Comprehensive Water System Plan

Town of South Prairie

April 2007

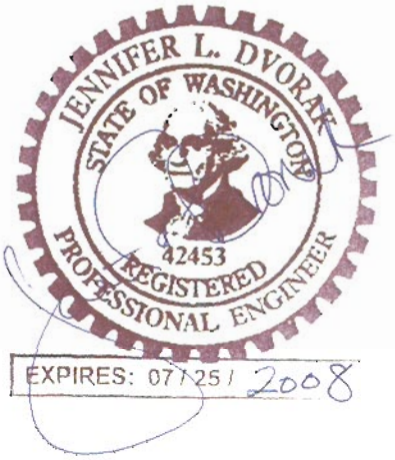
Parametrix

CITATION

Parametrix. 2007. Comprehensive Water System Plan.
Prepared by Parametrix, Sumner, Washington.
April 2007.

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.



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KEY TERMS

AC	asbestos cement
ac-ft/yr	acre-feet per year
ADD	average daily demand
ADP	average daily production
AWWA	American Water Works Association
BTO	Basic Treatment Operator
ccf	100 cubic feet
CCS	Cross-Connection Control Specialist
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIP	Capital Improvement Plan
CT	Chlorine Contact Time
CWSP	Coordinated Water System Plan
DDBPR	Disinfectants and Disinfection Byproducts Rule
DOH	Washington State Department of Health
DWSRF	Drinking Water State Revolving Fund
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ERU	equivalent residential unit
ES	equalizing storage
Fe	Iron
fps	feet per second
FSS	fire suppression storage
gpd	gallons per day
gpm	gallons per minute
HAA5	haloacetic acids
IDSE	Initial Distribution System Evaluation
IOCs	inorganic chemicals
MCL	maximum contaminant level
MCLG	Maximum Contaminant Level Goal
MDD	maximum day demand
MDP	maximum daily production
MG	million gallon
mgd	million gallons per day

KEY TERMS (CONTINUED)

Mn	manganese
MRDLs	Maximum Residual Disinfectant Levels
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation
O&M	operation and maintenance
PHD	peak hourly demand
PRV	pressure-reducing valves
PSE	Puget Sound Energy
PVC	polyvinyl chloride
Qa	annual quantity
Qi	instantaneous quantity
R-10	Rural 10 zoning
ROE	Report of Examination
RUS	Rural Utilities Service
RV	recreational vehicle
SB	Standby
SDWA	Safe Water Drinking Act
SEPA	STATE ENVIRONMENTAL POLICY ACT
SOCs	synthetic organic chemicals
TTHMs	total trihalomethanes
UGA	urban growth area
VOCs	volatile organic compounds
WAC	Washington Administrative Code
WDM	Water Distribution Manager
WISHA	Washington Industrial Safety and Health Act
WSRP	Water Shortage Response Plan
WTPO	Water Treatment Plant Operator

1. DESCRIPTION OF WATER SYSTEM

1.1 OWNERSHIP AND MANAGEMENT

The South Prairie Water System is municipally owned and managed by the Town of South Prairie as System ID 82300 R. The Town maintains a full-time paid Utilities Operator position whose qualifications include being a licensed Water Distribution Manager, Basic Treatment Operator, and Cross-Connection Control Specialist 1. The Utilities Operator is responsible for both the water and sewer system operations.

1.2 SYSTEM BACKGROUND

1.2.1 History of Water System Development and Growth

Predecessor System, 1855 to 1967

The Town of South Prairie was incorporated as a Fourth-Class Town in Washington in 1909.

South Prairie was served by a private water system, the South Prairie Water Company, until 1967. Records of the company's operations and facilities are scarce, and it is understood that the system was expanded on an ad hoc basis as the town developed.

Municipal System, 1967 to Present

By 1966, the South Prairie Water Company's facilities were inadequate for the small population of the town. The system owners notified the Town that they would cease operations on July 1, 1967. The system owners offered to sell the distribution network for $1,000 but did not offer to sell the water supply springs or their open concrete storage reservoirs. The Town hired Sleavin-Kors Professional Engineers to study the existing system and to recommend system improvements. A preliminary report dated September 22, 1966, and prepared by Sleavin-Kors, a water system plan prepared by Hedges and Roth Engineering in 1998 and later amended in 1999 by Cosmopolitan Engineering Group, and subsequent project construction documents were used to summarize the system development below.

1967 Private Facilities Not Acquired

Water was obtained through springs on a hillside at the south edge of town and was stored in reservoirs with a capacity of approximately 75,000 gallons. The springs did not furnish an adequate amount of water during periods of heavy usage and were under the influence of surface water. A well supplying approximately 35 gallons per minute (gpm) was used to supplement the spring water.

1967 Acquisition

Although the Town did not acquire physical access to the well and springs, it did acquire water rights. Water rights for the well were permitted under Certificate No. 768A for 100 gpm and 60 acre-feet per year (ac-ft/yr). Water rights for the spring were permitted under Certificate No. 9394 for 0.15 cubic feet per second (cfs) (161 gpm) and a total of 90 ac-ft per year.

Water lines varied from 1 inch to 4 inches in diameter. The smaller lines were generally in extremely poor condition. The system was configured with a single trunk line with lateral branches. No looping existed anywhere in the system. The 4-inch trunk line extended approximately 2,000 feet from the spring and reservoir in the south, across fields, and along Emery Street to its intersection with Franklin Street.

Comprehensive Water System Plan

Prepared for

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1967 Improvements

The heart of the Town's current system was built in 1967. The School Yard Well, also built in 1967, operated as the Town's primary water source until 2001. Other improvements included 1,800 feet of 8-inch-diameter pipe, a 2,500-foot-long main between the well and Tubbs Road (which remains the sole fire flow transmission main), and the original 100,000-gallon steel tank at Tubbs Road which continues to provide half the Town's storage. The other 200 feet of water main built in 1967 remains in use as a key part of the Town's distribution grid.

1968 Improvements

The year 1968 saw construction of the majority of the Town's distribution system comprising of over 3,300 feet of 8-inch mains, 6,200 feet of 6-inch mains, 11 fire hydrants, 75 service connections, and 25 isolation valves. These improvements replaced the entire South Prairie Water Company distribution system while closing system loops with additional mains in Eleanor and Cascade Streets and along Pioneer Way between Eleanor and Tacoma Streets. All mains were built of asbestos cement (AC) pipe. These improvements remain in service as of the date of this report.

1970s Improvements

In 1978, the Town built a second 100,000-gallon steel tank adjacent to the original tank at Tubbs Road. This tank provides additional fire storage and system flexibility and remains in service as of the date of this report. The Town built a deep supply well, pump house, and disinfection facility in the Tubbs Road tank compound in 1979. The Tubbs Road Well served as a secondary supply source until 2001 when new iron and manganese treatment improved the water quality and allowed the source to be used as a primary water supply.

1980s Improvements

In 1983, the Town extended an 8-inch PVC line from the Post Office, under and eastward along Pioneer Way/SR-162 to provide service to a new Fire Hall. These improvements remain in service. In the late 1980s, an 8-inch PVC line was extended on Emery from Pioneer Way to SE 1st Street.

1990s Improvements

The Town extended a 6-inch main westward along SW 1st Street and southward along South Prairie Carbon River Road East to provide service to the Town's sewage treatment plant in 1991. A privately owned 2-inch main was built westward along Pioneer Way from the town boundary in 1992. The Town replaced the pump in the School Yard Well and installed its first production flowmeter on the School Yard Well in 1994. Also in 1994, 8-inch-diameter mains were built under Rainier Street from Pioneer Way to SE 2nd Street. These improvements remain in service.

1994 to Present

In 2000, an 8-inch line, including fire hydrant, was installed under Cross Creek Court from South Prairie Road and under Pioneer Way. Iron and manganese treatment was installed at Tubbs Road Well in 2001. In addition to these improvements, a booster pump and 2-inch distribution line to five residential units along Tubbs Road was installed. In 2002, a 6-inch main was replaced with 8-inch PVC pipe along South Prairie Road from 250th Avenue past Pioneer Way. Iron and manganese treatment was installed at the School Yard Well in a separate contract in 2002.

1.2.2 Geography

South Prairie is located on State Route 162, approximately 8 miles northeasterly of Orting and approximately 4 miles southwesterly of Buckley as shown on Figure 1-1, "Vicinity Map." The community lies in a valley along South Prairie Creek, a tributary of the Carbon River. The valley is a broad, flat plain approximately 1 mile wide. The ridges to the north and south of the valley rise to 700 feet. Mount Rainier foothills border the south of the Valley. The approximate elevation is 425 feet.

1.2.3 Neighboring/Adjacent Water Systems

The City of Tacoma's water service area (Tacoma Water) abuts the town of South Prairie's water service area as shown on Figure 1-2, "Service and Franchise Areas." See additional discussion in Section 1.7 regarding past documentation discrepancies of the water service areas.

1.2.4 Ordinances

The Town of South Prairie adopted the 2003 *International Fire Code* by Ordinance No. 451 and the 2003 *Uniform Plumbing Code* by enactment of Ordinance No. 448. While Ordinance No. 451 does not specifically reference Appendices B and C of the International Fire Code, the Town's Fire Marshall has confirmed the Town's use of the appendices as standard practice. The Town has a cross-connection control policy as established in Ordinance No. 338. Base rate and volumetric charges are established in Ordinance No. 349 and as amended by Ordinance Nos. 374, 400, and 401. A copy of each of these Ordinances is included in Appendix A.

Pierce County requires that the Town of South Prairie provide fire flows for areas within the Town's service area as codified in Pierce County Code 17.C and included in Appendix B. The Town is required to provide these fire flows simultaneously with maximum day demand while maintaining a residual pressure of at least 20 psi throughout the system (Washington Administrative Code [WAC] 296-240-230).

1.3 INVENTORY OF EXISTING FACILITIES

1.3.1 Existing Service Area

Franchise Area, per Pierce County Ordinance 89-148

Franchises are nonexclusive geographical areas that allow a municipality to construct utilities outside of its corporate limits. It may be larger than a municipality's service area. Because franchises are nonexclusive, it does not prevent overlapping franchises in the same area and it does not determine the water service boundaries for a purveyor. Nor does it legally obligate a purveyor to provide service to development within the franchise area.

A copy of the ordinance defining South Prairie's franchise area in Pierce County has been included in Appendix B and permits South Prairie to construct, maintain, and operate water lines in Pierce County public roads and highways for a period of 25 years from November 14, 1989. The franchise area established in this agreement is larger than South Prairie's current service area as shown in Figure 1-2. The franchise area is described as follows:

- Sections 12 and 13, Township 19 North, Range 5 East, W.M.
- Sections 7 and 18, Township 19 North, Range 6 East, W.M.

Review of County records indicates there are several other franchises across and abutting South Prairie's franchise area. Any changes to the Town's water service area boundaries must be coordinated between South Prairie and any adjoining purveyor. As such, the franchise will allow the water purveyor boundaries to adjust, so long as the boundary is within the Town's and the adjoining purveyor's respective franchises. South Prairie is still required to obtain a right-of-way construction permit prior to construction of any individual project within their franchise area.

Physical Service Area

See Figure 1-2 showing the Town's service area. See Section 1.4.5, Land Use Plans, and Section 1.5.2, Zoning and Land Use, for discussion of the proposed UGA shown on Figure 1-2. The Town serves all areas within its corporate limits except areas along the ridge at the town's southern boundary that are above the elevation of the tanks. The service area extends to a large area southwest of the town although there are currently no physical pipes connecting this area to the South Prairie water system.

This differs from the service area shown in the *1998 Comprehensive Water System Plan* developed by Hedges and Roth. It appears, after extensive coordination with Pierce County, that the service areas shown in the 1998 plan reflected an earlier service area boundary and was not updated in the County's records. On January 4, 1999, a revised service area was determined in a Standard Service Agreement Establishing Water Utility Service Area Boundaries between the Town of South Prairie, Tacoma Water, and Clearwater Inc. The Clearwater System is a small Group B system to the southwest of South Prairie. See Appendix C for a copy of this agreement. The County has acknowledged that the agreement is on file and is currently updating its electronic mapping records to reflect the Town's correct service area boundary. See Section 1.7 regarding documentation discrepancies involving the Clearwater system.

Service Areas Outside of the Corporate Town Limits

Service areas outside of the town include:

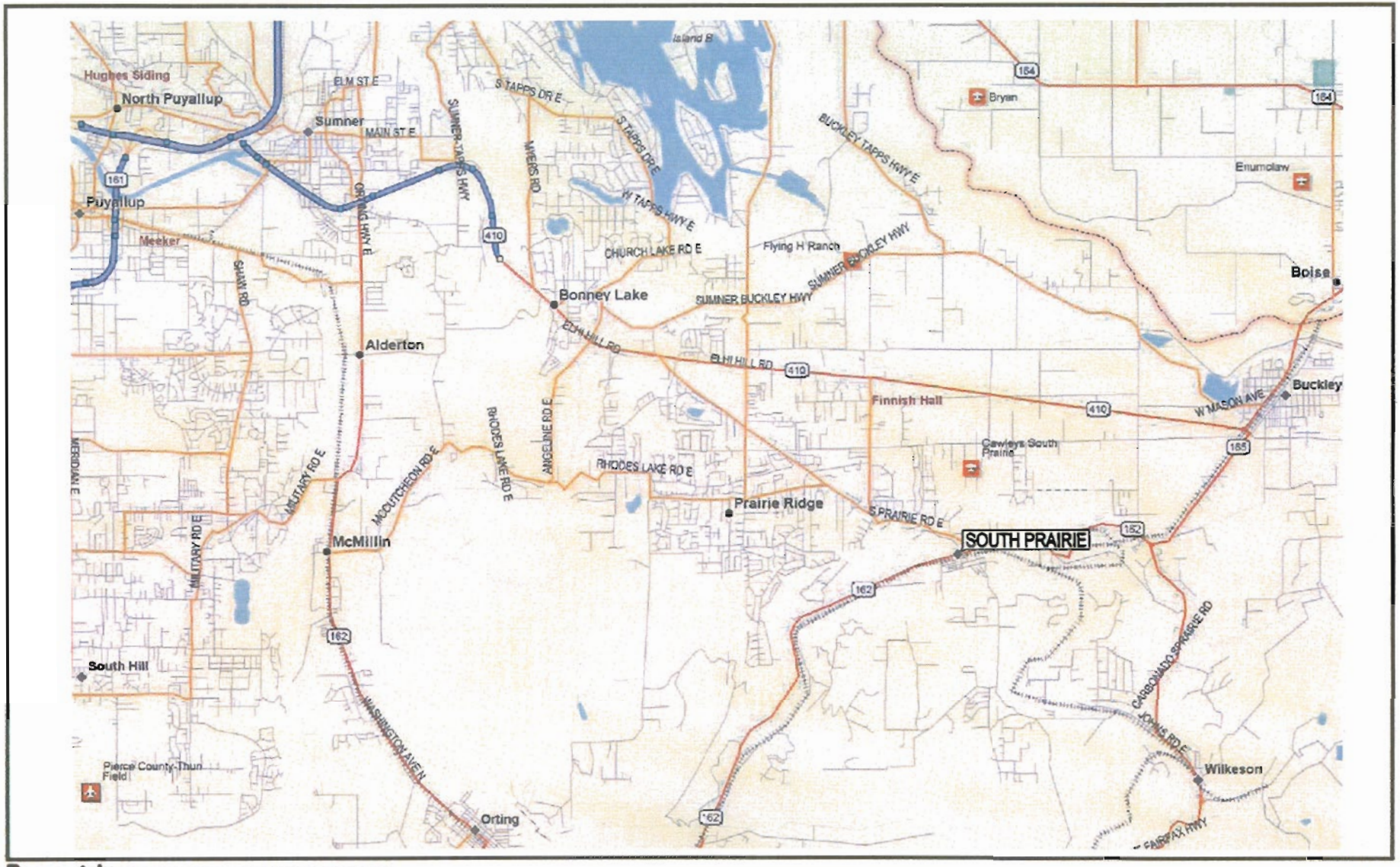
- Two services that provide water to residences and an adjacent shop located 1,000 feet west of the town on the north side of Pioneer Way.
- Ten residences along 250th Avenue East, 126th Street Court East South Prairie Road north of the town.
- One residence south of the wastewater treatment plant.

1.3.2 Existing Facilities

Supply

School Yard Well (location SE/NW 18 19N 06E)

The School Yard Well is 12 inches in diameter, 132 feet deep and currently operates at 55 gpm with an instantaneous water right of 100 gpm. Ground surface elevation at the well is approximately 425. The well pump is a submersible pump and is controlled by wire telemetry when water level drops in the reservoirs at Tubbs Road. Controls and other equipment are housed in a 12-foot by 12-foot concrete masonry well house enclosed in a 50-foot by 50-foot fenced yard. Disinfection is accomplished by sodium hypochlorite injection. Water is filtered for iron and manganese. During high water usage in the summer months, the Tubbs Road Well has operated as a secondary water source to the School Yard Well. With improvement of water quality at the Tubbs Road Well through iron/manganese treatment in 2001, the annual School Yard Well production has been reduced. Iron and manganese treatment was installed at the School Yard Well in 2002. The well is located on property owned by the White River School District with well operation rights granted through easements.



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SCALE IN FEET

Figure 1-1
South Prairie Vicinity Map

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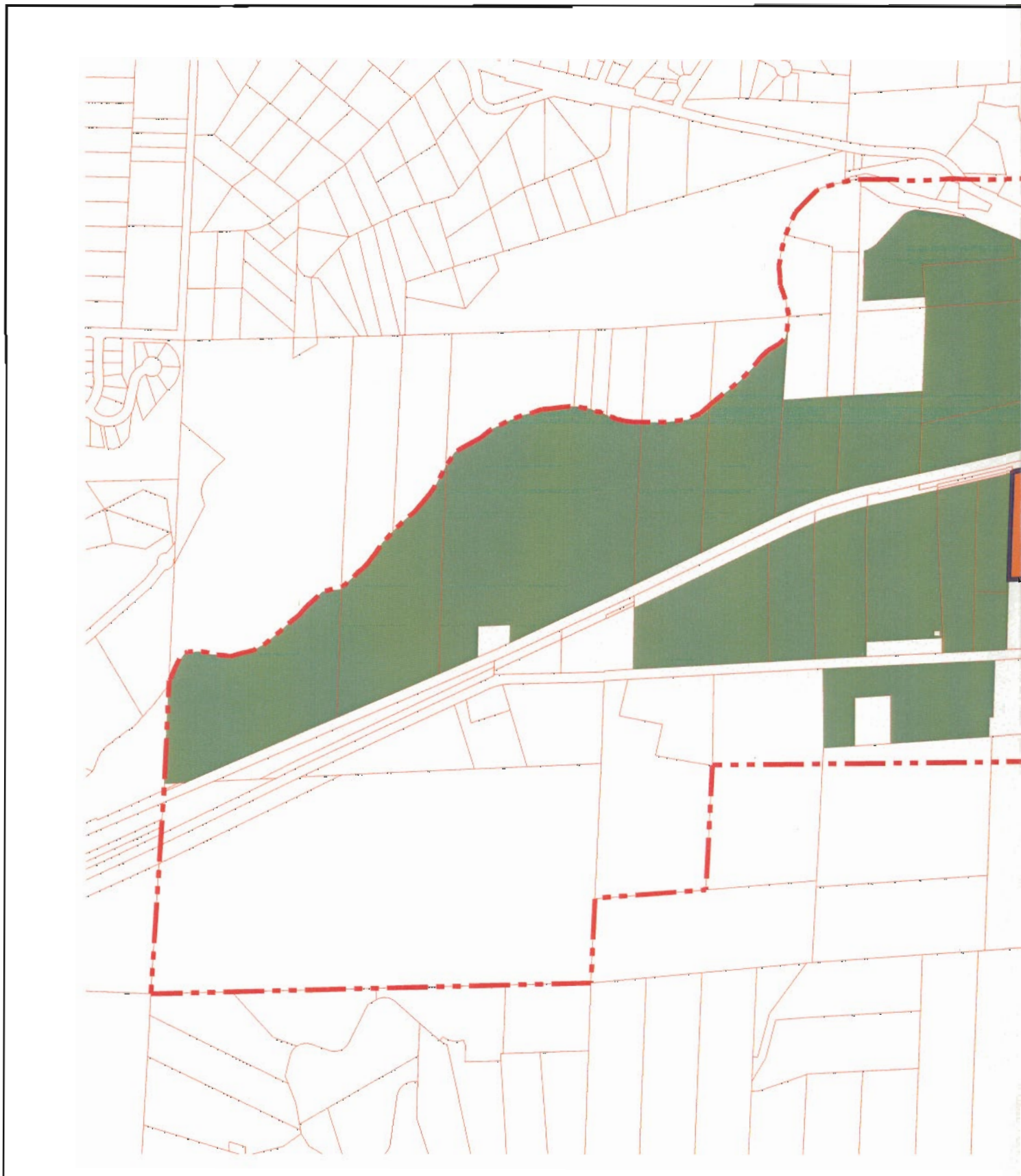
SCALE IN FEET

Figure 1-2
SOUTH PRAIRIE SERVICE AREA
AND ADJACENT PURVEYORS



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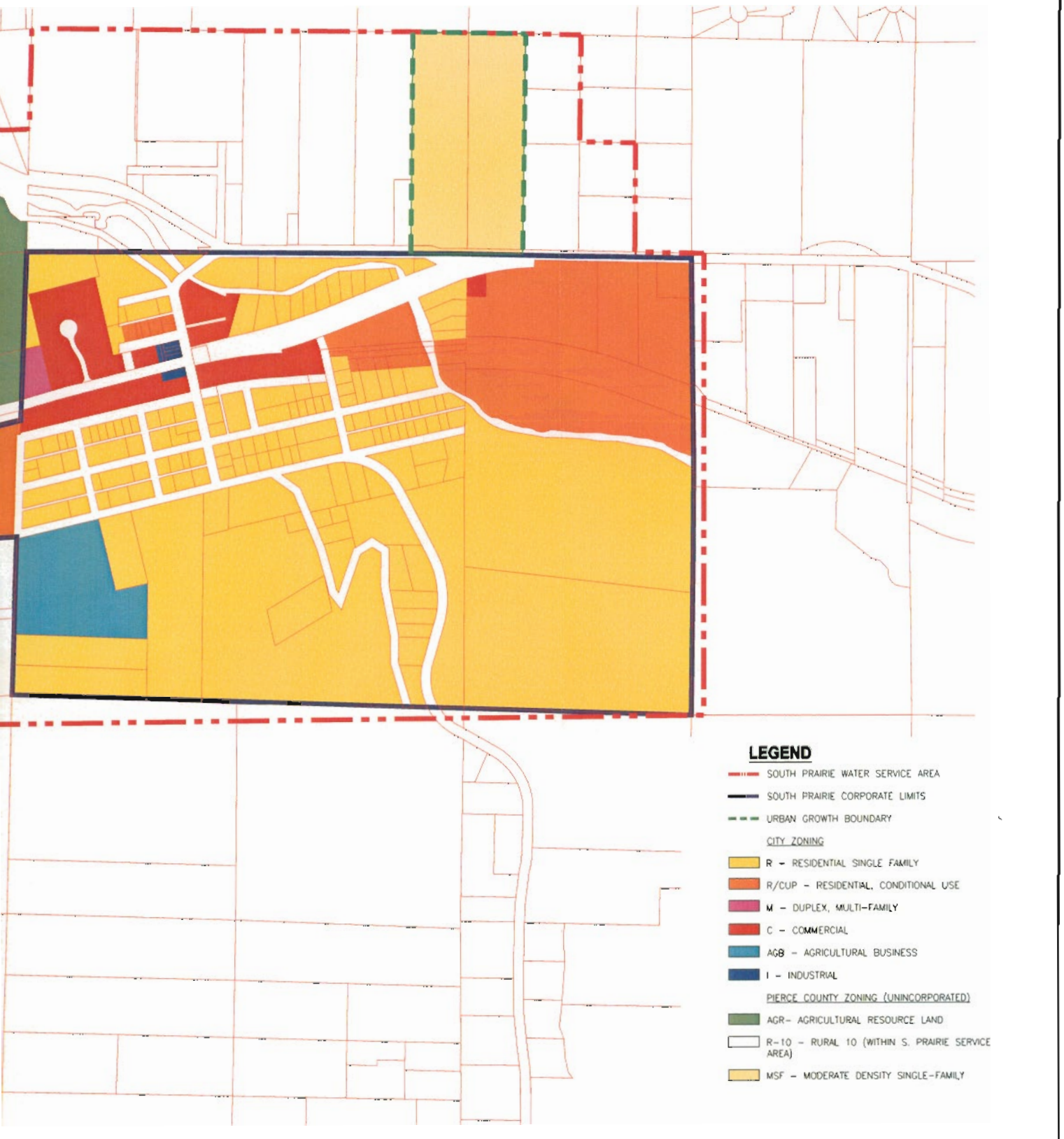


Figure 1-3
SOUTH PRAIRIE ZONING

The categories on the existing/proposed land use map are defined in the Town's Comprehensive Land Use Plan as follows:

- Residential – Intended for residential development at an average density of *two to six dwelling units per acre*, which includes single-family residential, mobile homes, and two-unit duplexes.
- Residential/Conditional Use – Intended for residential development but with potential environmental problems such as frequently flooded areas and/or being within a shoreline management area and thereby impacted by fish and wildlife habitation. The Town Council has placed an additional layer of oversight to the development in these areas by using conditional use permit procedures. Otherwise, the type and density of development is the same as "Residential."
- Duplex/Multi-Family – Intended for residential development at an average density of 8 to 12 housing units per acre.
- Commercial Intended for office use, retail stores, service establishments, wholesale businesses. No minimum lot size is specified.
- Industrial – Intended for light industrial establishments and research developments that enhance the Town's economic base and provide jobs for residents of the area. No minimum lot size is specified.
- Agricultural/Business · Intended for agricultural uses such as farms, livestock raising, and commercial agricultural product stores. Intended for large parcels containing more than one of the uses and that require substantial space. *Minimum lot size is 10 acres.*

Outside South Prairie Town Limits

Pierce County's Zoning Map, adopted March 9, 2007, shows the area outside South Prairie's current corporate limits as "Rural 10" (R-10) and Agricultural Resource Land. A copy of this zoning map printout from the County's GIS website is included in Appendix B. The total acreage of this type of land within the Town's water service area is 463 acres, with approximately half of the area designated as R-10 and the other half designated as Agricultural Resource Land. The R-10 designation (Pierce County Code 19A.40) allows a plan density of one dwelling unit per 10 acres. Density incentives are provided when 50 percent or more of the property is designated as open space. Clustering of dwelling units is encouraged to maximize buffers and open space. For the purposes of the future water demand analysis, a density of two units per 10 acres will be used.

