Moved Building**						
Non-utility installation permit fee, NOT including building permit fees and plan review fee for work pertaining to a permanent foundation ***and OTHER site work.***						
a) Single Unit Wide	285.00	285.00	285.00	285.00	285.00	285.00
b) Double Unit Wide	315.00	315.00	315.00	315.00	315.00	315.00
c) Triple Unit Wide or Larger	345.00	345.00	345.00	345.00	345.00	345.00
d) Utility Building Installation Permit	80.00	80.00	80.00	80.00	80.00	80.00
12. **Demolition Permit Fee:**						
a) Routine Utility	55.00	55.00	55.00	55.00	55.00	55.00
b) Primary Utility	100.00	100.00	100.00	100.00	100.00	100.00
c) Complex Utility	150.00	150.00	150.00	150.00	150.00	150.00
13. **Public and Private Pools Installation Permit Fee:** ***Calculated same as building permit***						
14. **Commercial Signs Installation Permit Fee:** ***Calculated same as building permit***						
15. **Chimney Inspection Fee**	50.00	50.00	50.00	50.00	50.00	50.00
16. **Permits & Review Fees requiring other inspections & which no fee is specifically indicated shall be the fee for the work it most closely resembles.**						
17. **For use of outside consultants for plan reviews and special inspections:**						
a) All costs incurred by the City, to include administrative and overhead costs						
18. **State Code Fee**	RCW	RCW	RCW	RCW	RCW	RCW

ZONING/PLANNING/PLANNING FILING AND VESTING FEES						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
1. **Zoning Conditional Use Permit**	425.00	425.00	425.00	425.00	425.00	425.00
2. **Home Occupation Certificate**:						
a) Administratice/Clerical	30.00	30.00	30.00	30.00	30.00	30.00
b) Other	100.00	100.00	100.00	100.00	100.00	100.00
3. **Variance Petition**	300.00	300.00	300.00	300.00	300.00	300.00
4. **Zoning Text/Map Amendment Petition**	500+*	500+*	500+*	500+*	500+*	500+*
5. **Comprehensive Plan Amendment Petition**	1000+*	1000+*	1000+*	1000+*	1000+*	1000+*
6. **Annexation Petition**:						
a. Due upon filing Intent ot File a Petition	No Charge	No Charge	No Charge	No Charge	No Charge	No Charge
b) Due upon filing Completed Petition	No Charge	No Charge	No Charge	No Charge	No Charge	No Charge
7. **Short Subdivision Application:**						
a) Due at initial application	100.00	100.00	100.00	100.00	100.00	100.00
b) Due at Notice of Complete Application to start review process						
c) Short Plat Filing Fee	0.00	0.00	0.00	0.00	0.00	0.00
1. Base Fee	300.00	300.00	300.00	300.00	300.00	300.00
2. Per Lot in addition to Base Fee	25+*	25+*	25+*	25+*	25+*	25+*
8. **Long Subdivision Application:**						
a) **Preliminary Approval Filing Fee** *shall be a base fee, which includes an initial application filing fee, due at applications submission. The balance of the total base fee shall not be payable until the application is deemed complete and shall include an addition per lot cost plus**						
1. Base Fee	600.00	600.00	600.00	600.00	600.00	600.00
2. Application Filing Fee	100.00	100.00	100.00	100.00	100.00	100.00
3. Cost per lot, in addition to base fee and application filing fee	25.00	25.00	25.00	25.00	25.00	25.00
b) **Final Long Subdivision Approval Filing Fee** (*in addition to preliminary fees already paid)*	200+*	200+*	200+*	200+*	200+*	200+*
PROVIDED the final plat submitted is in substantial conformance with the preliminary plat approval. If there are substantial differences, the fee shall be calculated at an additional per half-hour cost exceeding a base three-hour total processing time.						
1. Per half-hour cost	25+*	25+*	25+*	25+*	25+*	25+*
c) Long Plat Vacation Filing Fee	250.00	250.00	250.00	250.00	250.00	250.00
9. **Comprehensive Site Plan Analysis:** *not pertaining to a vested application for a permit shall be a base fee, plus a per half-hour fee in excess of one-hour of staff time developing the report.*						
a) Base Fee	50.00	50.00	50.00	50.00	50.00	50.00
b) Per Half-Hour Fee	25.00	25.00	25.00	25.00	25.00	25.00
Continued on Next Page						