The Agricultural Resource Land (Pierce County Code 19A.30.070) is a new land use designation created by Pierce County in 2004 as part of its compliance review with state law. This land is primarily devoted to lands with long term commercial significance for farming operation. The minimum lot size is 5 acres, and a base and maximum residential density of one unit per 10 acres is allowed. Some exceptions are permitted, such as community plans with densities no greater than one unit per 5 acres, or clustering of lots on 20-acre size lots. For the purposes of the future water demand analysis, a density of one unit per 5 acres will be used.

Finally, Moderate Density Single Family (Pierce County Code 19A.30.070) is a designation for land within an urban growth area and is a primary location for moderate to low urban density single-family and two-family developments. Density ranges from four to six dwelling units per acre, unless sewer is unavailable, in which case density may not exceed four

dwelling units per acre. As no additional sewer is available in South Prairie, the density is currently capped at four dwelling units per acre.

The Comprehensive Plan Land Use/Urban Growth Objective 2 (Chapter 19A.30.010) seeks to contain growth within the designated UGA and ensure that urban level facilities such as potable water, sewage disposal, surface water management, road, and transit are only provided within designated UGAs.

1.6 FUTURE SERVICE AREA

Several factors affect the future service area of a water utility including population growth or development, geography, resource availability (water rights and aquifer capacity), and service areas of other water purveyors, wastewater disposal alternatives (wastewater treatment facility or septic system), and transportation infrastructure. ***The following discussion documents South Prairie's decision to maintain the current size of its water service area.***

The unincorporated area of Pierce County within the Town of South Prairie's water service area is currently zoned R-10 and Agricultural Resource Land. These designations limit future development as discussed in Section 1.5, "Existing Service Area Characteristics." Modification of zoning is not anticipated for these areas unless South Prairie revises its UGA. Any UGA revisions are not anticipated to occur until after completion of this plan, at which time the Town of South Prairie will be required to make an application to Pierce County for approval.

Other service area considerations include geography. Expanding the service area to the north or south would potentially require establishing an additional pressure zone due to topography. These areas may be more easily served by the City of Tacoma to the north. Pierce County Water Programs would be required to approve any modifications to the Town's water service area.

Finally, water demand forecasts made in Chapter 2 of this document indicate that the town will exceed its peak-hour source capacity in Year 2021. Given the Town's limited financial resources and the limited benefits of any expanded service area, the Town will seek to focus resources and efforts within its water service area rather than expanding its system.

1.7 SERVICE AREA AGREEMENTS

The Town of South Prairie currently has an interlocal agreement with Tacoma Water and a water system identified as Clear Water, Inc. The agreement is included in Appendix C. Phone calls to Pierce County Public Works and Utilities Department, the County Lead Agency, verified that no updates have been made to these agreements since their signing on January 4, 1999. Phone correspondence with the representative of the Clear Water system, Glen Gordon, on July 12, 2006, indicated that this system was a Group B system physically located in and around the City of Graham and not adjacent to the Town of South Prairie. Pierce County GIS records do not indicate the location of any system named Clear Water, and other systems with similar names (Clear Lake Resort Water System or Clear Lake Water District) have been inactivated or are not in the vicinity of South Prairie. Therefore, it is reasonably assumed that the Town of South Prairie water service area is abutted only by Tacoma Water.

1.8 SERVICE AREA POLICIES

Establishing standard service area policies is important to ensure the smooth functioning of the water system. By establishing set policies, consistency can be maintained even with personnel changes. This section summarizes current procedures and policies that affect the operation and growth of the town of South Prairie and proposes new policies or updates where appropriate.

1.8.1 Wholesaling of Water

South Prairie does not wholesale water. Ordinance 349 specifically requires each residential unit be served by its own meter, with the exception of the recreational vehicle (RV) park. No specification is offered for commercial properties. Wholesaling of water to other purveyors is not feasible for South Prairie without an intertie.

Recommended Modifications: None at this time.

1.8.2 Wheeling of Water

South Prairie does not wheel water because it does not have any interties. However, as a member of the Water Cooperative of Pierce County, wheeling from another water purveyor may occur at a future date. Wheeling would require agreements and/or contracts between the participants and regulatory agency in coordination with the Department of Health.

Recommended Modifications: None at this time. Any policy modifications should be addressed at the time of intertie establishment.

1.8.3 Annexations

South Prairie is considering annexation of land with a revised UGA. The boundaries and status of a revised UGA are currently unknown and, therefore, not considered as part of this Water System Plan. Land may only be annexed by the Town if it is inside the UGA, in accordance with RCW 35.27. The Town has no specific policy as it relates to provision of water service as a condition of annexation.

Recommended Modifications: None at this time. Any policy modifications should be addressed at the time of annexation.

1.8.4 Direct Connection, Satellite/Remote Systems, and Alternate Water Sources

Some properties within the service area are supplied through private wells. Section 15.76.180 of the Unified Development Standards allows this by requiring every principal use and every lot within a subdivision or in any existing plat be served by a water supply system adequate to accommodate reasonable water demands and comply with DOH and all Town ordinances. Section 15.76.220 of the Unified Development Standards requires all new developments or existing developments within the service area who wish to be served by the Town's water utility extend water infrastructure from the existing water system at the cost to the property owner. There are currently no policies determining whether and when the satellite system must connect into the Town's main water utility.

Recommended Modifications: The Pierce County Coordinated Water System Plan (CWSP) MS-Policy 6 discourages the development of new individual water wells or "Group B" water systems in rural communities where water service may be provided by a "Group A" water system such as South Prairie's. It is impractical to prevent development of single private water wells in the Town's water service area since the cost to extend water infrastructure by a single private homeowner would make any

development unaffordable. However, the Town's Unified Development Regulations should be modified to prohibit any new construction of "Group B" systems within the South Prairie service area unless the Town is unable to provide timely and reasonable service to a development and no other water system is willing or able to provide service (pursuant to the CWSP). The revised regulations should also indicate that existing single private well users are allowed to continue to operate until (a) water utility extensions within 400 feet of the property are constructed or (b) significant redevelopment of the property triggers connection to the Town's water system.

1.8.5 Design and Performance Standards

Design and construction standards are discussed in Chapter 8 and included in Appendix N. South Prairie design and construction standards meet or exceed the design and construction standards for Pierce County (*Pierce County Coordinated Water System Plan*) and as established by the Washington Administrative Code. Any South Prairie modifications to the above standards are discussed in Chapter 8.

Recommended Modifications: No policy revisions are proposed at this time. Any modifications to the standards in Chapter 8 will be adopted at the time this Water System Plan is accepted and approved by the Town.

1.8.6 Surcharge for Customers Outside of the Corporate Limits

South Prairie serves ten customers outside the town limits as described in Section 1.5.1 Existing Service Area. A 20 percent surcharge is applied to each monthly billing account, per Ordinance No. 401 (see Appendix A), due to the additional costs of providing water service to these areas. Ordinance 401 details the base water utility rates through 2006.

Recommended Modifications: Enact an ordinance to update rates through year 2012 in accordance with Chapter 10, Financial Program. The ordinance should continue to apply the 20 percent surcharge to customers outside the Town's corporate limits.

1.8.7 Local Improvement Districts Outside Legal Boundaries

South Prairie does not have any policies associated with Local Improvement Districts.

Recommended Modifications: None at this time.

1.8.8 Urban Growth Area

The Washington State Growth Management Act requires urban level facilities, such as water, be available within its corporate limits and inside of its UGA. New development within the UGA or in any portion of the Town's water service area must pay for extensions to the water utility. Areas outside the Town's corporate limits have been identified as low-density residential and agricultural land. Development within these areas must be consistent with the County's zoning and development regulations. As mentioned in Section 1.8.4, if the Town is unable to provide timely and reasonable service to a new development within its water service area, then a new well or "Group B" water system would be allowed (pursuant to the CWSP).

Recommended Modifications: None at this time.

1.8.9 Oversized Pipes

Revenues from developments for system improvements are not based on line size or construction costs. Per Ordinance No. 349, the Town charges a standard $2,000 connection charge, plus labor and materials, for any new connection to its existing water system. Work is performed by a contractor/developer and inspected by the Town Water Department. This same Ordinance indicates that the Town supplies and assumes the cost for 3/4-inch water meters, and the applicant is required to pay the difference between the cost of a 3/4-inch meter and the meter desired. There is no policy regarding the oversizing of pipes.

Recommended Modifications: Modify the Unified Development Regulations to require oversizing of any pipes when deemed necessary by the Town due to hydraulics or when so required by the Town's latest comprehensive water plan at the full cost to the developer.

1.8.10 Cross-Connection Control Program

South Prairie's cross-connection control program was enacted in 1997 through Ordinance No. 338 and has not been updated since. The ordinance does not meet all of the current RCW requirements.

Recommended Modifications: Enact the ordinance included in the Cross-Connection Control Plan developed as part of Chapter 7, "Operations and Maintenance Program," and included in Appendix D. This ordinance will repeal and replace Ordinance No. 338.

1.8.11 Extensions

Extension or improvement of the water system is the responsibility of the developer and must be performed in accordance with the Town's Unified Development Regulations, of which applicable sections are included in Appendices E and F and summarized below.

Recommended Modifications: Update the Unified Development Regulation to require (a) extensions will extend to and across the full width of the property served by the water utility, and (b) extensions of the water system will be allowed provided the area to be served is within the Town's water service area. Enact an ordinance establishing rates for developer plan reviews to include a flat administration rate and any additional fees which the consulting engineer/Town engineer charges the Town for plan review services. Enact an ordinance to increase connection charges to offset the Town's limited revenue generation. Enact an ordinance to collect system development charges or general facilities charges to be applied to improvements benefiting the entire system, such as source, storage, and treatment.

1.8.12 Latecomer Agreements

The Town's Developer Extension Agreement requires that any property owner connecting to the developer-constructed water lines within a period of 15 years of the agreement must pay a pro rata share of the costs of the project without adjustment for inflation or accrual of interest. The Town reimburses such payments to the developer within 60 days after receipt. The project costs include those listed and verified on the warranty bill of sale for the project.

Recommended Modifications: Modify the agreement to indicate that pro rata shares shall be based upon the front frontage in relation to the entire frontage on the water main. The Developer Extension Agreement included in this Water System Plan includes this modification.

1.8.13 Other

1. The Town currently has no policy for connection charges when an existing water service connection is modified or renewed after a period of abandonment.

   Recommended Modifications: Enact an ordinance stating that when new buildings are to be erected on a site with previous connections and service is to be increased or relocated, or when a service connection to any premises is abandoned or no longer used for a period of 1 year, the owner is required to make an application for service and pay the regular connection charge.

2. The Town currently does not meter or establish rates for contractor or fire department use of water from the water system.

   Recommended Modifications: Enact an ordinance requiring metering of all water users that do not currently have accounts with the Town. Establish a base fee and consumption charge, if deemed necessary.

3. Operation of the water system valves and hydrants by unauthorized personnel is not specifically forbidden.

   Recommended Modifications: Update the Unified Development Regulations to forbid operation of the water system valves and hydrants by non-system and non-fire company personnel unless so authorized in writing.

1.9 SATELLITE MANAGEMENT

The Town of South Prairie operates as an independent utility.

1.10 CONDITIONS OF SERVICE

The Town has published a set of documents (Developer Extension Process Outline and Forms) as part of this Water System Plan and included in Appendix E. These standards can be generally summarized as follows:

- The developer must design and construct the water lines at the developer's expense. All plans must meet the Town's specifications and be approved by the Town before work commences.
- Water infrastructure must be constructed in town rights-of-way or easements; therefore, the developer must obtain all rights-of-way (minimum 10-foot width) and easements (minimum 15-foot width) at no cost to the Town. The project facilities and associated rights-of-way and easements must be conveyed to the Town at project completion.
- The developer must warranty the work for 2 years following completion of the work.
- Latecomers within a 15-year period pay a pro rata share of the costs of the project to the Town for reimbursement to the developer.
- Fees (general facility charges) are assessed as enacted by ordinance. These fees will need to be updated as detailed in Chapter 10, "Financial Program," and discussed in Section 1.8, Service Area Policies.

1.11 WATER SYSTEM COMPLAINTS

Water system complaints can cause much worry and distrust on the part of customers. It is of the utmost importance that all complaints be taken seriously and handled in a timely manner. Good record keeping can help in complaint resolution by ensuring that all relevant data is gathered and by serving as a reminder to resolve the complaint and notify the complainant.

All complaints received must be recorded and maintained in a complaint notebook. When recording a complaint, a form should be utilized to ensure that all the needed information is gathered. The form should contain information about the complainant, the nature of the complaint, time and date the complaint was received, system personnel recording the complaint, system personnel responding to the complaint, and any corrective action taken. Additionally, the form should indicate if the complaint was resolved or requires further investigation.

The Town of South Prairie has received very few complaints regarding its water. When a complaint is received, a complaint form is filled out by the Water Department. Of the one complaint received in 1999, corrective action was taken the following day. Complaints prior to this have generally been about the appearance of the water due to high concentrations of iron and manganese. Since treatment of all sources for iron and manganese in 2001 and 2002, no complaints have been received.

If a problem is found to be the sole responsibility of the property owner, such as a broken service line on private property, the property owner will be advised of their responsibilities. If necessary, the meter can be shut off until the property owner has resolved the problem.

If a problem persists and cannot be identified by Town personnel, outside technical assistance from the Town Engineer or other technical professionals will be sought until the problem can be identified and corrected.

2. BASIC PLANNING, DATA, AND WATER DEMAND FORECASTING

2.1 CURRENT POPULATION, SERVICE CONNECTIONS, WATER USE, AND EQUIVALENT RESIDENTIAL UNITS

The Town of South Prairie has two types of accounts, single-family residential and commercial. As of the end of 2004, there were 137 residential connections and 19 commercial connections serving an estimated population of 435. This is less than the population of 555 reported in the 1999 South Prairie Water System Plan and is due to an adjustment of the number of persons per household. It does not reflect any observed migration trend out of South Prairie. The number of residential and commercial connections is virtually the same from the previous report and indicates that growth in the town is nearly zero.

2.1.1 Current Population and Total Service Connections

The Town's approximate number and types of connections, population, and annual production for the past 6 years are presented in Table 2-1 (page 2-3). There are no multi-family, industrial or agricultural uses, only residential and commercial (nonresidential). The population is based on the number of residential connections and the average household size as determined by the Washington State Office of Financial Management.

2.1.2 Water Production to the System

Table 2-2 (page 2-3) illustrates the annual source production, metered consumption, and non-revenue water for South Prairie. Non-revenue water is water for which there is no billing account such as water lost through leaking pipes, flushing of mains, fire flow, and water used for construction activity. Non-revenue water may be divided into *accounted-for* and *unaccounted-for* water. Accounted-for water is typically measured and includes water for flushing of pipes or construction activity. Unaccounted water, such as through leaking pipes, cannot be measured and is estimated by subtracting all recorded consumption (revenue and non-revenue) from the total production to the system. As shown in Table 2-2, non-revenue water has been divided into accounted-for and unaccounted-for water.

It is noted that unaccounted water loss was particularly high in 1999. Discussions with South Prairie's staff noted a fire requiring fire flow in 1999; flushing of water mains; and construction of a new water main along South Prairie Road. No estimates are available for these activities but likely accounts for the 36 percent unaccounted water for that year.

In 2001, some of the non-revenue water was quantified by estimating the backwash water from the iron and manganese filters installed at the Tubbs Road Well. This included water wasted from the reservoirs while the system was off-line to install the system. A similar filter operation was installed at the School Yard Well in 2002. Estimates for the water waste from backwash are shown in the footnotes to Table 2-2.

2.1.3 Water-Use Data Collection

All wells are metered; the source meters are read every weekday. The Town reads customer meters and invoices customers every month. Customer accounts are currently recorded in a utility billing program that calculates the appropriate charges and creates bills for mailing.

2.1.4 Equivalent Residential Units

An equivalent residential unit (ERU) is the quantity of water consumed by the typical single family residence. A single-family residence is one ERU; a duplex would be two ERUs. A commercial account is assigned a specific number of ERUs depending on actual usage. It is possible for a commercial account to be one or more ERUs.

The DOH requires that water purveyors report current and projected water usage in ERUs. The average water use per residential connection was calculated as follows:

- Average daily demand (ADD) for residential use (1999–2004) = 24,893 gallons per day (gpd).
- Average number of residential connections (1999–2004) = 134.
- Average consumption per residential connection = 186 gpd.
- Therefore, 1 ERU = 186 gpd per residential connection.

Tables 2-3, 2-4, and 2-5 (page 2-4) show actual consumption data provided by the Town which was used for the above analysis.

The total number of ERUs is determined for the entire system by comparing the system's average daily demand to the use per residential unit. In order to account for system losses, the total system ERUs are calculated by increasing the average water use per residential unit by the ratio of the average production to the system to the average total recorded consumption from 1999 to 2004 as follows:

- Average Consumption per Residential Connection = 186 gpd per ERU.
- Average Recorded Consumption (including nonresidential connections) 33,488 gpd.
- **Total System ERUs = 180.**
- Average Production to System = 42,990 gpd.
- **Adjusted Daily Demand per ERU = 239 gpd.**

By using a value of 239 gpd per ERU, the projected water consumption resulting from growth will include system losses. System losses are included in growth projections because leaks from existing infrastructure typically increase over time, even if new construction builds new infrastructure.

Table 2-1. Historic Connections and Recorded Consumptions

Year[a]	Residential Connections[b]	Nonresidential Connections	Total Connections	Number of Residents per Household[c]	Population	Total Water Used (gallons/year)	Total Water Used (ac-ft/yr)
1999	130	19	149	3.10	404	9,980,459	30.6
2000	130	21	151	3.10	404	12,938,051	39.7
2001	135	19	154	3.10	419	11,219,207	34.4
2002	136	18	154	3.10	422	12,001,406	36.8
2003	136	22	158	3.10	422	14,421,672	44.3
2004	137	19	156	3.10	425	12,778,264	39.2
					Average:	**12,223,176**	

[a] Information represents data for full calendar years.

[b] Based on end of year reports by the Town of South Prairie

[c] Previously, average household size was 4.05 per a 1995 special census conducted by the Town. The Office of Financial Management "Puget Sound Trends" (No. D3, September 2005) indicates this is closer to 3.10

Table 2-2. Water Production and Source Losses

Year	Source 01 School Yard Well (ac-ft)	Source 02 Tubbs Road Well (ac-ft)	Total Production to System (ac-ft)	Total Recorded Consumption (ac-ft)	Accounted-for Non-Revenue Water[a] (ac-ft)	Unaccounted-for Non-Revenue Water (ac-ft)	Percentage Water Unaccounted
1999	27.99	19.96	47.95	30.63	–	17.32	36%
2000	34.72	16.33	51.04	39.71	–	11.34	22%
2001	11.41	36.05	47.46	34.43	1.11	11.92	25%
2002	6.47	40.31	46.78	36.83	.80	9.14	20%
2003	9.98	38.39	48.37	44.26	.82	3.29	7%
2004	9.22	38.11	47.33	39.22	.82	7.29	15%
Averages:	**16.63**	**31.52**	**48.15**	**37.51**	**.73**	**10.64**	**21%**

[a] Estimate for Backwash of Filters:
Source 01 = 46 gpm x 6 min x 4 backwashes/week x 56 weeks/325,851 = 0.19 ac-ft/yr.
Source 02 = 184 gpm x 4 min x 5 backwashes/week x 56 weeks/325,851 = 0.63 ac-ft/yr.
TOTAL BACKWASH = .82 ac-ft/yr (2003, 2004).
Higher estimate in 2001 includes wastage of water from reservoirs during construction activities (.61 ac-ft), plus partial backwash operations of Fe/Mn filters at SO2 (.50 ac-ft).
Lower estimate in 2002 accounts for full backwash operations of Fe/Mn filters at S02 (.63 ac-ft) and partial backwash operations at S01 (.17 ac-ft)

Table 2-3. Residential Consumption Data

Residential	1999	2000	2001	2002	2003	2004	Average
Residential Connections (number)	130	130	135	136	136	137	134
Total Residential Consumption (gal/yr)	7,566,686	9,195,239	7,886,635	8,542,115	11,420,681	9,904,313	9,085,945
Total Residential Consumption (gal/day)	20,731	25,192	21,607	23,403	31,290	27,135	24,893
Total Residential Consumption (gpd/acre, 61 acres total)	**340**	**413**	**354**	**384**	**513**	**445**	**408**
Average Consumption Per Residential Connection (gal/day)	159	194	160	172	230	198	186

Table 2-4. Commercial/Nonresidential Consumption Data

Commercial/Nonresidential	1999	2000	2001	2002	2003	2004	Average
Commercial/Nonresidential Connections (number)	19	21	19	18	22	19	20
Total Commercial Demand (gal/yr)	1,302,186	1,519,629	1,702,231	1,649,991	1,358,031	1,026,959	1,426,505
Total Commercial Demand (gal/day)	3,568	4,163	4,664	4,521	3,721	2,814	3,908
Total Commercial/Nonresidential Consumption (gpd/acre, 5.2 acres total)	**690**	**805**	**902**	**874**	**720**	**544**	**756**

Table 2-5. Summary of System ERUs

	1999	2000	2001	2002	2003	2004	Average
Residential ERUs	130	130	135	136	136	137	134
Commercial/Nonresidential ERUs	41	53	57	55	36	40	47
Total ERUs	**171**	**183**	**192**	**191**	**172**	**177**	**181**

2.1.5 Peak Factor

The system peaking factor is calculated by dividing the maximum daily production (MDP), a historical peak day, by the average daily production (ADP). The Town records the peak day of every month for both wells. Because the Town does not record when each peak day occurs in any month, it is conservatively assumed that the peak day for each source occurred on the same day in each month. This is a reasonable assumption because both wells operate simultaneously whenever water levels drop in the reservoirs. Table 2-6 shows the annual and average peak factors for the South Prairie water system. The average 2.80 peak factor is within DOH parameters.

Table 2-6. Annual Peak Factors

Date	Peak Daily Production (mgd[a])	Average Daily Production (mgd)	Peak to Average Factor
December 1999	0.174	0.0428	4.05
November 2000	0.126	0.0455	2.78
April 2001	0.120	0.0423	2.83
April 2002	0.131	0.0418	3.14
July 2003	0.106	0.0432	2.46
July 2004	0.084	0.0422	1.98
		Average:	2.80[b]

[a] million gallons per day (mgd)

[b] This average does not include the highest and lowest peak factors in December 1999 and July 2004, which appear to be outside the typical ranges.

2.1.6 Maximum Day Demand

The maximum day demand (MDD) is calculated by multiplying the average day demand (ADD), or average gallons per day per ERU, by the peak factor. Therefore:

$$MDD = ADD \times PF = 670\ gpd$$

Where: $ADD = 239\ gpd/ERU$

$PF = 2.80$

The results of this calculation were verified by evaluating the maximum day demands from the previous years against the calculated system ERUs from each year. As shown in Table 2-7, the exercise resulted in a peak-day average demand of 655 gallons per ERU (assuming the highest and lowest results were removed from the averaging, otherwise it is 685 gpd/ERU). Peak usage should be reviewed and revised every 2 years, at a minimum, to ensure the Town has adequate source available. Where referenced in this document, calculations requiring a maximum day demand value will use 670 gpd.

Table 2-7. Typical Maximum Day Demand for South Prairie

Year	MDD (gpd)	ERUs[a]	MDD (gpd/ERU)
1999	173,562	171	1,015
2000	126,418	183	691
2001	119,952	192	625
2002	131,100	191	686
2003	106,300	172	618
2004	83,700	177	473
		Average:	655[b]

[a] This represents the specific ERUs for the system in any particular year from Section 2.1.4.

[b] This average does not include the highest and lowest maximum day demands in 1999 and 2004, which appear to be outside the typical ranges.

2.1.7 Peak Hourly Demand

Due to unavailable meter data that would indicate maximum instantaneous water use, the DOH *Water System Design Manual* suggests using the following equation to calculate the peak hourly demand (PHD).

$$PHD = MDD/1,440 \times [(C)(N) + 75] \div 18 = 220\ gpm$$

Where: MDD = *Maximum daily demand (gpd/ERU)= 670 gpd*

C = *Coefficient associated with the number of ERUs 2.0 (see Chapter 5 of the Design Manual.)*

N = *Number of ERUs = 180*

2.2 PROJECTED LAND USE, FUTURE POPULATION, AND WATER DEMAND

2.2.1 Projected Land Use and Population

Section 1.6 provides a full discussion of the infrastructure issues, geography, and comprehensive planning changes that have influenced growth in South Prairie. At the present time, there is a moratorium on connections to the existing wastewater system because of legal and water quality issues associated with the wastewater treatment facility. The Town is working with the Washington State Department of Ecology (Ecology) to improve the level of treatment in an effort to have the moratorium lifted. In the interim, on-site wastewater disposal systems can be installed to serve the wastewater treatment needs of new water system customers, but this has severely limited development in South Prairie.

As a result, very little new development has occurred in the town of South Prairie over the past 6 years. Interviews with the Town of South Prairie staff have confirmed this observation by noting that most changes in the number of residential and commercial connections over the past 6 years have been driven by the closure of home-based businesses and conversion from a commercial water account to a standard residential account. In three other cases, homeowners that were already connected to the water system were added to the billing system as residential customers only after the Town could increase water pressures to an acceptable operational level. In two other cases, homeowners outside the Town's limits connected to the Town's water system after experiencing lowered water volumes from their existing private well.

With resolution of the sewer moratorium not projected for another 4 to 6 years from the date of this report, near-zero growth is anticipated in the community. The projected population and land use information discussed below assumes growth only after the sewer moratorium is lifted.

Projected Population

The Town of South Prairie's preliminary Comprehensive Land Use Plan projects a 102 percent population growth between 2004 and 2022 from the current population of 435 people to 880 people. Town staff has indicated that this population growth, including any associated water system expansion, will likely only occur after the wastewater treatment plant connection moratorium is lifted. Until this time, growth in the area is highly unlikely. Department of Health staff concurs with this outlook and has endorsed a near zero growth projection for the next 6 years, after which growth may accelerate considerably to meet the population projection of 880 people in 2022.

Pierce County adopted a smaller population estimate of 830 in Ordinance 2003-104s. For the purpose of this plan, the population estimate of 880 was used.

Projected Land Use

Build-out of underdeveloped and vacant land is anticipated with population growth in South Prairie. Table 2-10 (page 2-9) summarizes vacant land acreage within the South Prairie service area as provided by the Town's planner and documented in the Town's Comprehensive Land Use Plan. Water demand forecasts will evaluate consumption at full build-out of the vacant land within the 20-year outlook of this water plan and compare that value against water demand forecasts using population growth.

2.2.2 Projected Nonresidential Water Needs

Water demands for nonresidential purposes will be the water required for future commercial and industrial development in town and existing commercial activities. Based upon the existing zoning and land uses within the town of South Prairie, it is expected that a single new commercial/industrial connection will be made each year, with an average two and a half ERUs per connection. Two and a half ERUs per nonresidential connection are based upon the current average use per nonresidential connection.

2.2.3 Projected Non-Revenue Water

The water system operator normally records non-revenue water used for flushing mains, flow testing of the system, or when water is lost while cleaning the reservoirs. Water metering for construction operations is not monitored but is considered negligible with very few construction activities in South Prairie. An estimated 0.82 ac-ft/yr is backwashed onto the ground through the iron and manganese filters each year and is deducted from the difference between production and demand. Therefore it is assumed that the remaining difference between water produced and water sold is lost due to leakage in the system. As shown in Table 2-2, the water loss is currently 21 percent and above the DOH goal of 20 percent or less.

The Water Use Efficiency rule (Chapter 246-290 WAC) will become effective on January 22, 2007. This rule will affect all municipal water suppliers, which includes all Group A community systems with 15 or more connections such as South Prairie, by requiring systems to maintain their leakage to 10 percent or less of their production. Other water use efficiency elements include planning requirements and water use efficiency goal setting and performance reporting. Implementation will begin in 2008. Appropriate response measures, including a leak detection program, have been detailed in Section 5, Conservation, Water

Rights, System Reliability and Interties, and has been specifically developed into a project in Chapter 9, Improvement Program.

Given the Town's very limited sources, as well as the upcoming DOH rules, the Town needs to develop a leak-detection and water main replacement program. For purposes of water demand forecasts, however, an average 21 percent water loss will be assumed.

2.2.4 Water Rates and Rate Impacts on Water Demand

The Town of South Prairie has two types of accounts, single-family residential and commercial services. The current rate structure has been outlined in Ordinance No. 401 as shown in Appendix A.

2.2.5 Water Demand Forecasting

Water demand forecasts must include projections that depict demand for 6 years and 20 years into the future. In the case of South Prairie, the 6-year residential growth projection is zero, with a small increase of one additional connection per year to its nonresidential account. Growth is determined to be very limited over this timeframe due to the moratorium against additional wastewater treatment connections. After this 6-year timeframe, growth is projected to accelerate dramatically at 9.5 percent a year to achieve the projected population of 880 residents in year 2022. After this year, a slower growth rate of 2 percent is projected, in keeping with average county projections. See Table 2-8 and Table 2-9 showing water consumption without and with water conservation measures. Water conservation measures are assumed to reduce unaccounted water from 21 percent to approximately 10 percent by year 2017 (assumes 1 percent reduction per year from 2007–2017).

A similar forecast was performed in Table 2-10 below but considers build-out of vacant land. Current water demands per acre of designated land use were used to project future water demands. It appears that the water demand forecast is higher using projected population estimates, therefore information from Table 2-8 is used throughout the rest of this Water System Plan when projecting water rights, storage, etc. These numbers represent the most conservative estimates. The Town intends to follow water conservation programs as indicated in this plan.

Table 2-8. Forecasted Water Demand Without Conservation

Year	Total ERUs[a]	Water Consumed (gpd)[a]	Non-Revenue Water from Leaks (gpd)[b]	Average Day Demand (gpd)	Total Water Demand (ac-ft/yr)	Maximum Day Demand (gpd)[c]	Peak Hour Demand (gpm)[d]
2006	180	33,387	7,011	40,398	45.3	113,115	208
2007	182	33,852	7,109	40,961	45.9	114,691	210
2008	185	34,317	7,207	41,524	46.5	116,266	212
2009	187	34,782	7,304	42,086	47.1	117,841	214
2010	190	35,247	7,402	42,649	47.8	119,417	217
2011	192	35,712	7,500	43,212	48.4	120,992	219
2012[c]	208	38,598	8,106	46,703	52.3	130,769	232
2020	388	72,086	15,138	87,225	97.7	244,229	378
2021	420	78,030	16,386	94,417	105.8	264,366	403
2022[e]	454	84,494	17,744	102,238	114.5	286,267	431
2025	485	90,122	18,926	109,048	122.1	305,333	454

[a] Commercial growth assumed constant, with one additional connection per year at 2.5 ERUs per connection.

[b] Assumes constant 21 percent leakage/unaccounted water.

[c] Residential growth begins at 9.5 percent after lifting of sewer moratorium.

[d] Coefficient "C" associated with range of ERUs = 1.8 after total ERUs > 250. See equation in Section 2.1.7.
Factor "F" associated with range of ERUs = 125 after total ERUs > 250. See equation in Section 2.1.7.

[e] Residential growth tapers after reaching projected population indicated in Comprehensive Land Use Plan.

Table 2-9. Forecasted Water Demand With Conservation

Year	Total ERUs[a]	Water Consumed (gpd)[a]	Non-Revenue Water from Leaks (gpd)[b]	Average Day Demand (gpd)	Total Water Demand (ac-ft/yr)	Maximum Day Demand (gpd)[c]	Peak Hour Demand (gpm)[d]
2006	180	33,387	7,011	40,398	45.3	113,115	208
2007	182	33,852	6,770	40,622	45.5	113,743	209
2008	185	34,317	6,520	40,837	45.7	114,344	209
2009	187	34,782	6,261	41,043	46.0	114,920	210
2010	190	35,247	5,992	41,239	46.2	115,469	210
2011	192	35,712	5,714	41,426	46.4	115,993	211
2012[c]	208	38,598	5,790	44,387	49.7	124,285	222
2020	388	72,086	7,209	79,295	88.8	222,026	345
2021	420	78,030	7,803	85,833	96.1	240,333	368
2022[e]	454	84,494	8,449	92,944	104.1	260,243	393
2025	485	90,122	9,012	99,134	111.0	277,576	415

[a] Commercial growth assumed constant, with one additional connection per year at 2.5 ERUs per connection.

[b] Begins at 21 percent. Assumes 1 percent decrease beginning in 2007 and every year thereafter through 2017. Estimated non-revenue water from leaks continues at 10 percent after year 2017.

[c] Residential growth begins at 9.5 percent after lifting of sewer moratorium.

[d] Coefficient "C" associated with range of ERUs = 1.8 after total ERUs > 250. See equation in Section 2.1.7.
Factor "F" associated with range of ERUs = 125 after total ERUs > 250. See equation in Section 2.1.7.

[e] Residential growth tapers after reaching projected population indicated in Comprehensive Land Use Plan.

Table 2-10. Projected Water Use Per Land-Use Classification[a]

Land Use	Developable Area (acres)[b]	Historical Water Use per Acre (gpd/ac)[c]	Projected Water Use at Build-Out (gpd)
Residential	59.3	408	24,174
Commercial	7.5	756	5,700
Agricultural	4.5	50	225
UGA (Moderate Density Single Family)	8.21	408	3,346
Pierce County – Rural[e]	232	50	11,600
Pierce County – Agricultural Resource	232	50	11,600
		Subtotal:	56,645
		Current Usage (gpd in 2004):	35,009
		ADD at Build-Out:	91,654
		MDD at Build-Out (using 2.8 peak factor):	256,631

Source: Acreage and land use classification by the Town of South Prairie Planner, Mart Kask.

a Assumes current average system loss of 21 percent.

b Developable acreage within South Prairie corporate limits based on data provided by South Prairie's planner, Mart Kask, AICP, and documented in the Town's Comprehensive Land Use Plan. Acreage calculation outside of corporate limits is discussed in note (e) below.

c Residential consumption based on actual data available for South Prairie, gpd/acre. See Table 2-3 for values.

Commercial consumption based on actual data available for South Prairie, gpd/acre. See Table 2-4 for values.

Moderate Density Single Family (Pierce County zoning designation) consumption is based on Residential (South Prairie zoning designation) because designations anticipate similar densities. See Section 1.5.2.

Agricultural and R-10 water usage based on the following: Rural/Agricultural water usage: Per zoning code, assume 1 unit/5 acres at 239 gpd/unit (ADD) for 48 gpd/acre. Say 50 gpd/acre. Double-checked Rural/Agricultural water consumption with Marion Water County (nearby rural water purveyor) 39 mgd/2,735 acres = 40 gpd/acre.

d Not used.

e From Section 1.5.2, Zoning and Land Use. Total land outside corporate limits but within water service area is 463 acres. Approximately one-half is Agricultural Resource, the other half is Rural-10. Assume entire area is available for development (per allowable densities) for most conservative water use at build-out.

3. SYSTEM ANALYSIS

3.1 SYSTEM DESIGN STANDARDS

A full discussion of the system design standards is presented in Chapter 8

3.2 WATER QUALITY ANALYSIS

A full water quality analysis is presented in Chapter 4.

3.3 SYSTEM DESCRIPTION AND ANALYSIS

3.3.1 Source Description and Analysis

School Yard Well (Location SE/NW 18 19N 06E)

The School Yard Well is located on property owned by the White River School District with well operation rights granted through easements.

The School Yard Well is 12 inches in diameter and 132 feet deep and currently operates at 55 gpm. Ground surface elevation at the well is approximately 425 feet. The well pump is set 105 feet below ground level and is a submersible Berkley pump, Model 6T7.5 90, installed on March 22, 1994. The motor was replaced on July 13, 1999, with a 7.5 hp, 6-inch Hitachi submersible motor, 230 volt, three-phase. The casing houses a start and low-water shutoff probe at 82 feet and 92 feet below ground level, respectively.

Filters and chlorination equipment are housed in a 12-foot by 12-foot concrete masonry well house enclosed in a 50-foot by 50-foot fenced yard. Disinfection is by sodium hypochlorite injection. Water is also filtered for iron and manganese. During high water usage in the summer months, the Tubbs Road Well has typically operated as a secondary water source to the School Yard Well. However, with improvement of water quality at the Tubbs Road Well through iron/manganese treatment in 2001, the annual production from the School Yard Well has been reduced. Iron and manganese treatment was installed at the School Yard Well in 2002.

System pressure is maintained by water level in the reservoirs. The tanks are fed simultaneously from system pressure created by the pumping of water into the system. Wire telemetry housed at the Tubbs Road Well monitors water level with a single set of floating gauges, which in-turn triggers pumps at both Tubbs Road and the School Yard to pump simultaneously into the system. Sustained operation at the maximum capacity of 55 gpm, particularly in heavy irrigation summer months, has led to low water level shut off and excessive pump cycling. This has forced the Town to rely more heavily on the Tubbs Road Well for a majority of its water supply. The water system operator has noted sand accumulation in the well casing, which is easily flushed with insertion of a tube down the well column and allowing the artesian forces to push the accumulated sand outside the well house. Additionally, the well has shown high concentrations of arsenic, which is discussed in further detail in Chapter 4, "Water Quality Analysis." Treatment or blending of this source is discussed in Section 3.5, "Selection and Justification of Proposed Improvement Projects."

The well-house structure is in good condition, with the exception of the built-up roof, and appears to have a long life expectancy remaining (20-plus years). Plans to replace the roof during installation of the iron and manganese treatment in 2002 were not pursued due to limited funding. Interior piping, especially the top of the well casing, is rusting and requires cleaning, priming, and painting.

Tubbs Road Well (Location SE/NW 18 19N 06E)

The Tubbs Road Well is 12 inches in diameter and 425 feet deep. Ground surface elevation at the well is approximately 570 feet. The submersible well pump is set 325 feet below ground level and is a Berkley pump, Model 652 AH-7, installed in 1978. The motor was replaced on May 20, 1993, with a 30 Hp, 6-inch Franklin submersible motor, 460 volt, three-phase. There are no water-level probes installed on this well.

Controls and other equipment are housed in an 11-foot by 15-foot room in the concrete masonry pump house, which is enclosed in a 100-foot by 120-foot fenced yard. Pump controls are connected by wire telemetry. Disinfection is by sodium hypochlorite injection. A gas chlorination system is housed in a separate 8-foot by 8-foot room, but this system has been idle since about 1980. Water is filtered for iron and manganese. With installation of treatment, production is now approximately 325 gpm.

System pressure is maintained by water level in the reservoirs. The tanks are fed simultaneously from system pressure created by the pumping of water into the system. Wire telemetry housed at the Tubbs Road Well monitors water level with a single set of floating gauges, which in-turn triggers pumps at both Tubbs Road and the School Yard to pump simultaneously into the system.

Sustained pumping operations at the Tubbs Road Well have not indicated any problems (see Section 5.4.4 for details regarding water level monitoring). The well also meets current water quality standards. The pump appears to be beyond its life-expectancy but may continue to operate for many more years with the new motor installed in 1993.

The well house structure is in average condition and appears to have a moderate life expectancy remaining (about 20 years). The roof is heavily deteriorated with thick vegetation and may fail in the next few years if not replaced. Plans to replace the roof during installation of the iron and manganese treatment in 2001 were not pursued due to limited funding. Interior piping, especially the top of the well casing, is rusting and requires cleaning, priming, and painting.

Transmission Main

The transmission main is a 1,800-foot-long, 8-inch-diameter asbestos-concrete pipe installed without trace wire in easements and old rights-of-way in 1967. The transmission main leads from the reservoirs at Tubbs Road Well, along Carriage Road and into the distribution system at 3rd Street. The condition of the existing facility is not known, but asbestos pipe can present contamination problems during a breakage and has already reached the end of its useful life. Given the age and importance of the transmission main, especially since it links the Town to its entire water storage, the transmission main should be replaced.

3.3.2 Treatment Description and Analysis

Disinfection

Both of the Town's wells are treated with sodium hypochlorite. Injection rate is proportional to the flow rate of each well and can be sustained at the maximum pumping capacity of each well. Hypochlorite injection equipment at both wells is housed in the respective well houses. The equipment appears to be well-maintained and repair kits are immediately available from local suppliers in the event of a problem.

Disinfectant residuals are measured from Test Station No. 1 (see Section 4.1.5 for location information) every weekday. Once a month, residuals are captured at Test Station Nos. 2 and 3 while collecting coliform samples. The free chlorine residual at Test Station No. 1 is usually around 0.2 mg/L. The free chlorine residual at Test Station Nos. 2 and 3 are closer to 0.1 mg/L. Spot checks at dead ends can be significantly lower. The target chlorine concentration for the distribution system is 0.2 mg/L.

Chlorine Contact Time (CT), as calculated per Section 4.1.5, appears to be less than the required minimum 6.0, as per WAC 246-290-451. Calculations for both sources in Appendix R indicate that chlorine contact residual must be increased. Note that the chlorine contact time may be longer than that shown for water pumped from Tubbs Road Well since system pressure will cause water to backflow into the storage tanks for an undetermined amount of time before entering the distribution system. Therefore, the chlorine residuals represent the most conservative estimates:

- Approximate chlorine residual estimate at first customer with current operations: .25 mg/L.
- Required residual from Well No. 1 to meet minimum 6.0 CT: 1.27 mg/L.
- Required residual from Well No. 2 to meet minimum 6.0 CT: 0.45 mg/L.

Because of the high chlorine residual concentration required to maintain a minimum CT of 6.0 from Well No. 1, a project to extend and increase the diameter of the transmission main from Well No. 1 prior to entry into distribution will be considered as part of the capital improvement plan in Chapter 9.

Iron and Manganese Treatment

Both the School Yard Well and Tubbs Road Well produce water with iron and manganese above the maximum contaminant level (MCL). Manganese and iron are secondary aesthetic contaminants causing discoloration of plumbing fixtures but no known health impact from waterborne exposure. Iron and manganese filtration facilities using pyrolusite media were installed at the Tubbs Road Well in 2001 and the School Yard Well in 2002. Iron (Fe) and manganese (Mn) results before and after installation of treatment are shown in Table 3-1 below. The results indicate the treatment has been effective, and complaints about water quality have dropped.

Table 3-1. Iron and Manganese Treatment[a]

Well	June 1993 (mg/L)	October 1996 (mg/L)	May 1999 (mg/L)	2002 to 2004 After Treatment (mg/L)
No. 1	Fe 0.18; Mn 0.18	Fe 0.16; Mn 0.11	Fe 0.17; Mn 0.146	Fe < 0.03–0.15 (typical in both wells)
No. 2	Fe 0.88; Mn 0.29	Fe 0.64; Mn 0.23	Fe 0.47; Mn 0.216	Mn < 0.01 (typical in both wells)

[a] Fe detection limit = 0.03 mg/L; Fe MCL = 0.3 mg/L
Mn detection limit = 0.01 mg/L; Mn MCL = 0.05 mg/L

The facilities are in excellent condition and automatically backwash on a routine cycle. The backwash is discharged to a settling tank which then overflows into dispersion trenches.

Arsenic concentrations at Well No. 1 exceed the MCL of 0.010 mg/L. A detailed discussion of the regulation, impact on the Town, and possible solutions is provided in Section 4.2.1, Arsenic National Primary Drinking Water Regulation.

3.3.3 Storage Description and Analysis

Storage Description and Condition

Tank No. 1, built in 1967, is the northernmost of the two tanks and is a 27-foot-diameter, 24-foot-high 100,000-gallon steel tank with a concrete foundation. The tank does not have anchor bolts and moved approximately 1 inch on its foundation during the 5.0 magnitude earthquake in February 1995. The tank drain line is at elevation 586, and the tank overflow is at elevation 610.

Tank No. 2, built in 1978, is the southernmost of the two tanks and is similar to Tank No. 1 except that it was built with anchor bolts and has a flat roof. Both tanks serve a single pressure zone for the Town and are the same elevation for a total storage capacity of 200,000 gallons.

System pressure is maintained by water level in the reservoirs. The tanks are fed simultaneously from system pressure created by the pumping of water into the system. Wire telemetry housed at the Tubbs Road Well monitors water level with a single set of floating gauges, which in-turn triggers pumps at both Tubbs Road and the School Yard to pump simultaneously into the system.

The older of the two tanks is particularly vulnerable to earthquake damage because it does not have any structural connections to its foundation. System vulnerability is also compromised by the fact that the two tanks are connected to the distribution network by a single 8-inch-diameter, 1,800-foot-long AC transmission line.

The tanks were cleaned and inspected in 1998 and later in 2002. Both inspections noted corrosion and failed coatings (particularly on the interior of the tanks and ceilings) and recommended sand blasting and repainting. Other items recommended during the inspection included cleaning of the tank walls, replacement of the roof vent screens, installation of safety apparatuses to ladders, and repair to hatch seals. Iron, manganese, and other sediments nearly 12 inches deep were suctioned out during the 1998 inspections of both tanks. Follow-up cleaning in 2002 noted only 4 inches of sediment, a sharp reduction from the 1998 inspection and likely due to installation of iron/manganese filtration in 2001.

The design life of a concrete or steel tank properly maintained is approximately 50 years (DOH *Water System Design Manual*, Section 9.1.4, "Design Life"). Maintenance should be performed immediately with cleaning and interior/exterior painting of both tanks. Tank No. 1 is approaching the end of its design life within the 20-year projection of this Water System Plan and should be considered for future replacement.

Storage Analysis

Required storage volume is based upon five elements of storage:

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

The methodology of calculating each element is discussed in the following sections. Criteria for calculating the storage requirements are outlined in the DOH *Water System Design Manual* (DOH 2001).

Operational Storage

Operational storage is the volume of the reservoir devoted to supplying the water system while, under normal operating conditions, the sources of supply are in the off status. The volume is calculated between the normally full level and the pump on (or valve open) level. The South Prairie reservoir levels are controlled by the telemetry system. Low and high levels are at the 22-foot and 24-foot tank elevations, respectively, of the total tank levels. Telemetry set points are modified occasionally dependent upon system conditions, but rarely change more than a couple of inches up or down from the set points listed above.

Equalizing Storage

Equalizing storage is that quantity necessary to augment the water supply system during short periods of peak demand. It must be provided as part of the total storage whenever the total source capacity cannot meet the periodic peak demands placed on the water system. In other words, less storage volume is required with greater total source capacity. As discussed in Chapter 5, the total existing source capacity for South Prairie is 380 gpm.