ZONING/PLANNING/PLANNING FILING AND VESTING FEES-Continued						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
10. **Boundary Line Adjustment or Parcel Consolidation**						
a) Base Fee	75.00	75.00	75.00	75.00	75.00	75.00
b) Per Additional Affected Lot	10.00	10.00	10.00	10.00	10.00	10.00
11. **Planned Development**						
a) **Peliminary Planning Development**: *approval filing fee shall be a base fee that includes an initial application filing fee due at application submission. The balance of the total base fee shall not be payable until the application is deemed complete, and shall include an additional per lot/unit fee plus**						
1. Base Fee	600.00	600.00	600.00	600.00	600.00	600.00
2. Initial Application Filing Fee	100.00	100.00	100.00	100.00	100.00	100.00
3. Per Unit/Lot Fee	25.00	25.00	25.00	25.00	25.00	25.00
b) **Final Planned Development Approval Filing Fee**: *(in addition to prelim. fee paid) PROVIDED, the final planned development submitted is in substantial conformance with the preliminary development approval. If there are substantial differences, the fee shall be calculated at an additional per half-hour fee exceeding a base three-hour total processing time.*	200.00	200.00	200.00	200.00	200.00	200.00
1. Per Half-Hour Fee	25.00	25.00	25.00	25.00	25.00	25.00
12. **Access Management Ingress/Egress Permit (Administrative Approval):**	30+*	30+*	30+*			
a. Access Management Ingress/Egress Permit (Routine)	100+*	100+*	100+*	100+*	100+*	100+*
b. Access Management Ingress/Egress Permit (Complex)	200+*	200+*	200+*	200+*	200+*	200+*
13. **Street/Alley Vacations Fee:** (*in addition to any monies paid for subject right-of-way)*	125+*	125+*	125+*	125+*	125+*	125+*
14. **Appeal Filing Fee**:						
All costs incurred by the City in providing notice of the hearing. Fee is due and shall be paid prior to commencement of the hearing. The Appeals Board may make a recommendation to City Council for reimbursement of monies paid when there is an overriding circumstance.						
**** Shall mean** : plus all costs incurred by the City to include, but are not limited to copies, postage, advertisement and use of outside consultants that are directly attributed to actions pertaining to a specific project or proposal in the review and approval process. These costs are the obligation of the proponent regardless of the outcome of the determination. The said cost shall be payable to the City upon presentation of an itemized bill.*						
PAST DUE BILLING FEES FOR PAST DUE PERMIT FEES	20.50	21.00	25.00	25.00	25.00	25.00

SEPA						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
1. **State Environmental Policy Act (SEPA) compliance filing fee:**						
a) Base Fee	25.00	25.00	75.00	75.00	75.00	75.00
1. For construction projects which are not specifically included within the identified scope of a related land use decision's threshold determination.	250.00	250.00	250.00	250.00	250.00	250.00
2. For land use applications included within land use application filing & vesting fees.						
b) Projects requiring more than one-hour of staff time processing and/or receiving a determination of significants (DS) and/or requiring further revision to the SEPA documentation after the close of the comment period shall be billed at **$50.00 an hour** for staff time and all costs incurred by the City directly attributed to the SEPA compliance of the project.						
2. **Shoreline Substantial Development Permit**	500.00	500.00	500.00	500.00	500.00	500.00
a) **Shoreline Substantial Development Permit Requiring a Hearing**	550.00	550.00	550.00	550.00	550.00	550.00
3. **Shoreline Conditional Use Permit or Shoreline Variance Filing Fees**	600.00	600.00	600.00	600.00	600.00	600.00
4. **Petitions for Project Related Shoreline Master Program Amendments**	1000+*	1000+*	1000+*	1000+*	1000+*	1000+*
5. **Floodplain Development Permit**						
a) Adminstrative Approval	20.00	20.00	20.00	20.00	21.00	20.00
b) Minor Development (Routine)	100+*	100+*	100+*	100+*	100+*	100+*
c) Minor Development (Complex)	250.00	250.00	250.00	250.00	250.00	250.00
d) Substantial Development (Routine)	350.00	350.00	350.00	350.00	350.00	350.00
e) Substantial Development (Complex)	250+*	250+*	250+*	250+*	250+*	250+*
f) Variance	400+*	400+*	400+*	400+*	400+*	400+*
5. **Petitions for project related Flood Hazard Reduction Program Amendments**	1000+*	1000+*	1000+*	1000+*	1000+*	1000+*
6. **Completion of an Elevation/Flood proofing Certificate for a structure not related to a valid permit**	100.00	100.00	100.00	100.00	101.00	100.00
**** Shall mean** : plus all costs incurred by the City to include, but are not limited to copies, postage, advertisement and use of outside consultants that are directly attributed to actions pertaining to a specific project or proposal in the review and approval process. These costs are the obligation of the proponent regardless of the outcome of the determination. The said cost shall be payable to the City upon presentation of an itemized bill.*						