The equalizing volume needed can depend on several factors including peak demand, diurnal variations, source production, and how the production facility operates (i.e., either continuous pumping for a select period of time or by "call-on-demand" through use of reservoir level control switches, etc.). South Prairie's "call-on-demand" pump operation dictates the following recommended equation from DOH be used to determine equalizing storage (ES):

***ES** = (PHD – Qs) * 150 minutes, but in no case less than zero*

Where: ***ES*** = *Equalizing storage component, in gallons*

PHD = *Peak hourly demand, in gpm*

Qs = *Sum of all installed and active source of supply capacities, except emergency sources of supply, in gpm*

Calculations for equalizing storage are shown in Table 3-2, located on page 3-7.

Standby Storage

Standby (SB) storage refers to an emergency or reserve storage supply required to serve the water system for two average days, which is approximately equal to one peak day, when the largest source of supply is out of service. Standby storage is calculated by subtracting the volume of water produced with the firm capacity from the peak day demand. Firm capacity equals the total source capacity minus the largest source of supply (Source 02 – Tubbs Road Well). This would equal the supply from Source 01 – School Yard Well at 55 gpm.

$SB = (2\ days)(ADD)(N) - t_m\ (Q_S - Q_L)$

Where: ***ADD*** = *Average day demand for the system, in gpd/ERU*

N = *Number of ERUs*

t_m = *Time that remaining sources are pumped on the day when the largest source is not available, in minutes (1,440 minutes)*

Q_S = *Total source capacity, in gpm*

Q_L = *Largest capacity source available to the system, in gpm*

DOH also recommends that standby storage should not be less than 200 gpd/ERU. In South Prairie's case, the actual average daily demand per ERU exceeds this value (239 gpd/ERU); therefore, this higher and more stringent value will be used to calculate the standby storage requirement.

Standby storage is used to provide water service during an emergency occurring somewhere in the water system. Such an emergency could include a failing pump, interruption in the water supply or fire flow, or a critical valve or pipeline failure within the distribution system, etc.

Calculations for equalizing storage are shown in Table 3-2 (page 3-7).

Fire Suppression Storage

Per the Water System Design Manual, storage reservoirs must be capable of delivering fire flows as determined necessary by the fire protection authority or the Water System Coordination Act while maintaining 20 psi pressure throughout the distribution system (WAC 246-290-221[5]). The requirements must be met simultaneously with maximum day demands.

Pierce County Ordinance No. 95-91 applies to South Prairie and requires a maximum fire-flow volume of 2,000 gallons/min for 120 minutes for land zoned urban industrial. Pierce County Code, Title 17.C., allows reductions over 50 percent for commercial, industrial, and multi-family dwelling units constructed with sprinkler systems. While only one of the two industrial sites has sprinklers in South Prairie, the Town does not qualify for any reductions and would ordinarily require 240,000 gallons of storage. However, because the entire industrial zoned land is already built and the Town does not intend to increase its industrial space or build additional storage for one building, the fire flow storage will consider only commercial fire flows. Urban commercial land requires a maximum fire-flow volume of 1,500 gallons/min for 60 minutes.

The following equation expresses the required fire suppression storage (FSS):

$$FSS = (FF)(t_m)$$

Where: FF = *Required fire flow rate, expressed in gpm, as specified by fire protection authority or the Coordination Act, whichever is greater; and*

t_m = *Duration of FF rate, expressed in minutes, as specified by fire protection authority or the Coordination Act, whichever is greater.*

The SB or the FS storage components, whichever volume is smaller, can be excluded from the total storage requirement of a water system per WAC 246-290-235(4) provided that such practice is not prohibited by: (1) a locally developed and adopted Coordinated Water System Plan, (2) local ordinance, or (3) the local fire protection authority or County Fire Marshal. This prevents unused water stagnating in oversized tanks.

Calculations for equalizing storage are shown in Table 3-2 below.

Dead Storage

Dead storage (effective only to provide adequate pressure) is the volume of stored water not available to all consumers at the minimum system design pressure. Dead storage volume is excluded from the volumes provided to meet operational, equalizing, and fire suppression storage requirements.

Total Effective Storage

The minimum total storage requirement is the sum of equalizing and the larger of standby or fire flow, as shown in Table 3-2. The storage capacity for South Prairie is adequate for the 20-year projection.

Table 3-2. Storage Requirements[a]

Plan Year	ERUs	Standby (gallons)[b]	Equalizing (gallons)[c]	Fire Flow (gallons)[d]	Total Minimum (gallons)	Provided (gallons)
2012	208	14,207	0	90,000	90,000	200,000
2015	262	38,713	0	90,000	90,000	200,000
2025	485	138,895	11,155	90,000	150,050	200,000

[a] For purposes of this exercise, storage requirements assume the Town does not meet its water conservation goals by reducing unaccounted water from 21 percent to 10 percent. In reality, the Town intends to aggressively follow its conservation programs.

[b] Calculated with Tubbs Road Well out of service.

[c] Equalizing storage is not required until Year 2021 when peak hour demand exceeds well source capacity. Until this time, equalizing storage is considered zero.

[d] This assumes 1,500 gpm for 60 minutes for urban commercial zoned land and disregards urban industrial land. See full discussion above in "Fire Suppression Storage."

3.3.4 Distribution System Analysis

Distribution System

Capacity of pipelines is measured based on the ability or the pipeline to transmit water without excessive loss due to leakage or excessive loss of pressure due to friction. Because it is expensive to replace, a pipe should be sized for ultimate expected capacity when installed. Proper control of the flow must be maintained by the installation of sufficient valves and other appurtenances. The existing mains, valves, blow-off valves, and hydrants are shown in Figure 3-1. The water mains range in size from 1 to 8 inches in diameter, and the diameters and lengths are summarized in Table 3-3.

Table 3-3. Existing Water Mains

	Approximate Linear Footage					
Diameter	Asbestos Cement (AC)	Polyvinyl Chloride (PVC)	Polyethylene	Ductile or Cast Iron	Steel	Total
1 Inch	0	130	510	0	0	640
2 Inch	0	1,930	2,410	0	0	4,340
4 Inch	370	0	0	0	0	370
6 Inch	5,450	1,960	0	0	0	7,410
8 Inch	5,530	1,810	2,700	350	0	10,390
Total:	**11,350**	**5,830**	**5,620**	**350**	**530**	**23,150**

The Town has only one pressure zone (HGL 610), with pressures generally ranging between 40 and 85 psi. The 40-psi range applies only to five residential customers in the immediate vicinity of the tanks. These five customers are served by a booster pump in the Tubbs Road Well Building.

The Town has established this single pressure zone for purposes of operational simplicity. See Figure 3-2 "Hydraulic Schematic" showing an HGL of 610 which corresponds with the overflow elevation of the reservoir. The pressure range within this zone is based solely upon local topography. The pressure variations as modeled in Section 3.3.5 within the system are shown on Figure 3-3, "Existing Water Pressure Contours (psi)." Pressures are monitored and recorded during hydrant flushing.

The distribution network generally follows the street system and is well looped except for the following:

- In the area north of South Prairie Creek, where a single 6-inch line along 250th Avenue East feeds a 2-inch dead-end main along 126th Street Court East.
- On the north side of Pioneer Way, east of Emery Street, with a single 4-inch dead-end main.
- The furthest east end of South Prairie Road with an 8-inch dead-end main.
- In the vicinity of the Town's sewage treatment plant, where a 6 inch-diameter dead-end line to the plant ends within 200 feet of a 6-inch-diameter dead-end line on 3rd Street.
- West of the town boundary, where two private 2-inch-diameter main extend 1,000 feet to serve two residences.

The Town does not conduct a leak detection program or perform routine replacement of its water distribution lines. Leakage is currently estimated at 21 percent.

The system valving is generally well distributed and permits isolation of parts of the system for maintenance or repairs while service is maintained for the majority of the system. Valves and blow-off valves are shown on Figure 3-1.

3.3.5 Hydraulic Capacity Analysis

A hydraulic capacity model was performed in 1998 by Hedges and Roth Engineering, Inc. and incorporated into the 1998 Water System Plan. After reviewing new connections and completed projects since 1998, it was determined that the results of the model are still valid and an additional hydraulic analysis was not required for this Water System Plan update. The Department of Health concurred with this approach prior to commencing work on this Water System Plan. The methodology, assumptions, scenarios modeled, and maps provided here are taken from the Hedges and Roth document.

Methodology

A hydraulic analysis for water mains was completed for the existing Town of South Prairie system using the Cybernet design and analysis software. Cybernet is a comprehensive hydraulic modeling program that integrates AutoCAD with advanced mapping and graphic extensions and a numeric model. It contains many mapping functions, including:

- Fire flow maps that display the available fire flows.
- Pressure maps that display water pressure throughout the system. These maps can be exhibited in pressure "contours," hydraulic grade, fire flow, average travel time, etc.
- Maps that can be color-coded by pipe size, velocity, head loss, flow rate, travel time, etc.

With Cybernet, a range of modeling scenarios and "what-if" analyses can be defined and then solved very quickly using the built-in numerical model. Each scenario can be evaluated under steady state and variable conditions. Cybernet's fully integrated numbered model uses the Linear Method to solve simultaneous flow equations and is numerically consistent with Kentucky Pipe, another widely used modeling system. The Hazen-Williams and Darcy-Weisbach equations are supported for pipe friction loss computations.

Basic Assumptions

The following assumptions were made in this hydraulic analysis:

- The elevation of each pipe node was determined primarily from topographic maps.
- The size and configuration of the existing water system network were as described in Figure 3-1.
- The Town's customers are predominately residential, with a moderate number of commercial customers. Based on the Town's historical records for total water consumption (demand) and number of accounts, an average annual demand in gpm was determined. An inventory of the Town's customer locations was then made based on available maps, and the customers were assigned to the appropriate node. By multiplying the number of customers by the average demand, a demand in gpm was developed for each node.
- Fire flows were modeled at water main nodes. Fire hydrant runs and associated losses through the hydrants and hydrant runs were not modeled.
- Fire flow modeling was conducted at peak day conditions.

Computer Model Correlation

The computer model was correlated with actual field data collected by Town personnel. Fire flow tests were conducted at several locations around the town. The correlation was within 10 percent.

System Model

The computer model developed for the existing system analyzes transmission as well as distribution mains. Since many of the connecting distribution mains were 6-inch-diameter or smaller, it was decided to model all lines to get a more accurate picture of the system as well as to produce a working model for future use by the Town, if desired. An extended simulation was not part of this analysis.

Base gradients were set according to the reservoir service levels and/or system design head. Roughness coefficients for pipe sections were selected from representative values determined by the Hazen-Williams equation.

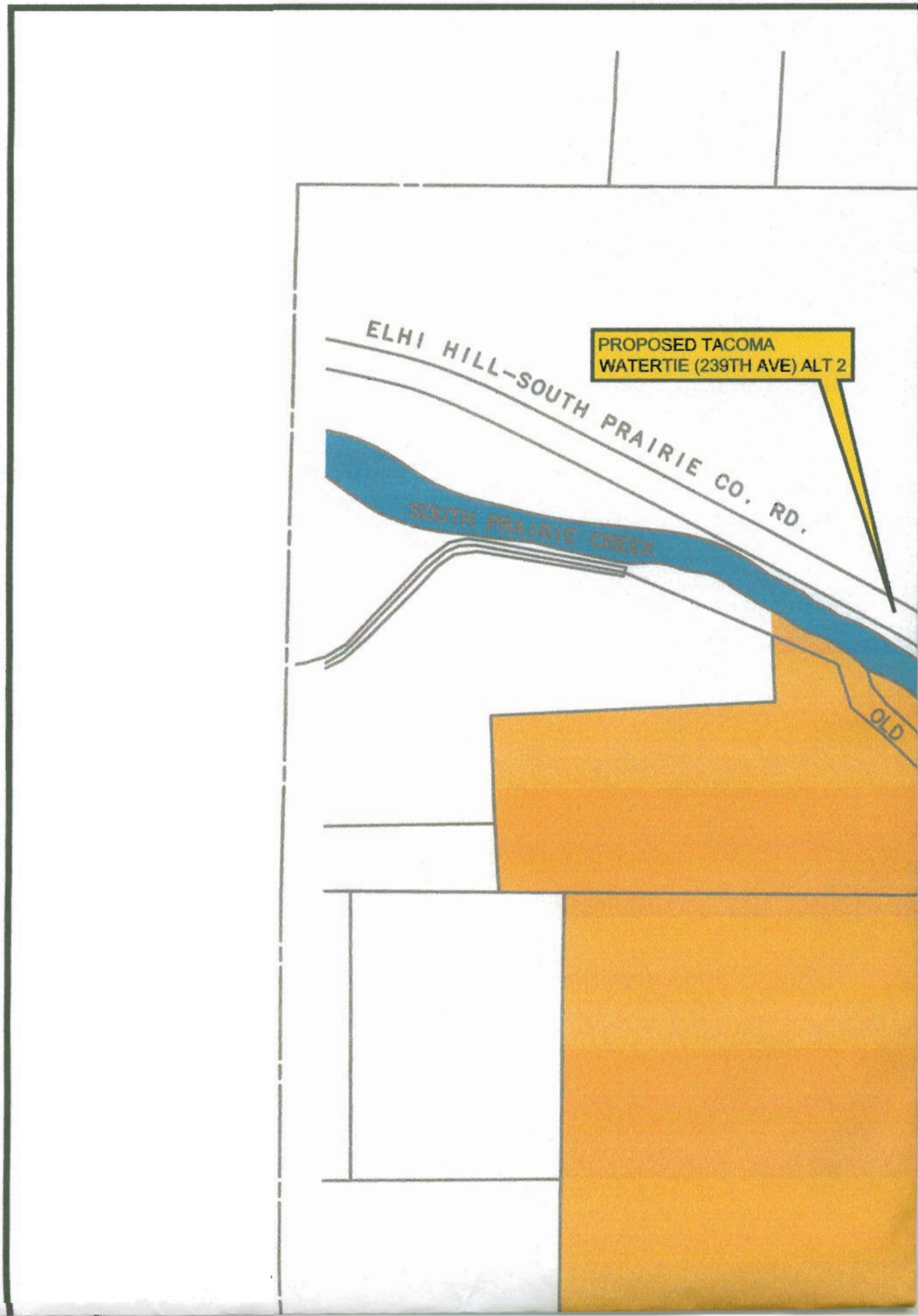
Existing system records show that most of the water system is ductile iron pipe in fair condition or asbestos/cement pipe, so a roughness coefficient of 120 was chosen for all pipes in the existing system. No allowance was made for minor losses from system components, such as valves and fittings, in order to maintain the simplicity of the model for everyday use.

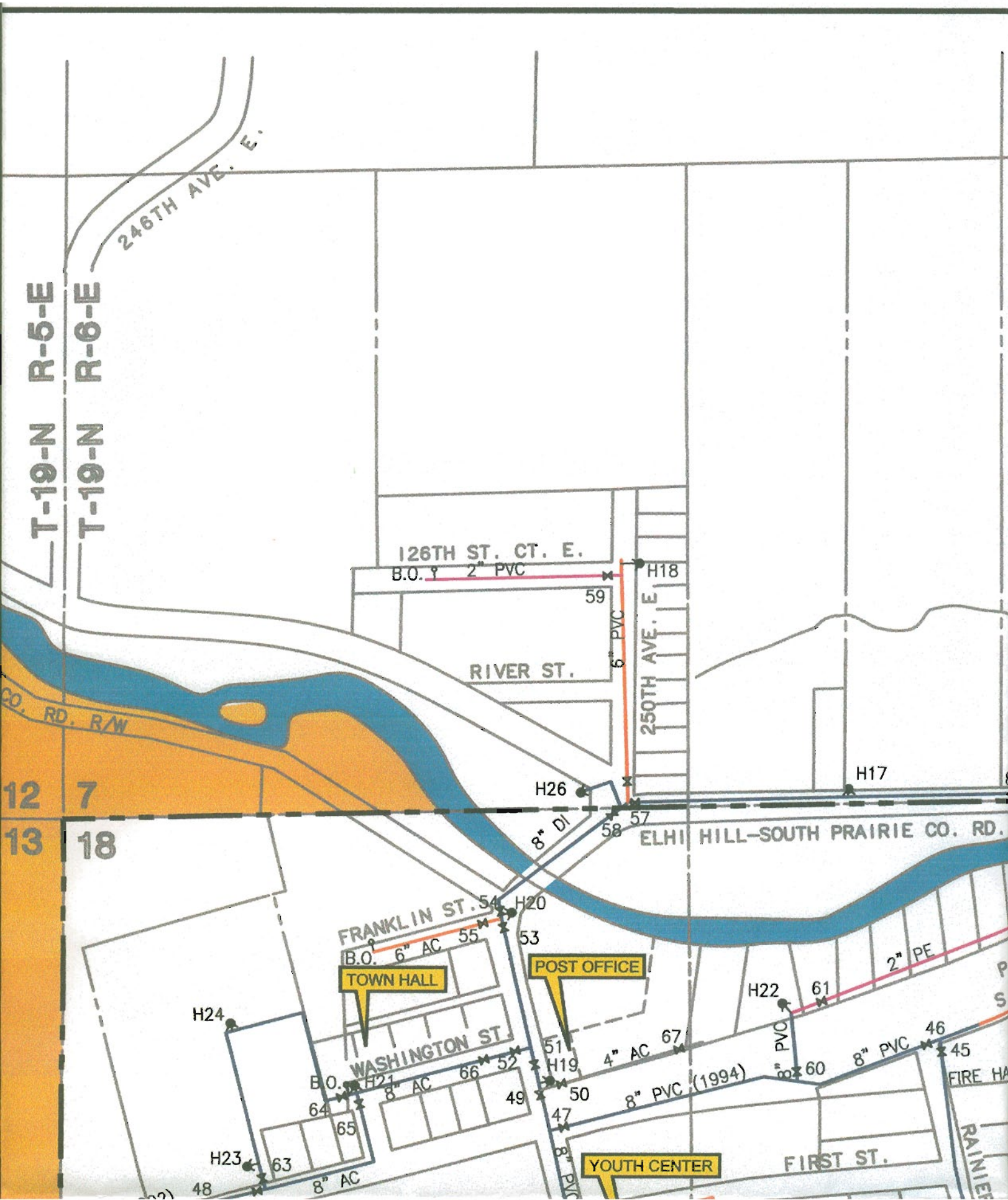
Input data consisted of pipe (numerical labeling), open/closed designation, pipe diameter, length, roughness coefficient, check valves, pipe junctions (nodes), demand, elevation, and fixed grades. To simulate the system, fixed-grade nodes were used to represent reservoirs for demands at specific pressures and pumps.

Regular Simulations

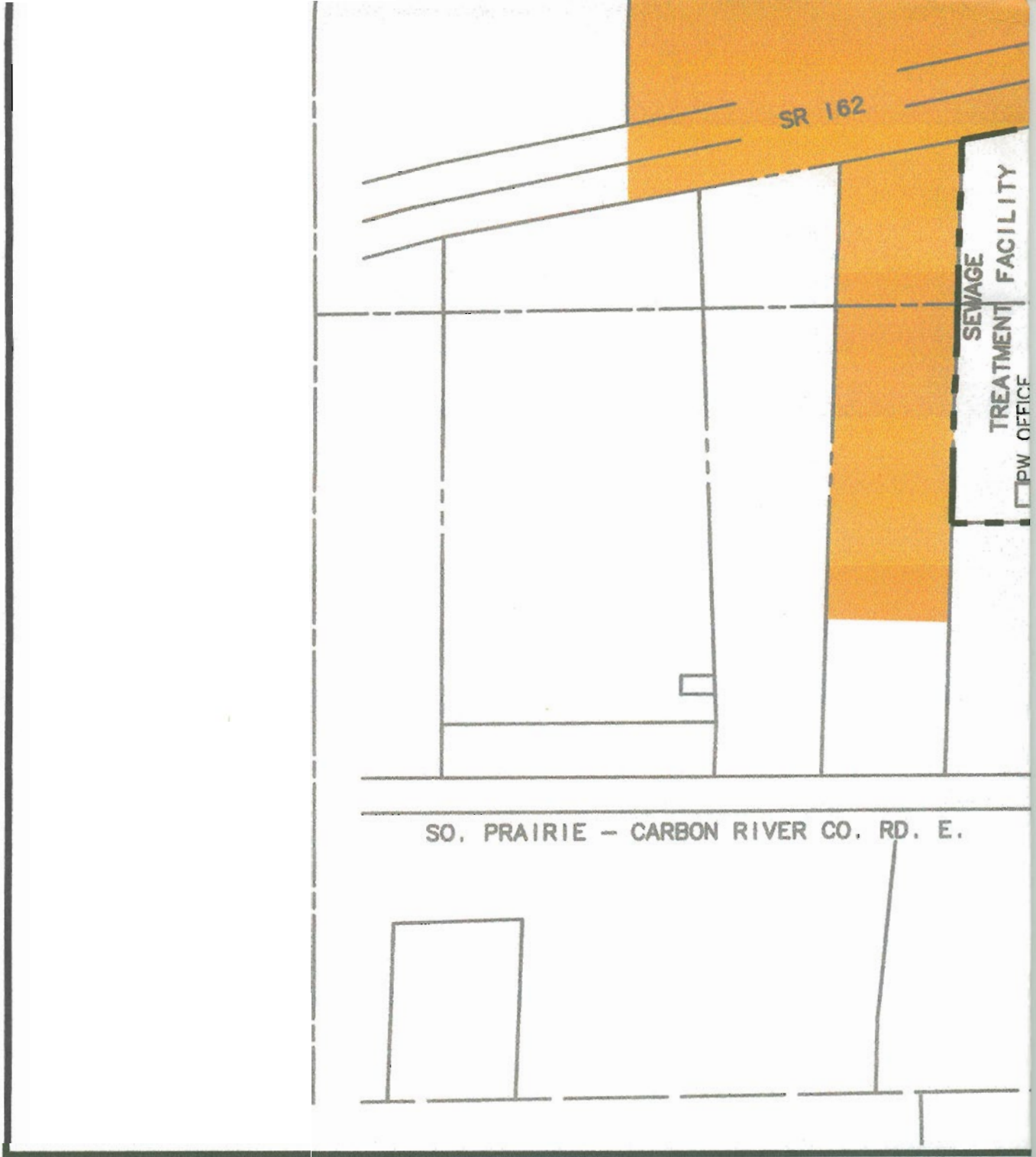
Initially, computer simulations were run showing the existing system at peak demand. Fire flows were then simulated at several points in the system to calibrate the model with actual new fire flow tests.

Fixed-grade nodes were placed at the nearest node in the existing system to simulate a 20 psi residual pressure. Calculated flows were then checked against actual field measurements. The results of these simulations are shown on Figure 3-3 and Figure 3-4.


ELHI HILL-SOUTH PRAIRIE CO. RD.
PROPOSED TACOMA
WATERTIE (239TH AVE) ALT 2
SOUTH PRAIRIE CREEK
OLD


246TH AVE. E.
T-19-N R-5-E
T-19-N R-6-E
126TH ST. CT. E.
B.O. 2" PVC
59
H18
6" PVC
250TH AVE. E.
RIVER ST.
CO. RD. R/W
12
7
13
18
H26
H17
8" DI
58
57
ELHI HILL-SOUTH PRAIRIE CO. RD.
FRANKLIN ST.
54
H20
B.O. 6" AC
55
53
TOWN HALL
POST OFFICE
2" PE
H22
61
H24
WASHINGTON ST.
51
4" AC
67
B.O.
H21
8" AC
66
52
H19
8" PVC (1994)
60
8" PVC
46
45
64
65
49
50
47
H23
63
8" AC
48
YOUTH CENTER
FIRST ST.
FIRE HA
RAINIER

GENERAL NOTES

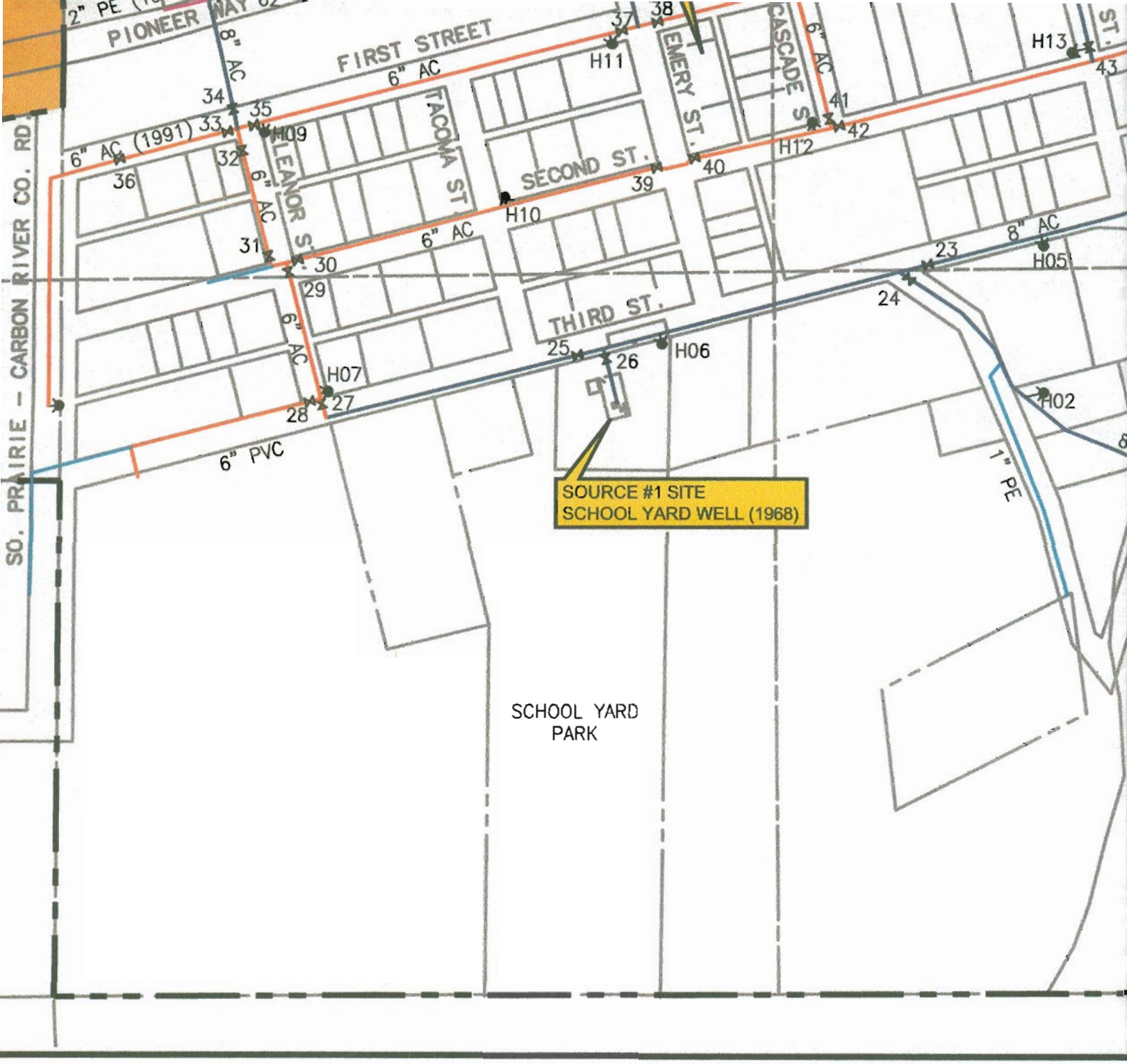


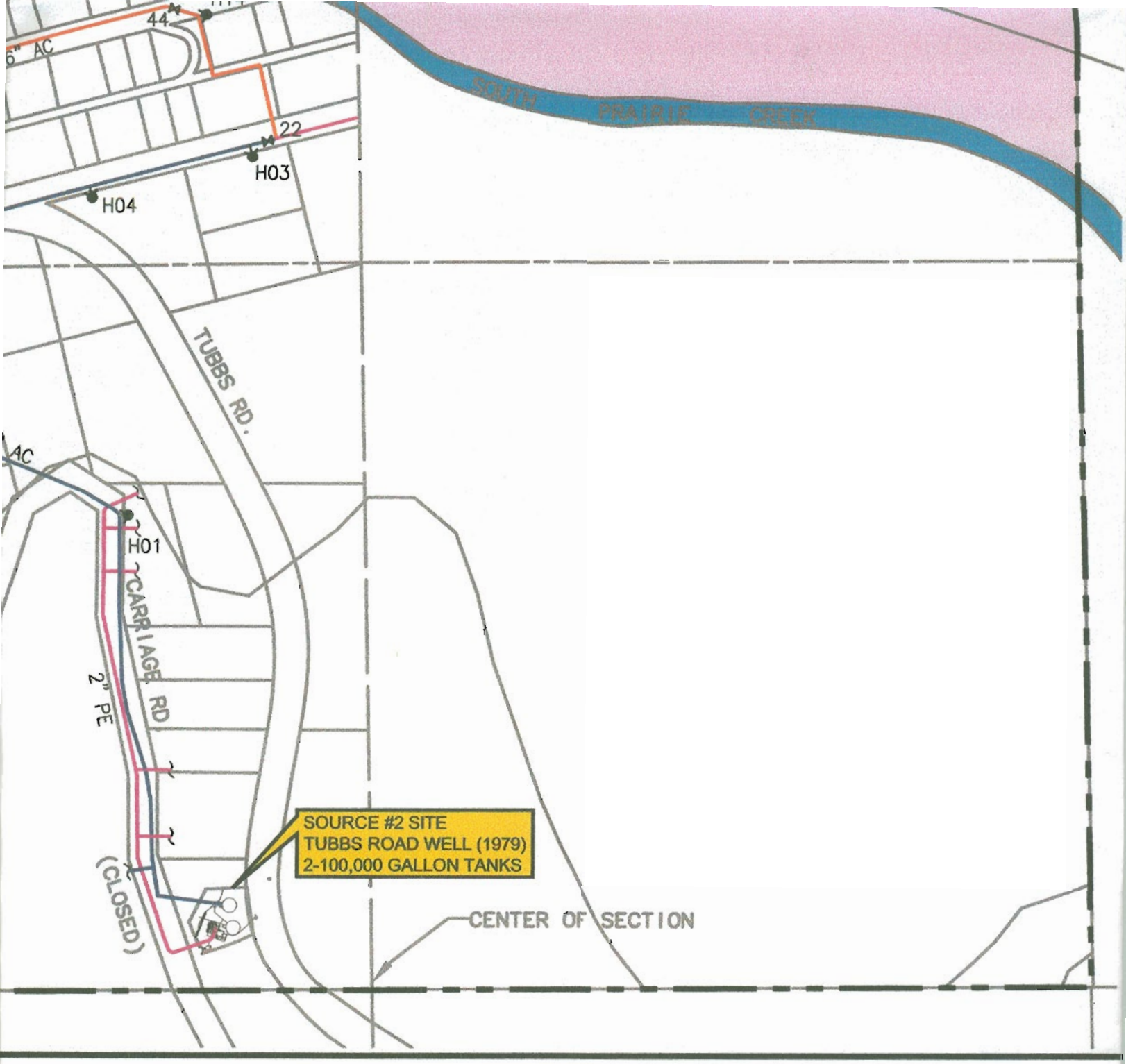
Parametrix DATE: Jul 17, 2006 FILE: SU4101003P01T01_FIG3-1

N

0 500

SCALE IN FEET


PIONEER WAY
FIRST STREET
SECOND ST.
THIRD ST.
TACOMA ST.
ELEANOR ST.
EMERY ST.
CASCADE ST.
SO. PRAIRIE – CARBON RIVER CO. RD.
2" PE
8" AC
6" AC
6" AC (1991)
6" PVC
1" PE
8" AC
H01
H02
H03
H04
H05
H06
H07
H08
H09
H10
H11
H12
H13
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
SOURCE #1 SITE
SCHOOL YARD WELL (1968)
SCHOOL YARD
PARK

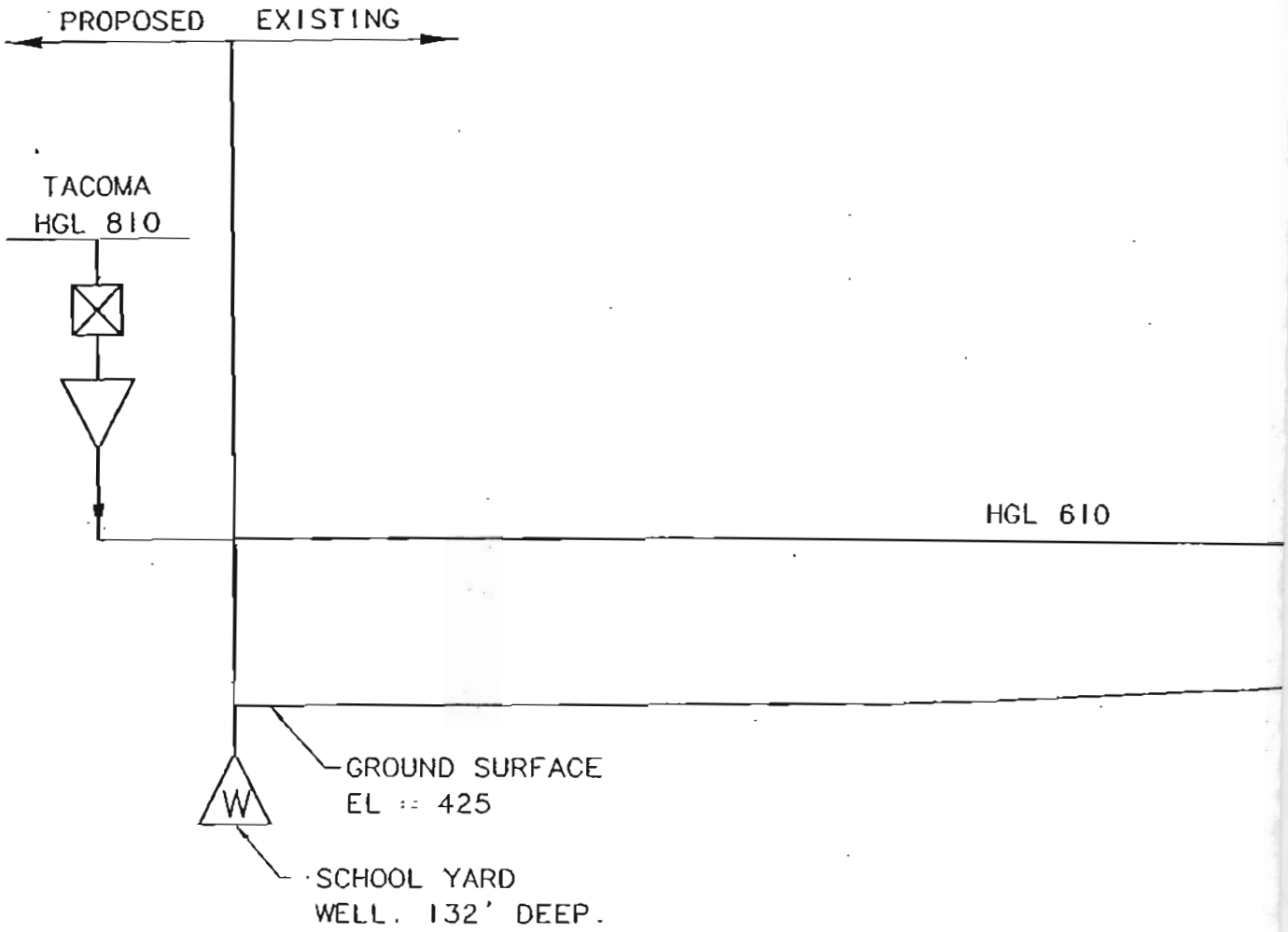

44
6" AC
22
H03
H04
SOUTH PRAIRIE CREEK
TUBBS RD.
AC
H01
CARRIAGE RD.
2" PE
(CLOSED)
SOURCE #2 SITE
TUBBS ROAD WELL (1979)
2-100,000 GALLON TANKS
CENTER OF SECTION

THEREFORE NOT SHOWN.

2. PIPE VALVE AND HYDRANT LOCATIONS ARE APPROXIMATE AND ARE INTENDED TO AID CONCEPTUAL-LEVEL PLANNING, NOT DETAILED DESIGN.

Figure 3-1
Water System Map
Existing Mains, Valves, and Hydrants

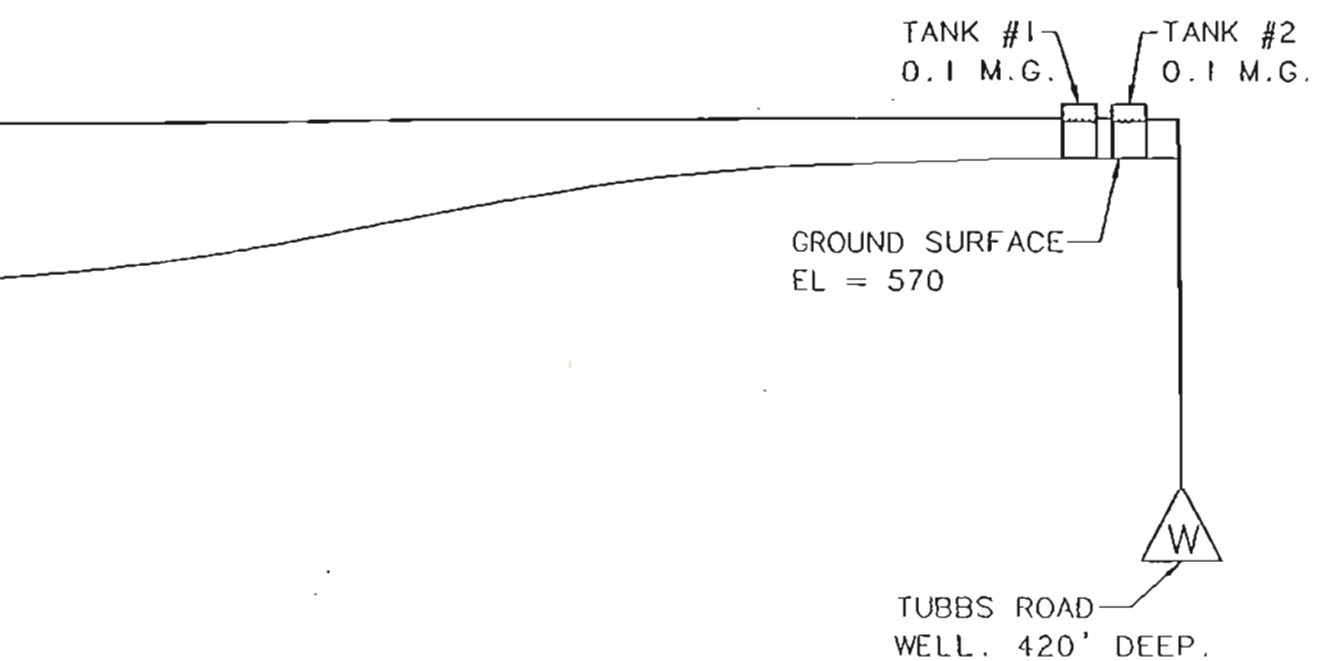
HEDGES & ROTH ENGINEERING, INC. CONSULTING ENGINEERS-PLANNERS-SURVEYORS, 913 KINCAID AVENUE, SUMNER, WA. 98390, (253) 891-9365, J8-002-80, SPHYDSCM, 5/29/98



LEGEND

- ELEVATED TANK
- WELL SUPPLY
- INTERTIE
- PRESSURE REDUCING VALVE

©



TOWN OF SOUTH PRAIRIE
COMPREHENSIVE WATER PLAN
HYDRAULIC SCHEMATIC

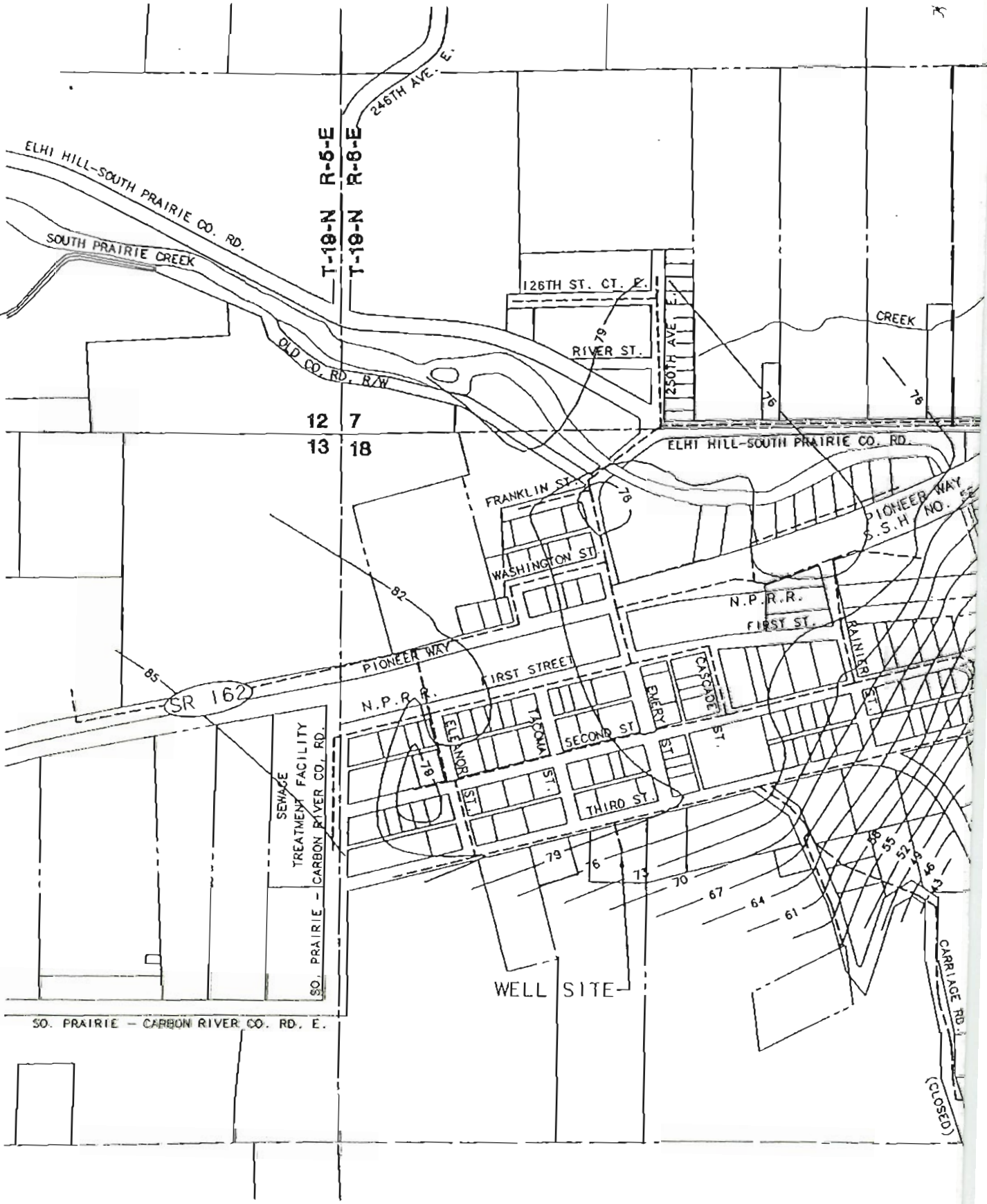
SCALE 1"=200'

5/29/98

Figure 3-2

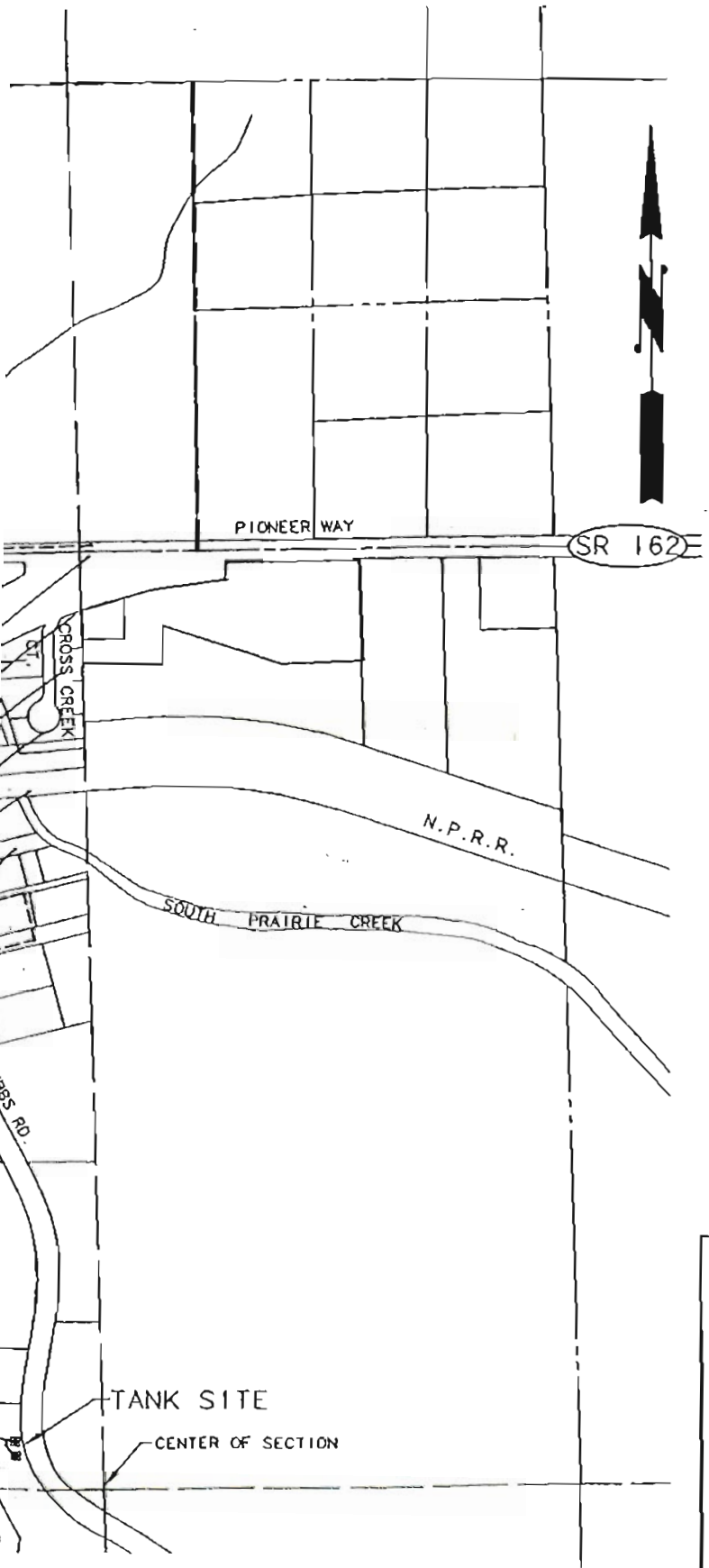
HEDGES & ROTH ENGINEERING, INC. CONSULTING ENGINEERS-PLANNERS-SURVEYORS, 913 KINCAID AVENUE, SUMNER, WA. 98390, (253) 891-9365, 38-002-80, SPRESSUR, 5/29/98

PORTIONS OF SECTIONS 12 & 13, TO
PORTIONS OF SECTIONS 7 & 18, TOW



©

'NSHIP 19 NORTH, RANGE 5 EAST, W.M.
NSHIP 19 NORTH, RANGE 6 EAST, W.M.



MODEL CONDITIONS	
TANKS AT ELEVATION	609.50
SCHOOL YARD PUMP	OFF
TUBBS ROAD PUMP	OFF
DOMESTIC DEMAND	121.88 gpm
FIRE FLOW	750 gpm

LEGEND

- EXISTING TOWN LIMITS
- EXISTING URBAN GROWTH
- EXISTING WATER MAIN
- 61 PRESSURE CONTOUR (PSI)

TOWN OF SOUTH PRAIRIE
EXISTING WATER PRESSURE CONTOURS (PSI)

SCALE 1"=500' 5/29/98

Figure 3-3

3.4 SUMMARY OF SYSTEM DEFICIENCIES

3.4.1 Source and Transmission Mains

Both well-house roofs are in poor condition, and the Well No. 2 roof has nearly failed. Well house interior piping is badly corroded although still serviceable. The chlorination system may be causing corrosion on the well house piping.

The South Prairie water system lacks redundancy in its water source availability. Damage to a well or to the transmission main between the reservoirs and distribution system, pump failure, and power outages could prevent Town access to its storage and/or pumping facilities at its largest water source on Tubbs Road. Alternative sources should be investigated in preparation for any contingencies.