FEE REFUNDS and INVESTIGATION FEE						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
Fee Refunds: Construction, Environmental, Zoning, Water and Sewer Fees:						
Any fee paid hereunder which was erroneously paid or collected may be refunded with appropriate documentation. The Permit Administrator with concurrence of the City Clerk and Director of Public Works may authorize refunding of not more than **80%** of a permit fee paid when no work has been done under a permit issued in accordance with Okanogan Municipal Code. The Permit Administrator with concurrence of the City Clerk and Director of Public Works may authorize refunding of not more than **80%** of a plan review fee paid when an application for a permit for which a plan review fee has been paid is withdrawn or cancelled before any plan reviewing is done. The Permit Administraor shall not authorize refunding of any fee paid except on written application filed by the original permit holder not later then 180 days after the date of fee payment.						
Investigation Fee: Construction, Environmental, Zoning, Water and Sewer Fees:						
Whenever any work or activity for which a permit is required by municipal code has commenced without first obtaining said permit, a special investigation shall be made before a permit may be issued for such work or activity. An investigation fee, in addition to the permit fee, shall be collected whether or not a permit is then or subsequently issued. The investigation fee shall be **equal to the amount of the permit fee** required by this fee schedule. The payment of such investigation fee shall not exempt a person from compliance with all other provisions of municipal code nor from any penalty prescibed by law.						

APPENDIX S

INTERTIE AGREEMENT

CITY OF OKANOGAN
AGREEMENT BETWEEN THE CITY OF OKANOGAN AND PROGRESSIVE FLAT WATER ASSOCIATION FOR DELIVERY OF WATER

RECITALS

1. The Progressive Flat Water Association, hereinafter (Progressive), is a water district formed in 1960 pursuant to the Revised Codes of Washington and is operated as a non-profit corporation under Washington law.

2. Progressive currently provides domestic water service to 45residences and is authorized to provide domestic water service to 90 residences in the service area described on Exhibit A. The maximum number of services may be increased by the Washington State Department of Health once system upgrades are completed in the service area.

3. The City of Okanogan, Washington, hereinafter (City) is a Washington municipal corporation and operates a water system providing domestic water service to residents within the corporate boundaries of the City.

4. In the past two years the well supplying water to Progressive's water users has been unable to supply sufficient quantity of water to meet domestic needs of its water users, and the water has been determined to have radioactive properties which may prove to be inimical to human health if ingested over long periods of time.

5. Progressive Flats has successfully transferred two water rights to the City of Okanogan, specifically, Water Right Application Number CG4-CWC3838-A@2 for 50 gallons per minute and 39 Acre Feet per year approved on June 7, 2006 and Water Right Number CG4-30573 for 20 gallons per minute and 6.3 Acre Feet per year approved on July 5, 2006.

6. The City is agreeable to providing water from its system to Progressive for domestic use by Progressive's members in exchange for Progressive conveying its water rights to the City and according to the terms and conditions of the following:

AGREEMENT FOR DELIVERY AND USE OF CITY WATER

The parties herein, PROGRESSIVE FLAT WATER ASSOCIATION and CITY OF OKANOGAN, Washington, for and in consideration of conveyance by PROGRESSIVE to CITY of all it's Water Rights as confirmed by the DEPARTMENT OF ECOLOGY of the

State of WASHINGTON, the mutual promises of the parties herein, and other good and valuable consideration, do this 14th day of November, 2006 agree as follows:

I.

1.1 The City agrees to furnish water through the City's water system to Progressive for the domestic use of a maximum of 90 individual hookups (or such other maximum number of hookups as may be approved by the Washington State Department of Health and Department of Ecology) to Progressive's water system until such time as any part of the area serviced by Progressive should be annexed to the City and subject to the conditions of annexation as described elsewhere herein. Should annexation of any part of the service area occur, the approved number of hookups permissible shall be reduced by the number of hookups within the annexed service area.