The asbestos concrete transmission main connecting the Town storage with its distribution system may be brittle or soft with age and/or soil contact and may be susceptible to breakage.

3.4.2 Treatment

Well No. 1 indicates high levels of arsenic contamination. Regulation effective January 23, 2006, requires sources to limit arsenic concentrations to less than 0.01 mg/L.

3.4.3 Storage

The interior tank coatings are heavily blistered and rusted and are flaking into stored water. Sediment accumulation in both tanks can harbor organics and prevent chlorine contact.

Tank No. 1 lacks shear connectors and is susceptible to movement between the tank and foundation under seismic loads.

Roof vent screens show signs of rust and have holes in them. This may allow contaminants and insects to enter the storage facilities. Manhole entries and hatches show signs of rust and degraded seals. The tanks and ladders lack proper safety equipment to prevent falls.

Tank No. 1 (the older of the two) is approaching the end of its design life within the 20-year forecast of this plan.

3.4.4 Distribution System

Dead-ends in the system limit fire flow and lower chlorine residuals.

The water system has a high percentage of asbestos concrete pipe that may require replacement in the near future. The system has a high percentage of unaccounted water: an average 21 percent of water produced.

3.5 SELECTION AND JUSTIFICATION OF PROPOSED IMPROVEMENT PROJECTS

3.5.1 Proposed Improvements Identified Through Modeling

The following improvement projects were identified in the modeling results and will improve the system pressures and fire flow as identified in Figure 3-5 and Figure 3-6:

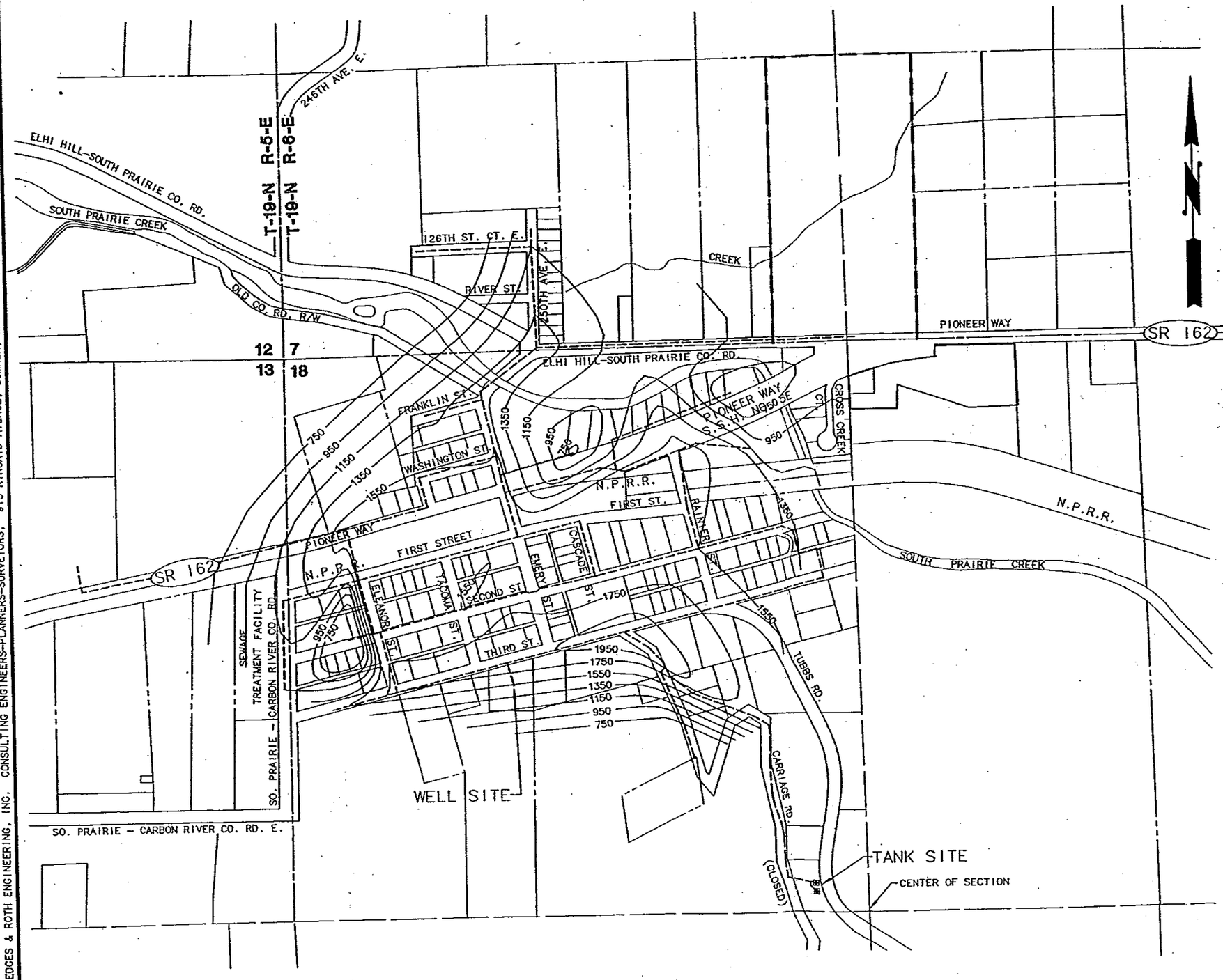
- Loop the water lines at 2nd Street, 3rd Street, and South Prairie Carbon River Road East.
- Install new 12-inch ductile iron transmission line along Tubbs Road from Tubbs Road Well to 2nd Street.
- Loop 4-inch ductile iron pipe and 8-inch ductile iron pipe along Pioneer Way.

In addition to the above-mentioned improvements, an intertie with the Tacoma Water System will improve system pressures and fire flow as identified in Figures 3-7 and 3-8.

3.5.2 Proposed Improvements Identified Through System Analysis

Improvements have been identified based on review of the previous analyses and are presented in Chapter 9, "Improvement Program." A full discussion of the financial impact will be evaluated and included in Chapter 10, "Financial Program."

PORTIONS OF SECTIONS 12 & 13, TOWNSHIP 19 NORTH, RANGE 5 EAST, W.M.
PORTIONS OF SECTIONS 7 & 18, TOWNSHIP 19 NORTH, RANGE 6 EAST, W.M.



MODEL CONDITIONS	
TANKS AT ELEVATION	609.50
SCHOOL YARD PUMP	OFF
TUBBS ROAD PUMP	OFF
DOMESTIC DEMAND	121.88 gpm

LEGEND

- EXISTING TOWN LIMITS
- URBAN GROWTH AREA
- EXISTING WATER MAIN
- 750 FIRE FLOW CONTOUR (GPM)

TOWN OF SOUTH PRAIRIE
EXISTING AVAILABLE FIREFLOW CONTOURS

SCALE 1"=500' 5/29/98

HEDGES & ROTH ENGINEERING, INC. CONSULTING ENGINEERS-PLANNERS-SURVEYORS, 913 KINCAID AVENUE, SUMNER, WA. 98390, (253) 891-9365, 38-002-80, SPFIRFLO, 5/29/98

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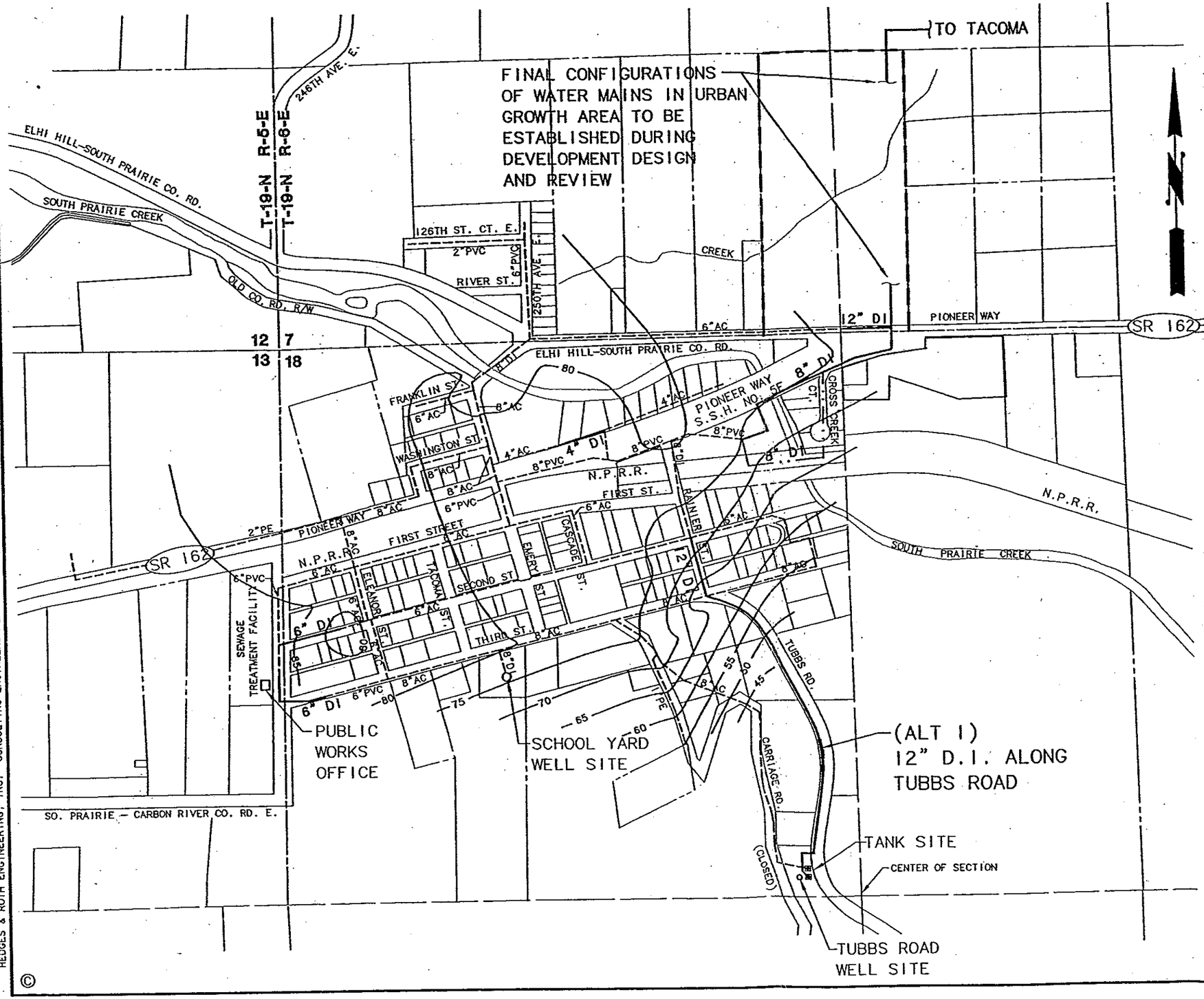
Figure 3-4

PORTIONS OF SECTIONS 12 & 13, TOWNSHIP 19 NORTH, RANGE 5 EAST, W.M.
PORTIONS OF SECTIONS 7 & 18, TOWNSHIP 19 NORTH, RANGE 6 EAST, W.M.



MODEL CONDITIONS	
TANKS AT ELEVATION	609.50
SCHOOL YARD PUMP	OFF
TUBBS ROAD PUMP	OFF
DOMESTIC DEMAND	121.88 gpm
DEVELOPER'S EXTENSION	NOT INCL.

LEGEND

- EXISTING TOWN LIMITS
- URBAN GROWTH AREA
- EXISTING WATER
- PROPOSED WATER
- ALTERNATIVE WATER
- 45 PRESSURE CONTOURS (PSI)
- AC ASBESTOS CEMENT
- DI DUCTILE IRON
- PE POLYETHYLENE
- PVC POLYVINYLCHLORIDE

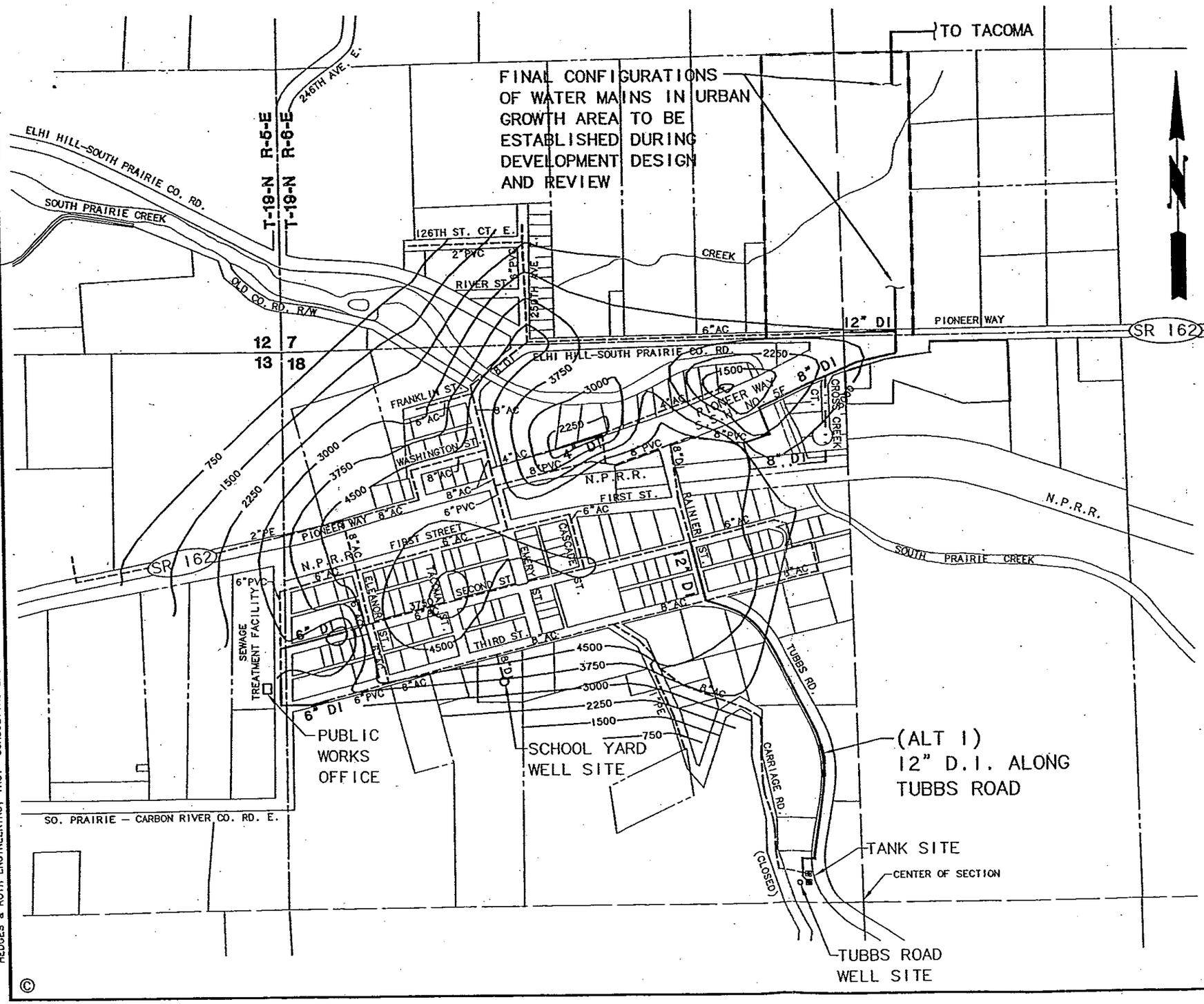
TOWN OF SOUTH PRAIRIE
ALTERNATIVE 1 PRESSURE CONTOURS (PSI)

SCALE 1"=500' 5/29/98

HEDGES & ROTH ENGINEERING, INC. CONSULTING ENGINEERS–PLANNERS–SURVEYORS, 813 KINCAID AVENUE, SUMNER, WA, 98390, (253) 891-9365, 38-002-80, SPALTIPS, 5/29/98

Figure 3-5

PORTIONS OF SECTIONS 12 & 13, TOWNSHIP 19 NORTH, RANGE 5 EAST, W.M.
PORTIONS OF SECTIONS 7 & 18, TOWNSHIP 19 NORTH, RANGE 6 EAST, W.M.



MODEL CONDITIONS	
TANKS AT ELEVATION	609.50
SCHOOL YARD PUMP	OFF
TUBBS ROAD PUMP	OFF
DOMESTIC DEMAND	121.88 gpm
FIRE FLOW	750 gpm
DEVELOPER'S EXTENSION	NOT INCL.

LEGEND

- EXISTING TOWN LIMITS
- URBAN GROWTH AREA
- EXISTING WATER
- PROPOSED WATER
- ALTERNATIVE WATER
- 2250 PROPOSED FIREFLOW CONTOURS (gpm)
- AC ASBESTOS CEMENT
- DI DUCTILE IRON
- PE POLYETHYLENE
- PVC POLYVINYLCHLORIDE

TOWN OF SOUTH PRAIRIE
ALTERNATIVE 1
FIREFLOW CONTOURS

SCALE 1"=500' 5/29/98

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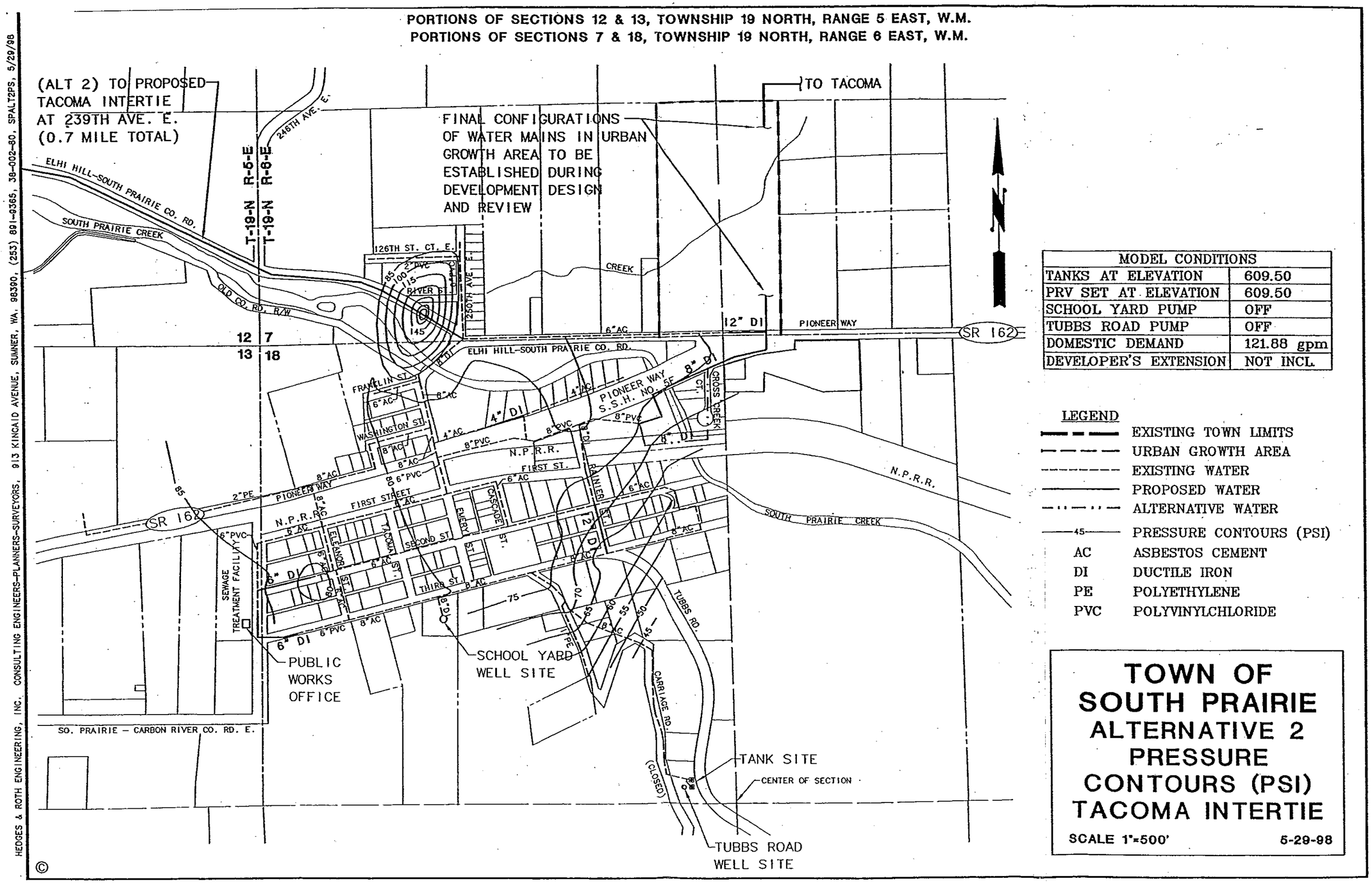
Figure 3-6



MODEL CONDITIONS	
TANKS AT ELEVATION	609.50
PRV SET AT ELEVATION	609.50
SCHOOL YARD PUMP	OFF
TUBBS ROAD PUMP	OFF
DOMESTIC DEMAND	121.88 gpm
DEVELOPER'S EXTENSION	NOT INCL.

LEGEND

- EXISTING TOWN LIMITS
- URBAN GROWTH AREA
- EXISTING WATER
- PROPOSED WATER
- ALTERNATIVE WATER
- 45 PRESSURE CONTOURS (PSI)
- AC ASBESTOS CEMENT
- DI DUCTILE IRON
- PE POLYETHYLENE
- PVC POLYVINYLCHLORIDE

TOWN OF SOUTH PRAIRIE ALTERNATIVE 2 PRESSURE CONTOURS (PSI) TACOMA INTERTIE

SCALE 1"=500' 5-29-98

Figure 3-7

PORTIONS OF SECTIONS 12 & 13, TOWNSHIP 19 NORTH, RANGE 5 EAST, W.M.
PORTIONS OF SECTIONS 7 & 18, TOWNSHIP 19 NORTH, RANGE 6 EAST, W.M.

(ALT 2) TO PROPOSED TACOMA INTERTIE AT 239TH AVE. E. (0.7 MILE TOTAL)

FINAL CONFIGURATIONS OF WATER MAINS IN URBAN GROWTH AREA TO BE ESTABLISHED DURING DEVELOPMENT DESIGN AND REVIEW

TO TACOMA

MODEL CONDITIONS	
TANKS AT ELEVATION	609.50
PRV SET AT ELEVATION	609.50
SCHOOL YARD PUMP	OFF
TUBBS ROAD PUMP	OFF
DOMESTIC DEMAND	121.88 gpm
FIRE FLOW	750 gpm
DEVELOPER'S EXTENSION	NOT INCL.

LEGEND

- EXISTING TOWN LIMITS
- URBAN GROWTH AREA
- EXISTING WATER
- PROPOSED WATER
- ALTERNATIVE WATER
- 4000 PROPOSED FIREFLOW CONTOURS (gpm)
- AC ASBESTOS CEMENT
- DI DUCTILE IRON
- PE POLYETHYLENE
- PVC POLYVINYLCHLORIDE

TOWN OF SOUTH PRAIRIE
ALTERNATIVE 2
FIREFLOW CONTOURS
TACOMA INTERTIE

SCALE 1"=500' 5/29/98

HEDGES & ROTH ENGINEERING, INC. CONSULTING ENGINEERS–PLANNERS–SURVEYORS, 913 KINCAID AVENUE, SUMNER, WA. 98390, (253) 891-9365, 38-002-80, SPALT2FF, 5/29/98

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Figure 3-8

4. WATER QUALITY ANALYSIS

4.1 INTRODUCTION

Water supplied by South Prairie must meet water quality regulations developed at both the state and federal level. State regulations may be the same as or more stringent than the federal regulations. DOH regulates the water quality of public water systems under the State Drinking Water Regulations, WAC 246-290-300 through 320. The state also has the enforcement responsibility for federal regulations included within primacy agreements with the United States Environmental Protection Agency (EPA). Water quality regulations are currently evolving due to implementation of the 1996 amendments to the Safe Water Drinking Act (SDWA) and other state and federal legislation.

Sampling and analysis of water quality is performed regularly pursuant to DOH and EPA requirements. Sampling protocol is described within the Coliform Monitoring Plan. South Prairie uses Water Management Laboratories (1515 80th East, Tacoma, Washington; telephone 253-531-3121) for independent laboratory analysis.

This section outlines the current water quality regulations, water quality monitoring by South Prairie, and upcoming water quality regulations applicable to the South Prairie water system. A summary of concerns is discussed, as well as a review of complaint records related to water quality.