1.2 Progressive asserts and confirms that it has obtained all necessary rights of way and/or easements necessary for the installation and/or continued operation of Progressive's domestic water delivery system and Progressive will maintain said system at no expense to the City. It is agreed that the dividing point between the Progressive Flats System and the City of Okanogan's Water System will be immediately after the master meter and backflow prevention valve on the main line.

1.3 The service connection for each of the hookups referenced above shall have a maximum pipe size of three quarters (3/4) inch in diameter for a single family residential unit, and a maximum pipe size of two (2) inches in diameter for multiple unit housing facilities.

1.4 Progressive agrees that any meters installed in their system will be the same type and brand of meter that is used by the City of Okanogan, and will be suitable for installation of "radio read meter transmitters" that will be compatible with equipment to be acquired by the City of Okanogan. Progressive further agrees that meters will be installed within 10 to 15 feet of the water main which serves the meter.

1.5 The water delivered by the City to Progressive is for domestic use of its members and shall be used exclusively for domestic and non-commercial livestock watering purposes. Water may also be used for farm labor housing facilities and commercial facilities but not for agricultural irrigation or commercial livestock purposes.

1.6 All hookups to the Progressive system shall comply with the City's Back Flow Prevention Ordinance.

1.7 There shall be only one equivalent residential unit ERU for each hookup to the system

except for Farm Labor Housing Facilities which are designed for several residents.

1.8 All members and/or recipients of domestic water delivered through the Progressive system shall be subject to the regulations contained to Title 13 of the Okanogan Municipal Code.

1.9 The City does not guarantee delivery of any water at any specific pressure or fire flow volume in the Progressive system unless the Progressive system is upgraded to standards required of the City system by the City's Municipal Code, the Revised Code of Washington and pertinent regulations of the Washington Administrative Code. Any easements necessary to upgrade the Progressive system will the responsibility of Progressive.

1.10 Progressive shall install a back flow prevention device acceptable to the City and consistent with City standards and specification at the location of the main valve connecting the City water system to the Progressive water system.

1.11 Progressive will install at least one sampling station at the location where the City's water system is connected to the Progressive system. Material specification for the sampling station shall be in accordance with City requirements and all costs of labor, materials and equipment necessary for installation of the sampling station shall be at the expense of Progressive.

1.12 The City will take water samples monthly from the sampling station as indicated in Paragraph 1.10 above to test for the presence of coliforms as required by the Washington State Department of Health. The water samples will be shipped to an independent laboratory for testing. The City will invoice Progressive and Progressive will pay the City on a monthly basis for all costs to take, ship and test the samples.

1.13 Should the presence of coliforms be detected, repeat samples will be taken and tests made as required by Chapter 246-290 of the Washington Administrative Code. If the source of contamination is determined to be from the Progressive system, Progressive will be responsible for all costs of the contamination as relates to the Department of Health Regulations, including additional testing, within the City system and the Progressive system, and Progressive agrees that it will install City approved back flow devices at Progressive's costs for all individual hookups. If the source of contamination is determined to be caused from the City's system, the City will assume all costs for the contamination as relates to the Department of Health Regulations, including testing.

1.14 Should the Washington State Department of Ecology or Washington State Department of Health increase the testing frequency or add other monitoring requirements, Progressive agrees to pay additional costs for these tests whenever they are imposed upon the City.

II.

2.1 Progressive agrees that it and its members will hold City harmless from any liabilities of persons or property for any damages to persons or property which may result from the use or operation or maintenance of the system installed by Progressive including but not limited to lack of water or water pressure.

2.2 Progressive will at its own expense maintain in force general comprehensive liability insurance naming the City as additional insured in order to protect the City and its personnel against liability for loss or damages or bodily injury, death, and property damages caused by the activities of Progressive under this agreement. Minimum limits under the policy will be ONE MILLION and NO/100 ($1,000,000.00) Dollars resulting from any one occurrence. Evidence of said coverage in the form of a valid certificate of insurance, showing the City named as additional insured, will be submitted to the City Clerk within 60 days of final execution of this agreement.

2.3 Progressive agrees that it will reimburse the City in full within 15 days of receiving an invoice showing the amount of water delivered to Progressive through the City's water delivery system as metered by a meter to be installed at the connection of the City water system to Progressive's water system. Wholesale water rates to be charged to Progressive shall be at the beginning rate of $1.08 for every thousand gallons delivered to Progressive during a preceding month. The parties also agree that the rate per thousand gallons will be reviewed and adjusted annually as are the City's water rates.

The City shall not interfere in any way or require any arrangement pursuant to which Progressive secures reimbursement of the wholesale cost of water delivered to its system from those receiving water through Progressive's delivery system.

2.4 In the event that the Progressive Board of Directors dissolves, or does not pay the invoice by the end of the month in which it is sent, the City's recourse will be to discontinue water service to the Progressive Flat System. This action will be preceded by an attempt to provide telephonic notice to the Progressive Flats Board of Directors 24 hours in advance of the turn off. In event of a delinquency of this account, the standard penalties and turn off, turn on charges specified in the City's Fee Schedule in affect at the time will be imposed prior to resumption of service.

III.

It is understood and agreed between the parties that in the event that there is insufficient water to serve all the demand on the City's water system, that water rationing or restrictions will be equally applied to Progressive Flats and the City's individual customers.

Progressive Flats agrees to enforce any such rationing or restrictions on their customers as is applied to other City customers.

IV.

Progressive agrees to furnish the City Water Department and Public Works Department engineered As-Built plans of Progressive's system, including any upgrades or modifications to Progressive system, within 30 days after any installation or modification to Progressive's system.

V.

Though not a requirement of this agreement, it is understood and anticipated by the parties that some property owners of areas served by Progressive's water system may request annexation to the City, and in which event, annexation shall proceed as follows:

1. Annexations, if any, shall occur in a progressive sequence that does not create islands or peninsulas.

2. In the event of such annexation, all City utilities, including water and sewer, shall be upgraded by the property owner/developer in accordance with the City's comprehensive plan for Progressive's service area.

VI.

Progressive shall be responsible to inform its members no less than 48 hours in advance of water outages due to planned maintenance or upgrading of Progressive's water system. Progressive shall be responsible for all water taps, permits, and costs of maintenance and construction of its system on County roads or City street rights of way.

VII.

This agreement shall be binding upon and inure to the benefit of heirs, successors and assigns of the members of Progressive.

VIII.

This agreement shall continue for a period of Twenty (20) years from the date of this agreement. At the end of the initial twenty-year period this agreement may be renewed, amended or terminated by mutual agreement of the Parties.

IN WITNESS WHEREOF, we have hereunto set our hands this 14th day of November, 2006.

CITY OF OKANOGAN

Michael Blake, Mayor

PROGRESSIVE FLAT WATER ASSN.

President

Attested:

Ralph Malone, City Clerk

Secretary

Approved as to form:

Owen M. Gardner, City Attorney

STATE OF WASHINGTON)
:ss
County of Okanogan)

On this 1st day of November, 2006, before me, a Notary Public in and for the above-named County and State, personally appeared Michael Blake and Ralph Malone to be known to be the Mayor and City Clerk respectively of the municipality that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said municipality, for the uses and purposes therein mentioned, and each on oath stated that he was authorized to execute said instrument.

In witness whereas I have hereunto set my hand and affixed by official seal the day and year first above written.

JENELL LYNN KRUSE COMMISSION EXP. NOTARY PUBLIC APRIL 20, 2009 STATE OF WASHINGTON

Jenell Lynn Kruse
Notary Public for the State of Washington, residing in Okanogan.
My Commission Expires 04-20-09.

STATE OF WASHINGTON)
:ss
County of Okanogan)

On this 14th day of November, 2006, before me, a Notary Public in and for the above-named County and State, personally appeared John Sherlock and _____ to be known to be the President and Secretary respectively of the corporation that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and each on oath stated that he/she was authorized to executed said instrument.

In witness whereas I have hereunto set my hand and affixed by official seal the day and year first above written.

JENELL LYNN KRUSE COMMISSION EXP. NOTARY PUBLIC APRIL 20, 2009 STATE OF WASHINGTON

Jenell Lynn Kruse
Notary Public for the State of Washington, residing in Okanogan.

My Commission Expires April 20 2009

STATE OF WASHINGTON)
:ss
County of Okanogan)

On this 9th day of November, 2006, before me, a Notary Public in and for the above-named County and State, personally appeared Michael Blake and Ralph Malone to be known to be the Mayor and City Clerk respectively of the municipality that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said municipality, for the uses and purposes therein mentioned, and each on oath stated that he was authorized to execute said instrument.