4.1.1 Current Water Quality Regulations

Table 4-1 shows the current state-regulated chemical contaminants and physical properties tested by South Prairie, and the MCL standards established for each parameter. The table includes both primary and secondary standards. Primary standards refer to those contaminants or physical properties associated with chronic, nonacute, or acute human health effects. Secondary standards refer to those contaminants or physical properties associated with problems other than health effects, such as the general aesthetic quality of the water.

Table 4-1. Primary and Secondary Maximum Contaminant Limits

Parameter	Units	MCL	Detection Limit	Comments
Inorganics/Primary				
Antimony (Sb)	mg/L	0.006	0.002	
Arsenic (As)	mg/L	0.01	0.005	[a]
Asbestos	Million fibers/L	7 (> 10 µm)	0.01	
Barium (Ba)	mg/L	2.0	0.1	
Beryllium (Be)	mg/L	0.004	0.002	
Cadmium (Cd)	mg/L	0.005	0.002	
Chromium (Cr)	mg/L	0.1	0.01	
Copper (Cu)	mg/L	[b]	0.2	[b]
Cyanide (HCN)	mg/L	0.2	0.05	
Fluoride (F)	mg/L	4.0	0.2	
Lead (Pb)	mg/L	[b]	0.002	[b]

(Table Continues)

Table 4-1. Primary and Secondary Maximum Contaminant Limits (Continued)

Parameter	Units	MCL	Detection Limit	Comments
Inorganics/Primary (Continued)				
Mercury (Hg)	mg/L	0.002	0.0005	
Nickel (Ni)	mg/L	0.1	0.04	
Nitrate (as N)	mg/L	10.0	0.2	
Nitrite (as N)	mg/L	1.0	0.2	
Selenium (Se)	mg/L	0.05	0.005	
Sodium (Na)	mg/L	[b]	5	[b]
Thallium (Tl)	mg/L	0.002	0.001	
Inorganics/Secondary				
Chloride (Cl)	mg/L	250.0	–	
Fluoride	mg/ L	2.0	0.2	
Iron (Fe)	mg/L	0.3	0.03	
Manganese (Mn)	mg/L	0.05	0.01	
Silver (Ag)	mg/L	0.1	0.01	
Sulfate (SO_4)	mg/L	250.0	–	
Zinc (Zn)	mg/L	5.0	0.05	
Physical Characteristics/Secondary				
Color	Color Units	15	5.0b	At 25°C
Hardness	mg/L $CaCO_3$	None	N/A	
Specific Conductivity	µmhos/cm	700	–	
TDS	mg/L	500	–	[c]
Disinfection By-Products/Primary				
Total Trihalomethanes (TTHMs)	mg/L	0.080	–	
Haloacetic Acids (HAA5)	mg/L	0.060	–	
Pesticides				
Endrin	mg/L	0.0002	0.00001	
Lindane	mg/L	0.004	–	
Methoxychlor	mg/L	0.1	0.0001	
Toxaphene	mg/L	0.005	0.001	
2,4-D	mg/L	0.1	–	
2,4,5-TP (Silvex)	mg/L	0.01	–	
Radionuclides/Primary				
Radium-226	PCi/L	3.0		
Combined Radium –226 and Radium 228	PCi/L	5.0		
Gross Alpha Particle Activity	PCi/L	15.0		
Uranium	µg/L	30		
Volatile Organic Chemicals/Primary				
Vinyl Chloride	mg/L	0.002	0.0005	
Benzene	mg/L	0.005	0.0005	
Carbon Tetrachloride	mg/L	0.005	0.0005	
1,2-Dichloroethane	mg/L	0.005	0.0005	

(Table Continues)

Table 4-1. Primary and Secondary Maximum Contaminant Limits (Continued)

Parameter	Units	MCL	Detection Limit	Comments
Volatile Organic Chemicals/Primary (Continued)				
Trichloroethylene	mg/L	0.005	0.0005	
1,4-Dichlorobenzene	mg/L	0.075	0.0005	
1, 1-Dichloroethylene	mg/L	0.007	0.0005	
1, 1, 1-Trichloroethane	mg/L	0.2	0.0005	
Cis-1, 2-Dichloroethylene	mg/L	0.07	0.0005	
1, 2-Dichloropropane	mg/L	0.005	0.0005	
Ethylbenzene	mg/L	0.7	0.0005	
Monochlorobenzene	mg/L	0.1	0.0005	
o-Dichlorobenzene	mg/L	0.6	0.0005	
Styrene	mg/L	0.1	0.0005	
Tetrachloroethylene	mg/L	0.005	0.0005	
Toluene	mg/L	1	0.0005	
Trans-1, 2-Dichloroethylene	mg/L	0.1	0.0005	
Xylenes (total)	mg/L	10	0.0005	
Dichloromethane	mg/L	0.005	0.0005	
1, 2, 4-Trichlorobenzene	mg/L	0.07	0.0005	
1,1,2-Trichloroethane	mg/L	0.005	0.0005	
Synthetic Organic Compounds/Primary				
Alachlor	mg/L	0.002	0.0004	
Aldicarb	mg/L	0.003	0.001	
Aldicarb Sulfoxide	mg/L	0.004	0.0018	
Aldicarb Sulfone	mg/L	0.002	0.0007	
Atrazine	mg/L	0.003	0.0002	
Carbofuran	mg/L	0.04	0.002	
Chlordane	mg/L	0.002	0.0004	
Dibromochloropropane	mg/L	0.0002	–	
2,4-D	mg/L	0.07	0.0002	
Ethylene Dibromide	mg/L	0.00005	–	
Heptachlor	mg/L	0.0004	0.00008	
Heptachlor Epoxide	mg/L	0.0002	0.00004	
Lindane	mg/L	0.0002	0.00004	
Methoxychlor	mg/L	0.04	0.0002	
Polychlorinated Biphenyls	mg/L	0.0005	–	
Pentachlorophenol	mg/L	0.001	0.00008	
Toxaphene	mg/L	0.003	0.002	
2,4,5-TP	mg/L	0.05	0.0004	
Benzo[a]pyrene	mg/L	0.0002	0.00004	
Dalapon	mg/L	0.2	0.002	
Di (2-ethylhexyl) Adipate	mg/L	0.4	0.0013	
Di (2-ethylhexyl) Phthalate	mg/L	0.006	0.0013	
Dinoseb	mg/L	0.007	0.0004	

(Table Continues)

Table 4-1. Primary and Secondary Maximum Contaminant Limits (Continued)

Parameter	Units	MCL	Detection Limit	Comments
Synthetic Organic Compounds/Primary				
Diquat	mg/L	0.02	–	
Endothall	mg/L	0.1	–	
Endrin	mg/L	0.002	0.00004	
Glyphosate	mg/L	0.7	–	
Hexachlorobenzene	mg/L	0.001	0.0002	
Hexachlorocyclopentadiene	mg/L	0.05	0.0002	
Oxamyl (Vydate)	mg/L	0.2	0.004	
Picloram	mg/L	0.5	0.0002	
Simazine	mg/L	0.004	0.00015	
2,3,7,8-TCDD (Dioxin)	mg/L	3E-8	–	

a Systems using sources certified as complete prior to January 22, 2004, must demonstrate compliance with this MCL by January 23, 2006.

b Although the state board of health has not established MCLs for copper, lead, and sodium, there is sufficient public health significance connected with these elements to require inclusion in inorganic chemical and physical source monitoring. Action levels for lead and copper are 0.015 mg/L and 1.3 mg/L, respectively.

c Required only when specific conductivity exceeds 700 µmhos/cm.

4.1.2 Lead and Copper

Lead is a highly toxic metal now banned for use in new public water system pipes, flux, and solder. Infants and pregnant women are especially susceptible to lead poisoning. Lead causes central and peripheral nervous system damage, hindering development in small children. The presence of lead in older facilities is a nationwide concern. All new pipes, fittings, solder, or flux used in the installation or repair of public water systems must now be lead-free (WAC 246-290-230). Lead-free is defined in the state regulations as no more than 8 percent lead in pipes and pipe fittings and no more than two-tenths of a percent lead in solder and flux. Copper is both a primary and secondary drinking water standard. Copper is associated with stomach distress, Wilson's disease, and staining of porcelain.

Initially, water systems must collect and analyze drinking water samples from a full sample of home taps within a six-month period and a second full number of home taps during the next six months. The number of sampling locations is dependent upon the size of the population served by the water system. For South Prairie's population between 101 and 500, ten initial samples are required. All samples for lead and copper are collected as first-drawn samples, consisting of 1 liter of water that has stood motionless within the plumbing system for at least 6 hours. If both initial sample sets are at or below the action levels for lead and copper, the system qualifies for reduced monitoring at fewer samples sites between June and September in each of the following 2 years. In South Prairie's case, sample sites would be reduced from ten to five sites. If the annual samples are also at or below the action levels, monitoring is reduced to once every 3 years between June and September.

EPA lead and copper action levels are 0.015 mg/L and 1.3 mg/L, respectively. However, if the system exceeds the action levels, it must follow the requirements for corrosion control treatment. These requirements include increased sampling and a recommendation by the water system to begin corrosion control treatment within 18 to 24 months after the system exceeds the lead/copper levels.

South Prairie's water has been consistently below action levels for both lead and copper and has qualified the Town for a reduced monitoring frequency every 3 years. The Town most recently performed lead and copper monitoring in May 1999 and November 2003. Five

houses participated in each sampling event. The highest lead and copper results were 0.002 mg/L and 0.17 mg/L respectively and well below action levels. The next lead and copper sampling will be due in 2006.

4.1.3 Revised Radionuclides Rule

Radionuclides are compounds that emit radioactive particles, which essentially "destabilize" nearby cells. Resulting cell destabilization in humans and animals is thought to result in increased likelihood of cancer and/or birth defects.

The revised Radionuclides Rule establishes an MCL for uranium while retaining existing MCLs for combined radium-226/228, gross alpha particle, and beta particle/photon radioactivity (see Table 4-1 above). The revised rule also establishes a Maximum Contaminant Level Goal (MCLG) of zero for all ionizing radiation and new radionuclide monitoring requirements. The MCLs/MCLGs in the revised rule are shown in Table 4-2.

Table 4-2. Revised Radionuclide Rule MCLs and MCLGs

Regulated Radionuclide	MCL	MCLG
Beta/Photon Emitters	4 mrem/year	Zero
Gross Alpha Particle	15 pCi/L	Zero
Combined Radium-226–228	5 pCi/L	Zero
Uranium	30 µg/L	Zero

The timetable for the Revised Radionuclides Rule is shown in Table 4-3.

Table 4-3. Revised Radionuclide Rule Development

Date	Rule Development
December 2000	EPA released Final Radionuclide Rule
September 2002	Application deadline for states wishing to establish primacy
December 8, 2003	Radionuclide Rule Effective Date/Systems must begin initial sampling
December 31, 2007	Systems must complete initial monitoring

Systems determine initial compliance with the revised rule by collecting four consecutive quarterly samples at each entry point to the water distribution system. Compliance is determined based on the annual average of the quarterly samples. Systems exhibiting annual average radionuclide concentrations below the MCL will be eligible for reduced monitoring as follows:

- If an annual average concentration for gross alpha, uranium, and combined radium-226/228 at an entry point is below the detection limit, the system will be allowed to reduce monitoring to one sample every 9 years at that entry point (40 CFR 141.26[a][3][i]).
- If an annual average concentration for gross alpha, uranium, and combined radium-226/228 at an entry point is at or above the detection limit, but at or below one-half the MCL, the system will be allowed to reduce monitoring to one sample every 6 years at that entry point (40 CFR 141.26[a][3][ii]).

- If an annual average concentration for gross alpha, uranium, and combined radium-226/228 at an entry point is above one-half the MCL, but at or below the MCL, the system will be allowed to reduce monitoring to one sample every 3 years at that entry point (40 CFR 141.26[a][3][iii]).

Systems that exhibit an average radionuclide concentration exceeding the MCL will be required to continue sampling and coordinate with DOH to develop treatment strategies.

Prior to implementation of the revised Radionuclide Rule, radionuclides were monitored every 4 years in South Prairie. The most recent radionuclide monitoring for both wells occurred in August 2003 and qualified the Town for a grandfathering provision of the rule (i.e., samples for gross alpha radionuclide between June 1, 2000, and December 7, 2003, can be used to waive certain monitoring requirements in the future). This grandfathering provision allows the initial monitoring requirements to consist of sampling for Radium 228 only. Radium 228 samples were performed in April and October 2005 for Well No. 1 and May and November 2005 for Well No. 2. The results of all of the tests were nondetect. Based on the results of these samples, South Prairie will begin a monitoring program pursuant to the revised rule in 2007.

4.1.4 Total Coliform Rule

Coliform bacteria, though not necessarily disease-causing themselves, can be indicators of organisms that can cause gastroenteric infections, dysentery, hepatitis, typhoid fever, cholera, and other infectious diseases. Coliform bacteria reside in the intestinal tracts of warm-blooded mammals and are excreted in large numbers with feces. Fecal coliforms are a subset of total coliforms and are generally a better indicator of direct fecal contamination. *Escherichia coli* (*E. coli*) is a subset of fecal coliforms and is an even better indicator of fecal contamination. Coliforms can be found in sewage, soils, surface waters, and vegetation.

The coliform rule, WAC 246-290-310, is based on a presence/absence of total coliforms in routine samples. If coliforms are detected in a routine sample, the sample must be analyzed for fecal coliforms or *E. coli* and four repeat samples collected within 24 hours of the original sample. The first repeat sample is collected at the site of the sample with coliform presence. The second repeat sample is collected within five active service connections upstream of the sample with coliform presence. The third repeat sample is collected within five active service connections downstream of the site with coliform presence. The fourth repeat sample is performed at any other active service or from a location most susceptible to contamination (i.e., well or reservoir). Other follow-up actions are stipulated in WAC 246-290-320 including department notification, public notification, and correction procedures. A minimum of five routine samples are required the month following one or more positive samples.

All public water systems are required to collect samples for coliform bacteria analysis. For Group A systems, coliform bacteria sample collections are based upon a written monitoring plan. The sampling sites and monitoring frequency indicated in the plan must be representative of the water throughout the distribution system. Coliform monitoring plans are subject to review and to revision as directed by DOH. The plan must be kept on file with the water system and made available to DOH at the time of any routine evaluation or special site visit. The Town's Coliform Monitoring Plan is in Appendix F.

Bacteriological samples are collected monthly in South Prairie at one of three sampling sites in the distribution system:

- Station No. 1: 606 Tubbs Road
- Station No. 2: 318 SW 1st Street
- Station No. 3: 25014 South Prairie Road E.

The sampling site is rotated each month, as follows:

Sample Site No. 1	Sample Site No. 2	Sample Site No. 3
November	December	January
February	March	April
May	June	July
August	September	October

Any additional bacteriological monitoring is based upon the presence or absence of coliforms. A positive test will trigger repeat sampling requirements pursuant to WAC 246-290-320. South Prairie had a positive test for bacteria in August 2004, but after repeat sampling, the results were found satisfactory and attributed to pollen or dust in the original sample.

In the event of a repeat positive test result, South Prairie will respond pursuant to WAC 246-290-320 requirements, and will notify DOH as well as the public.

4.1.5 Groundwater Disinfection

The purpose of disinfection is to destroy organisms that cause disease. Without appropriate disinfection, a water supply can be susceptible to contamination. Two types of disinfection are normally practiced, primary and secondary. Primary disinfection is applied at the source. This is usually accomplished by maintaining a disinfectant residual in a tank for a period of time necessary to kill pathogenic organisms. Secondary disinfection is maintained in the distribution system. This is accomplished by assuring disinfectant residual remains after primary disinfection to kill pathogenic organisms that may be introduced after the source through cross connections, subsequent regrowth, etc.

Per WAC 246-290-251, all groundwater sources not under the influence of surface water shall have continuous disinfection consistent with the following requirements:

- The combination of free chlorine residual concentration ($C_{mg/\ell}$) and chlorine contact time ($T_{minutes}$) CT product (C x T) shall be greater than or equal to 6, prior to or at the first water customer.
- A free chlorine residual, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide, shall be detectable throughout all active portions of the distribution system (a system with a heterotrophic plate count of 500 organisms/ml or less is considered to have detectable chlorine residual).

DOH may require increased chlorine residual concentrations, increased contact times, or additional treatment as necessary to protect public health.

Systems using chemical disinfectants such as South Prairie must monitor residuals on a daily basis and at the same time and location of routine and repeat coliform sampling. South Prairie monitors chlorine residual every weekday at Sample Station No. 1 as described above in Section 4.1.4. This location will vary once a month when rotating coliform samples are taken at one of three other sampling stations.

4.1.6 Disinfectants and Disinfection Byproducts

While effective in controlling many microorganisms, disinfecting chemicals commonly react with natural and organic matter in water to form disinfection byproducts. Disinfection byproducts are known to be carcinogenic in lab animals. Recent studies have also suggested a weak association between certain cancers and reproductive/development effects with exposure to chlorinated water.

Stage 1 of the Disinfectants and Disinfection Byproducts Rule (DDBPR) updates and supersedes the 1979 total trihalomethanes regulations. The purpose of the DDBPR is to reduce exposure to three disinfectants and many disinfection byproducts. The parameters to be monitored by each water system are specific to the disinfectant chemicals utilized. Maximum Residual Disinfectant Levels (MRDLs) for disinfectants and MCLs for disinfection byproducts applicable to South Prairie (sodium hypochlorite disinfection) are as shown in Table 4-4. Stage 2 of the DDBPR is still in draft form, and is discussed in Section 4.2.2.

Table 4-4. Disinfection Residual and Byproduct Standards

Disinfectant Residual	MRDL (mg/L)
Chlorine	4.0 (as Cl_2)
Disinfection Byproduct	MCL (mg/L)
Total Trihalomethanes (TTHMs)	0.080
Haloacetic Acids (HAA5)	0.060

Compliance with the Stage 1 DDBPR requirements for disinfectant residuals is based upon a running annual average, computed quarterly, of monthly averages of all samples collected (including those collected in conjunction with coliform sampling). Disinfectant residual samples are collected at the same locations as bacteriological samples are collected. The system is in violation if the average of any four consecutive quarters exceeds the MRDL listed in Table 4-4 above. If found to be in violation of the MRDL, the system is required to notify the public (per 40 CFR 141.201 through 207 and WAC 246-290 Part 7, Subpart A), report the exceedance to DOH (per WAC 246-290-480), and complete follow-up action as outlined in WAC 246-290-320.

Disinfection byproduct compliance is based upon the running annual average of sampling results. Disinfection byproduct samples are collected at locations within the distribution system that represent the maximum residence time for each treated source during the month of warmest water temperature per 40 CFR 141.132(b)(1)(i). For South Prairie, one sample per year is required, because it is a system (a) using only groundwater not under direct influence of surface water, (b) using chemical disinfectant, and (c) serving fewer than 10,000 people. A reduced monitoring frequency may be permitted if the following conditions in Table 4-5 apply.

Table 4-5. Reduced Monitoring Requirements

Number of Years of Sampling	TTHM Annual Average	HAA5 Annual Average	Reduced Sampling Schedule
Two consecutive years of sampling indicate:	Less than or equal to 0.040 mg/L	Less than or equal to 0.030 mg/L	One sample per treatment plant per 3-year monitoring cycle.
One year of sampling indicates:	Less than or equal to 0.020 mg/L	Less than or equal to 0.015 mg/L	One sample per treatment plant per 3-year monitoring cycle.

The system is in violation if the annual average exceeds the MCLs in Table 4-1. Systems in violation must comply with the notification and follow-up actions listed above.

South Prairie's last test for TTHM and HAA5 in August 2004 produced results less than 0.020 mg/L and 0.015 mg/L, respectively. South Prairie tests every 3 years at the discretion of DOH.

4.1.7 Inorganic Chemical and Physical Characteristics Monitoring

Inorganic chemicals (IOCs) and physical characteristics are monitored every 3 years. The most recent full sampling was conducted in November 2003, although additional monitoring of iron and manganese sampling was performed throughout 2004. Consistent reductions in iron and manganese below the MCLs for both wells after treatment indicate the proper functioning of filtration systems, and DOH has permitted iron and manganese sampling to occur on the same schedule as all other inorganic chemicals. South Prairie meets all Maximum Contaminant Levels (MCLs) for IOCs and physical characteristics identified in Table 4-1. See Section 4.2.1 for information about the new MCL for arsenic and the impact on South Prairie.

4.1.8 Nitrate and Nitrite Monitoring

Nitrate is a chemical found in most fertilizers, in manure, and in the liquid waste discharged from septic tanks. Nitrates are converted into nitrites once consumed in the body. Nitrate can affect red blood cells and reduce their ability to carry oxygen to the body. Excessive levels of nitrate in drinking water have caused serious illness and sometimes death.

Nitrates are required for testing every year. South Prairie has consistently monitored for nitrates yearly and with results consistently well below the MCL. The most recent nitrite sampling available at the time of this report was performed in August 2004.

In 1993, levels of nitrates in other parts of the region were climbing rapidly. DOH, in cooperation with the Tacoma Pierce County Health Department, conducted an extensive study of the nitrate levels in central Pierce County. Although the MCL is 10 mg/L, the Action Level is set at 5.0 mg/L. Samples collected by South Prairie at all sources indicate that nitrate concentrations are less than 0.2 mg/L and well below the Action Level.

4.1.9 Asbestos Monitoring

Asbestos fibers may be released from natural sources such as erosion of asbestos-containing ores, but the primary source is through the wear or breakdown of asbestos-containing materials, particularly from the wastewaters of mining and other industries, and by the use of asbestos cement pipes in water supply systems. The regulation for asbestos monitoring in water became effective in 1992. Between 1993 and 1995, water suppliers were required to collect a single water sample and analyze it for asbestos above 7 million fibers/L. If present above this level, the system must continue to monitor for asbestos in accordance with 40 CFR 141.23(b). DOH is allowed to waive this testing if the system is reliably and consistently below the MCL level for asbestos.

South Prairie performed its most recent asbestos monitoring in December 1997 with results less than 0.18 million fibers/L. This has qualified South Prairie for a 9-year monitoring waiver from the Department of Health. The next sample would be required in 2007.

4.1.10 Synthetic Organic Compound Monitoring

Synthetic organic chemicals (SOCs) are manmade chemicals (i.e., pesticides and herbicides) that can appear in drinking water as a result of careless application or improper disposal. SOCs are typically monitored every 3 years in accordance with WAC 246-290-300(8)(c); however, South Prairie falls within an area waiver and does not require routine testing.

4.1.11 Volatile Organic Compound Monitoring

Like SOCs, volatile organic compounds (VOCs) can appear in drinking water as a result of careless application or improper disposal. VOCs combust or flash when heated. These chemicals are generally found in cleaning solvents, oil-based lubrication products, adhesives, and plastic and petroleum alloys. To date, VOCs have not been detected at any of the South Prairie sources. The most recent VOC sampling was conducted for both wells in June 2000 and June 2003 and no contaminants were detected. VOCs are monitored every 3 years.

4.1.12 Water Quality Customer Complaints

The Town of South Prairie has received very few complaints regarding its water. When a complaint is received, a complaint form is filled out by the Water System Manager. Of the one complaint received in 1999, corrective action was taken the following day. Complaints prior to this have generally been about the color of the water due to high concentrations of iron and manganese. Since treatment of all sources for iron and manganese in 2001 and 2002, no complaints have been received.

4.2 UPCOMING WATER QUALITY REGULATIONS

4.2.1 Arsenic National Primary Drinking Water Regulation

Arsenic is a naturally occurring element that comes from natural rock formations, especially those of volcanic origin. Ingestion of arsenic has been linked to the development of certain types of cancers, cardiovascular problems, and diabetes. The MCL for arsenic, effective January 23, 2006, has been reduced from 0.05 mg/L to 0.010 mg/L as shown in Table 4-1. The EPA is currently considering revising the rule to 0.030 mg/L, but no timeline or decision has been made as of the date of this document, therefore it is assumed that the most stringent criteria of 0.01 mg/L will apply.

Sampling results from South Prairie's Well No. 1 demonstrate arsenic concentrations above the MCL, between 0.021 mg/L in 2002 to 0.015 mg/L in 2003. Arsenic concentrations recorded at Well No. 2 appear to be within the new MCL with a concentration around 0.004 mg/L. Additional monitoring by South Prairie will be implemented throughout 2006 and 2007 to confirm the results of these tests.