In witness whereas I have hereunto set my hand and affixed by official seal the day and year first above written.

JENELL LYNN KRUSE COMMISSION EXP. NOTARY PUBLIC APRIL 20, 2009 STATE OF WASHINGTON

Jenell Lynn Kruse
Notary Public for the State of Washington, residing in Okanogan.
My Commission Expires 4-20-09.

STATE OF WASHINGTON)
:ss
County of Okanogan)

On this 9th day of November, 2006, before me, a Notary Public in and for the above-named County and State, personally appeared R. D. Blake ~~and~~ _____ to be known to be the ~~President and~~ Secretary ~~respectively~~ of the corporation that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and each on oath stated that he/she was authorized to executed said instrument.

In witness whereas I have hereunto set my hand and affixed by official seal the day and year first above written.

JENELL LYNN KRUSE COMMISSION EXP. NOTARY PUBLIC APRIL 20, 2009 STATE OF WASHINGTON

Jenell Lynn Kruse
Notary Public for the State of Washington, residing in Okanogan.

My Commission Expires 04-20-09.

APPENDIX T

RESOLUTION

SUBSTITUTE

RESOLUTION No. 2006-19

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF OKANOGAN, WASHINGTON, FORMALIZING ITS POLICY ON WATER UTILITY CONNECTIONS IN LOCATIONS OUTSIDE OF THE OKANOGAN CITY LIMITS

WHEREAS, the City of Okanogan has maintained a policy of not providing water service connections to properties outside of the city limits for many years, and this policy is evidenced by repeated references thereto in council minutes over the years; and

WHEREAS, it is a prudent policy to reserve the limited water resources of the City of Okanogan for distribution to those areas that are located within the City Limits of the City of Okanogan; and

WHEREAS, adoption of a formal policy through Resolution will establish with certainty the conditions under which the City of Okanogan will provide water service.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Okanogan:

Section 1. No water service connection will be allowed to a property outside of the Okanogan city limits unless one of the following three conditions are met.

A. The City or Applicant can demonstrate that a health emergency exists that warrants extension of city services to said property or properties. In all such cases, the Applicant shall demonstrate that adequate water rights exist to offset any such commitment by the City and shall take all steps necessary to transfer said rights to the City.

OR

B. The Applicant is an instrumentality of the State, Federal or Tribal Government and the service is for a public purpose and the City finds that it is in its best interest to provide the service.

OR

C. Applicant can demonstrate through physical evidence that a city water service existed at the proposed service site in the past,

OR

Applicant can provide acceptable documentation that a city water service existed at the service site by production of city billing

records, recorded easements or other definitive evidence to demonstrate that the property was served by city water in the past,

OR

Applicant can provide acceptable documentation of past agreements reached between the City and the property owners providing for extension of rural water to said property or properties,

AND

Applicant is unable to annex the property into the City.

Section 2. The following requirements must be met before service will be restored or extended to any property outside the boundaries of the City.

A. The necessary water line must be installed or repaired to City specifications at the expense of the applicant.
B. Maintenance of the water line will be the sole responsibility of the applicant and any subsequent property owners.
C. An approved backflow prevention device must be installed if required by the Public Works Superintendent.
D. Restored or extended water service cannot exceed the original use type established in Section No. 1 above. Specifically no subdivisions, additional services or expanded uses such as motels, apartments or businesses will be allowed, unless specifically authorized under water rights transferred to the City.
E. All applicable fees for extension / restoration of water service will be paid by the property owner(s).
F. Application for rural water connection is approved by the Okanogan City Council
G. Rural water service rates will apply to all such services, except in such cases where unique circumstances and/or agreements stipulate otherwise.

Section 3. The restrictions imposed in Section 2 above will continue until such time as the property is formally and officially annexed into the City of Okanogan in accordance with State of Washington Statute. Upon annexation into the City of Okanogan, the properties will be treated in the same manner as all other properties with a water service connection within the City limits.

PASSED BY THE CITY COUNCIL AND APPROVED BY THE MAYOR OF THE CITY OF OKANOGAN this 19th day of December, 2006.

APPROVED:

Michael Blake, Mayor

ATTEST:

Ralph S. Malone Jr. Clerk/Treasurer

APPENDIX U

WATER USE EFFICIENCY PUBLIC FORUM MINUTES