South Prairie will be required to perform arsenic treatment if any of the following is true:

- A single sample >0.04 mg/L.
- Average of two quarters >0.020 mg/L.
- Running annual average (four consecutive quarters) >0.010 mg/L.

It is assumed that results obtained in 2006 and 2007 will require South Prairie to treat for arsenic at this source.

The following options are available to South Prairie but will require further study to make any determination as to feasibility:

- Non-Treatment Alternatives – Involves the blending of Well No. 1 with Well No. 2 prior to distribution, inactivating the source, or connecting to an adjacent water system such as the City of Tacoma. Development of a new source may be feasible if the existing well can be retrofitted to collect water below the arsenic-producing strata.

- Iron Oxidation/Filtration – Involves the oxidation of naturally occurring iron, which binds to arsenic and is then removed by filtration. Iron can be added to increase the amount of arsenic removed by filtration. The process is most effective when pH is less than 7.5 and the concentration of iron to arsenic is 20:1 or greater.
- Ion Exchange – Involves the exchange of chloride ions for arsenic ions and periodic regeneration of the ion-exchange resin with a salt solution. Health concerns associated with system operations and brine disposal limit the applicability of this technology for most small systems.
- Sorbents – Adsorb arsenic from the water. Well water is passed through a pressure vessel containing a sorbent, which is periodically replaced. The frequency of replacement will vary depending upon the sorbent used, pH, and other water quality parameters. All sorbents need to be National Sanitation Foundation (NSF) 61 approved.

The following calculations indicate that blending could be a potential solution:

Well No. 1:

Average arsenic concentration (four samples) from test results, May 1999 to November 2003: **0.016 mg/L**

Flow rate: 55 gpm = **208 L/min**

Well No. 2:

Average arsenic concentration (three samples) from test results, May 1999 to November 2003: **0.004 mg/L**

Flow rate: 325 gpm = **1,230 L/min**

Total Arsenic Load:

(0.016 mg/L x 208 L/min) + (0.004 mg/L x 1,230 L/min) = 8.248 mg/min

8.248 mg/min/(208 L/min + 1,230 L) = **0.0057 mg/L < MCL 0.01 mg/L**

The results were verified by performing the same calculations while using the highest arsenic concentrations on record for Well No. 1 and Well No. 2, 0.021 mg/L and 0.005 mg/L respectively. This resulted in a maximum arsenic concentration of 0.0073 mg/L, which is also below the MCL for arsenic.

A detailed study of additional arsenic treatment options will be required to make an appropriate recommendation to the Town.

4.2.2 Stage 2 Disinfectants and Disinfection Byproducts Rule

The Stage 2 DBPR was proposed in August 2003 and promulgated on December 15, 2005. This rule builds on the premise of Stage 1 by further monitoring microbial and disinfection byproducts.

Under the Stage 2 DBPR, systems conduct an evaluation of their distribution systems, known as an Initial Distribution System Evaluation (IDSE), to identify the locations with high disinfection byproduct concentrations. These locations will then be used by the systems as the sampling sites for Stage 2 DBPR compliance monitoring. A system can fulfill the IDSE requirements by certifying that all individual TTHM and HAA5 monitoring results for compliance with the Stage 1 DBPR are less than or equal to 0.040 mg/L for TTHM and 0.030 mg/L for HAA5 during a prescribed 2-year time period. In addition, the system must not have had any Stage 1 DBPR monitoring violations for TTHM and HAA5 during the same

period. South Prairie will likely be able to certify such compliance. Certification will be required to the EPA by April 1, 2008. Monitoring under Stage 1 compliance must continue until additional sampling under Stage 2 begins in October 2013. A Stage II compliance monitoring plan, similar to the Stage I plan, must be developed prior to any monitoring and must be kept on file for state and public review. Additional information regarding the details of this new rule has been published on the EPA's website, http://www.epa.gov/safewater/disinfection/stage2/index.html.

4.2.3 Groundwater Rule

An informal draft Groundwater Rule was posted for comment by the EPA on May 10, 2000. No implementation schedule was available at the writing of this plan. The Groundwater Rule proposal is based on the need to protect against bacteria and viruses found in drinking water. The draft rule establishes protective measures and target systems to identify water systems at high risk for contamination. The proposed rule is based on the ideas within the following regulations:

- Total Coliform Rule.
- Surface Water Treatment Rule.
- Interim Enhanced Surface Water Treatment Rule.
- Stage 1 Disinfection/Disinfection Byproducts Rule.
- Underground Injection Control Program.
- Source Water Assessment and Protection/Wellhead Protection Program.

The requirements of the proposed Groundwater Rule are outlined below.

Sanitary Surveys

The state shall conduct sanitary surveys on all community water systems every 3 years. During the survey, the state will compile a list of observed system deficiencies to be provided to the system within 30 days of the survey. The codification of this rule will provide the state with the authority to enforce all corrective action required to remedy all system deficiencies defined during sanitary surveys.

Hydrological Sensitivity Assessment

The state shall perform a one-time assessment of sensitivity for all systems that are unable to maintain a minimum 4-log removal (99.99 percent virus inactivation through disinfection). A system that is determined to be hydrologically sensitive must be monitored monthly as outlined under "Source Water Monitoring."

Source Water Monitoring

Groundwater systems that are determined to be located within sensitive aquifers shall conduct monthly sampling for fecal indicators. The sampling frequency may be reduced after 12 consecutive months of negative results. Additionally, if routine coliform sampling within the distribution system yields coliform-positive results, then the system shall, as a supplement to the additional sampling required by the Total Coliform Rule, collect a source water sample and monitor for fecal indicator.

Corrective Actions

If a system is notified by the state that a significant deficiency is present within the distribution system or that a fecal indicator is present within the system, then corrective action must be taken within 90 days of notification. If corrective action includes treatment implementation or expansion, then the system must monitor to ensure that a 4-log inactivation is maintained.

Compliance Monitoring

Compliance monitoring applies to all water systems that disinfect as a corrective action or to avoid source water monitoring. As written, disinfection system monitoring must be conducted as outlined in Table 4-6.

Table 4-6. Groundwater Rule Compliance Monitoring Requirements

System Size	Monitoring Frequency
<3,300	Daily disinfection treatment monitoring.
>3,300	Continuous disinfection treatment monitoring.

If monitoring shows the disinfection concentrations within the distribution system to be below the required level, then the system must notify the state or restore the required disinfection level within 4 hours.

Communication with DOH personnel indicates that the schedule for finalizing and enacting the Groundwater Rule is unknown. With the promulgation of the rule, it may be necessary to adjust the chlorine dosages as needed to maintain a 4-log (99.99 percent removal) inactivation and/or removal of viruses.

4.2.4 Radon Rule

Radon is a colorless, odorless naturally forming gas produced by uranium decay. Radon intake, from both drinking water and indoor air, is thought to increase the risk of cancer. In November 1999, EPA proposed a general Radon 222 MCL of 300 pCi/L for all Group A water systems, unless the system develops and implements a radon "multimedia mitigation" program. Communities with a multimedia mitigation program in place will be subject to a less stringent MCL of 4,000 pCi/L for radon in drinking water. The proposed Radon Rule does not specify all aspects to be included in a multimedia mitigation program, simply stating that only plans incorporating the following components shall be approved:

- Public involvement in program development.
- Quantitative goals for reducing radon in new and existing homes.
- Strategies to achieve said quantitative goals.
- Plans for tracking and reporting project results.

The Radon Rule was originally scheduled for promulgation in 2001. It is unclear at this time when this rule will be finalized and become effective for water systems in Washington State. Upon final ruling, however, South Prairie will be required to collect quarterly water samples at each of the water distribution system entry points for 1 year, and then once every year thereafter.

If the radon concentration at the sources is found to be below the proposed MCL, South Prairie would be allowed to request a reduced sampling frequency. If sample analyses indicate radon concentrations greater than the proposed MCL, then a choice must be made whether to implement treatment at the source, or to develop a multimedia mitigation program. Per an initial EPA benefit-cost analysis, the implementation of radon treatment at the source may be cost prohibitive at five times greater than the development and implementation of a multimedia mitigation program.

5. CONSERVATION, WATER RIGHTS, SYSTEM RELIABILITY, AND INTERTIES

5.1 CONSERVATION PROGRAM DEVELOPMENT AND IMPLEMENTATION

The discussion of South Prairie's conservation program, in accordance with the DOH publication titled *Conservation Planning Requirements: Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs*, is included below. A checklist documenting the required elements for the water conservation program is attached in Appendix G.

5.1.1 Goals and Objectives

South Prairie seeks the most effective use of their produced water. Overall, the Town seeks to reduce overall consumption by at least 5 percent by 2015 and reduce the unaccounted water to 10 percent of the total produced water. The following goals will assist the Town in meeting these objectives:

- Increase public awareness of the need to reduce water consumption.
- Reduce system leakage and unaccounted water which is currently 21 percent. DOH recommends a goal of 10 percent.
- Provide customers information about their historical water usage.

5.1.2 Evaluation of Conservation Measures

As a minimum, DOH requires implementation of two conservation planning measures; **source meter installation** and **conservation program promotion**. While South Prairie currently meters all of its sources, it does not currently promote its conservation program. Promotion can include a variety of means to publicize the need for water conservation. If the water use data from a water system indicates that unaccounted-for water is greater than 20 percent, as is the case in South Prairie, the water conservation program must also include a leak detection and repair program. South Prairie does not currently have a leak detection program.

DOH also requires, at a minimum, a cost benefit evaluation of the use of **service meters** and **conservation pricing**. South Prairie has already implemented both of these programs. Base rate and volumetric charges are established in Ordinance No. 349 and as amended by Ordinance Nos. 374, 400 and 401. A copy of each of these Ordinances is included in Appendix A. Service meters are installed on all customer accounts, and the Town will pursue metering of other water consumption activities such as fire department truck filling, construction activities, and system flushing.

Numerous other non-mandatory water conservation programs are documented in the DOH document titled *Conservation Planning Requirements: Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs*. The only other program that could be realistically implemented is inclusion of water consumptive history with each customer's bill. This would require the purchase of new billing software by the Town. The current antiquated software does not create reports to monitor water conservation; it cannot export information to other programs; and technical support is extremely limited.

In summary, the following activities are not currently performed by South Prairie and will be evaluated for implementation:

- Mandatory:
  - Program Promotion.
  - Unaccounted Water/Leak Detection.
- Non-Mandatory:
  - Customer bill showing consumption history.

5.1.3 Identification of Selected Conservation Activities

Program Promotion

Description – This element involves publicizing the need for water conservation through news articles, public water system bill inserts, or other means. Program promotion includes promoting efficient indoor and outdoor water usage; distribution of Ecology/Health conservation brochures or other printed material; informing customers, builders, and contractors of new plumbing code regulations requiring efficient plumbing fixtures; and other efforts. The following sources offer numerous publications or pamphlets for residential distribution:

- American Water and Energy Savers: http://www.americanwater.com/49ways.htm
  49 ways to save water indoors and out.
- Consortium for Energy Efficiency: http://www.cee1.org/
  A national, nonprofit organization that promotes energy-efficient products and services and offers a list of washers and other appliances with information about energy and water use ratings.
- Everett Public Utilities:
  http://www.everettwa.org/community/default.asp?sectionid=3&parentid=2
  Tips on water conservation in the home.
- Get Wise: http://www.getwise.org/
  An interactive home tour for adults and children provides water- and energy-saving ideas. There are also free resources for teachers.
- Saving Water Partnership: http://www.savingwater.org/inside.htm
  Detailed how-to information on saving water around the home. Resources include instructions for identifying and repairing leaks, activities for children, and teaching materials. Also has details on rebates.
- Snohomish County PUD: http://www.snopud.com/WaterResources/
  GeneralInformation/WaterConservationTips.ashx?p=2078
  Tips on conserving water in the home.
- Tacoma Water: http://www.ci.tacoma.wa.us/water/
  WaterConservation/conservhom.htm
  Extensive information on toilets and statistics on how various conservation methods save water.
- Toiletology 101: http://www.toiletology.com/conserve.shtml
  Extensive information on the care and repair of toilets, including how to identify leaks.

- Water Conservation Coalition of Puget Sound:
  http://www.bewatersmart.net/whyconserve.htm
  The Coalition is made up of water-conservation specialists from most of the water utilities in the central Puget Sound region. In addition to water-saving tips for home and school, the site links to numerous other resources for teachers and water customers.
- Water Saver Home: http://www.h2ouse.org/
  Provides a virtual home tour to uncover water saving opportunities in each area of the home. Lists top actions to save water and calculate a water budget.
- Water Use it Wisely: http://www.wateruseitwisely.com/
  Lists more than 100 ways to conserve water both indoors and outdoors. Also provides a Family Water Audit.
- American Water Works Association: http://www.awwa.org/advocacy/learn/conserve/
  An extensive Web site about water conservation.
- Municipal Research and Services Center of Washington:
  http://www.mrsc.org/Subjects/Environment/water/wc-measures.aspxNo. Leakdetect
  An extensive Web site with numerous links to other Web sites on water conservation.
- Environmental Protection Agency:
  - EPA Web site on water use efficiency:
    http://www.epa.gov/owm/water-efficiency/index.htm
  - EPA Website on minimizing water usage in landscape:
    http://www.epa.gov/seahome/landscp.html
- Washington State Department of Health:
  http://www.doh.wa.gov/ehp/dw/our_main_pages/water_use_efficiency.htm
  Offers consumer brochures, No. 331-120 (Brochures 1 through 8).

Schedule – Program implementation will begin within 1 year of the adoption of this Water System Plan. Full implementation will be in effect within 3 years.

Budget – See estimates provided in Chapter 9, "Improvement Program," as Project O&M 8: Public Education Program.

Monitoring Requirements – Success will be measured with (a) the inclusion of information (brochures and inserts) with bills every other month, and (b) flyers/brochures posted or made available at City Hall.

Target Water Savings Projections – Reduction of the peak-day demand is calculated below. By reducing the peak-day demand by 5 percent, the Town will have the ability to serve an additional five ERUs.

69,700 gpd[1] x 5 percent = 3,485 gpd

1 ERU = 239 gpd = 670 gpd/ERU (peak)[2]

3,485 gpd/(670 gpd/ERU) = 5 ERUs

The main benefit of the program is increasing public awareness of their water source and its limited availability.

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[1] Average residential water usage (1999 to 2004) = 24,893 gpd. Maximum day demand, assuming 2.80 peak factor, = 69,700 gpd.

[2] Peak factor = 2.80; ERU = 239 gpd includes system losses.

Bill Showing Consumption History

Description – This program element involves providing billings that show the percentage of increase or decrease in water use over the same period from the previous year.

Schedule – Program implementation will begin within 2 years of the adoption of this Water System Plan. Full implementation will require 1 year for a total of 3 years to fully implement this new program.

Budget – See estimates provided in Chapter 9, Improvement Program, as Project O&M 2: Meter Reading/Billing Software and Equipment.

Monitoring Requirements – Success will be measured with the acquisition of a new billing program and identification of water use reductions during monthly meter readings.

Target Water Savings Projections – Reduction of the peak-day demand is calculated below. By reducing the peak-day demand by 5 percent, the Town will have the ability to serve an additional five ERUs.

69,700 gpd[3] x 5 percent = 3,485 gpd

1 ERU = 239 gpd = 670 gpd/ERU (peak)[4]

3,485 gpd/(670 gpd/ERU) = 5 ERUs

The main benefit of the program is increasing consumer awareness of water consumption over previous years. It will also improve staff efficiency and aid in future updates to the Water System Plan.

Unaccounted Water/Leak Detection

Description – This program element involves regular and systematic locating and repairing leaks in system mains and laterals, including on-site testing using computer-assisted leak-detection equipment on water-distribution mains, valves, services, and meters. In the case of South Prairie, it will also include recording of unmetered water usages including fire hydrant flows, fire hydrant flushing, blowoff uses, fire truck filling, and mainline construction flushing. All other indiscriminate uses are prohibited. Reduction of unaccounted water will provide the greatest water conservation returns in South Prairie's water system.

South Prairie attempts to estimate and track unmetered uses by observing flow rate and duration of flow. When water use from unmetered discharges is monitored/estimated systematically, unaccountable water can be reduced significantly. Unmetered uses and methods for estimating water usage are described below.

- *Fire Hydrant Flows*: South Prairie is required to perform flow tests on fire hydrants for the purpose of system analysis and engineering data. Fire flow tests should be timed to determine the approximate number of gallons used during the test. The quantity of water used in the fire flow test can be calculated based on the orifice size and the velocity of the flow at the center of the orifice as measured by piezometer. In this calculation, it is typical to report the observed flow in gallons per minute. The fire flow tests are timed, in minutes and seconds. The flow in gallons per minute can be multiplied by the test time, yielding an approximate volume of water used during the test.

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[3] Average residential water usage (1999 to 2004) = 24,893 gpd. Maximum day demand, assuming 2.80 peak factor, = 69,700 gpd.

[4] Peak factor = 2.80; ERU = 239 gpd includes system losses.

- *Fire Hydrant Flushing*: South Prairie is required to flush fire hydrants to rid the pipe of any unwanted deposition and to replace stagnant water that may reside in the localized area. Flushing is similar to the fire hydrant flows mentioned above, with the exception that the apparatus attached to the hydrant used to determine the rate of flow is not used. To determine the amount of water used during flushing, the flow time should be documented. Based on previous fire flow records, the gallons per minute are multiplied by the flow time to calculate the total gallons used. Static pressure of the system prior to each flushing action helps calibrate any variation in flow.
- *Blowoffs*: Typical blowoffs throughout the South Prairie distribution system are 2 inches in size. The Town should purchase a double-check assembly with meter and use it to measure water lost during any blow-off activities.
- *Fire Truck Sales*: Water usage by fire trucks is currently not metered or billed. Metering of water during filling operations should be implemented through use of a meter assembly or estimates should be made during each fill based on the size of the truck tank.
- *Mainline Construction Flushing*: Mainline construction flushing discharges any foreign object inside a newly constructed mainline. South Prairie currently does not monitor contractor usage of water during construction activities. The Town should purchase a double-check assembly with meter and require contractors, through a permitting process, to use it during construction activities that require water.

Leaks in the distribution system and at meters contribute to unaccounted water. Over time, the water lost due to leaks can be significant. As tracking of the above non-metered water uses improves, leaks will be considered the largest source of unaccounted water. The following measures will be implemented to minimize unaccounted water from leaks:

1. A test section is identified by having an inline valve at each end of the test section, with all services identified and meter stops operated.
2. The customers served by the line to be tested are notified several days before the actual test.
3. The test is initiated by closing all meter stops on all known services along the test section.
4. A pressure gauge is installed at one end of the test section, on a service, fire hydrant, or blowoff. The static mainline pressure is observed and recorded.
5. A pressure pump is installed at the other end of the test section as far away from the pressure gauge station as possible.
6. The in-line isolation valves at each end of the test section are closed.
7. The pressure gauge is observed. If a drop in pressure is noted, the drop in pressure is documented versus time and plotted.
8. If a pressure drop is detected, the pressure pump is used to bring the line pressure up to the system static pressure. The time is noted to determine the duration. The amount of water needed to bring the test section up to a static system is also noted.
9. Knowing the time and amount of water it takes to maintain system pressure, the gallons per hour loss can be calculated.
10. Repair of test sections will be prioritized by the largest loss of unaccounted water.

Schedule – Program implementation will begin within 2 years of the adoption of this Water System Plan. Full implementation will be ongoing until the next update to the Water System Plan.

Budget – See estimates provided in Chapter 9, "Improvement Program," as Project O&M 4: Leak Detection Program. This does not include any additional expenses to repair identified leaks. Project D4 – Water Main Replacement and Upgrades Next 20 Years should be used to repair identified leaks.

Monitoring Requirements – Success will be measured with the accurate metering of non-revenue-generating water. Success will also be measured with the identification of system leaks and appropriate repairs within a timely manner (within 1 year of identification).

Target Water Savings Projections – Reduction of the peak-day demand is calculated below. By reducing the leakage to less than *10 percent of the Town's overall production* (an 11-point decrease from the Town's current unaccounted water percentage of 21 percent), the Town will have the ability to serve an additional 24 ERUs.

157.0 ac-ft per year at year 2025 *without* conservation measures.

141.3 ac-ft per year at year 2025 *with* conservation measures.

Difference = 15.7 ac-ft per year = 5.12 million gallons per year = 14,028 gpd.

1 ERU = 573 gpd/ERU (assuming conservation activities are implemented).

14,028 gpd/573 gpd/ERU = 24 ERUs.

5.2 SOURCE OF SUPPLY ANALYSIS

Each source that a system draws upon for service is to be evaluated as to its limiting aspect such as well or aquifer capacity (yield), installed pumping capacity, design treatment limitations, or legal limitations.

5.2.1 Instantaneous Source Capacity

Instantaneous source capacity is evaluated by comparing well-yield tests from the original well logs in Appendix H, pump capacity, instantaneous water rights (Qi) and observed withdrawal rates. Table 5-1 summarizes this data for both sources in the South Prairie system. From this table, the total instantaneous source capacity for the South Prairie system is limited by the smallest value, or 380 gpm.

Table 5-1. Instantaneous Source Capacity

Well No.	Well Yield (gpm)[a]	Pump Capacity (gpm)	Water Right (gpm)	Observed Withdrawal Rate after Treatment (gpm)
01	150	60	100	55
02	415	350	350	325
Total	**565**	**410**	**450**	**380**

[a] Informational only. Well yield results were performed during drilling of wells and may no longer be accurate. In the case of Well No. 1, sustained withdrawal of 55 gpm can frequently cause low water level shut-off of the pump.

The projected peak-hour demand exceeds 380 gpm in year 2021 (see Section 2.2.5). In 2021, peak hour demand is anticipated to reach 403 gpm. By year 2025, the peak hour demand is anticipated to reach 457 gpm. Increased pumping capacity or an intertie will be explored in

Chapter 9 to address this deficiency. Modifications to existing water rights may be considered in future Water System Plan updates since the demand exceeds water rights by only a small fraction at this time.

5.2.2 Annual Source Capacity

Annual source capacity is estimated by evaluating extended source withdrawal capacity against total annual water rights (Qa). For source withdrawal capacity, the water system operator estimates that Well No. 1 can only be run approximately 60 percent of the time to avoid excessive drawdown and pump cycling. Well No. 2 has the assumed potential to operate 100 percent of the time. The Town's total source capacity for an entire year of operation assuming 60 percent operation for Well No. 1 and 100 percent for Well No. 2 is shown in Table 5-2 below. From this table, the total annual source capacity for the South Prairie system is limited by the smallest value, or 250 ac-ft/yr.

Table 5-2. Annual Source Capacity

Well No.	Volume Pumped (ac-ft/yr)	Water Right (ac-ft/yr)
01	53	60
02	524	250[a]
Total	**577**	**250[a]**

[a] The water right for Source 02 is supplementary to Source 01 and permits a maximum of 250 ac-ft/yr from both sources combined. Therefore, this is the limiting Qa to be withdrawn from all sources.

5.2.3 Source Evaluation

Present source requirements are presented in Table 5-3. Required source is equal to maximum day demand, which was calculated in Section 2.2.5, "Water Demand Forecasting."

A comparison of instantaneous and annual source capacity against projected maximum day and peak-hour demands calculated in Chapter 2 is presented in Table 5-3, "Source Surplus/Deficiency."

Table 5-3. Source Surplus/Deficiency

Year	Daily Source Capacity[a] (gpd)	Annual Source Capacity[b] (ac-ft/yr)	Maximum Day Demand (gpd)[c]	Total Water Demand (without conservation) (ac-ft/yr)[d]	Surplus/ (Deficiency) (gpd)	Surplus/ (Deficiency) (ac-ft/yr)
2006	515,520	250	113,115	45.3	402,405	205
2010	515,520	250	119,417	47.8	396,103	202
2015	515,520	250	165,079	66.0	350,441	184
2020	515,520	250	244,229	97.7	271,291	152
2025	515,520	250	305,333	122.1	210,287	128

[a] 55 gpm * 1,440 min/day * 60 percent = 47,520 gpd 325 gpm * 1,440 min/day * 100 percent = 468,000 gpd
47,520 gpd + 468,000 gpd = 515,520 gpd

[b] As shown in Table 5-2, water rights is the limiting factor for annual source capacity.

[c] From Table 2-8 "Forecasted Water Demand Without Conservation."

[d] Conservatively assumed little or no conservation as part of source analysis. The Town of South Prairie intends to pursue its water conservation program aggressively.

Average Day Demand Versus Source Capacity and Water Rights

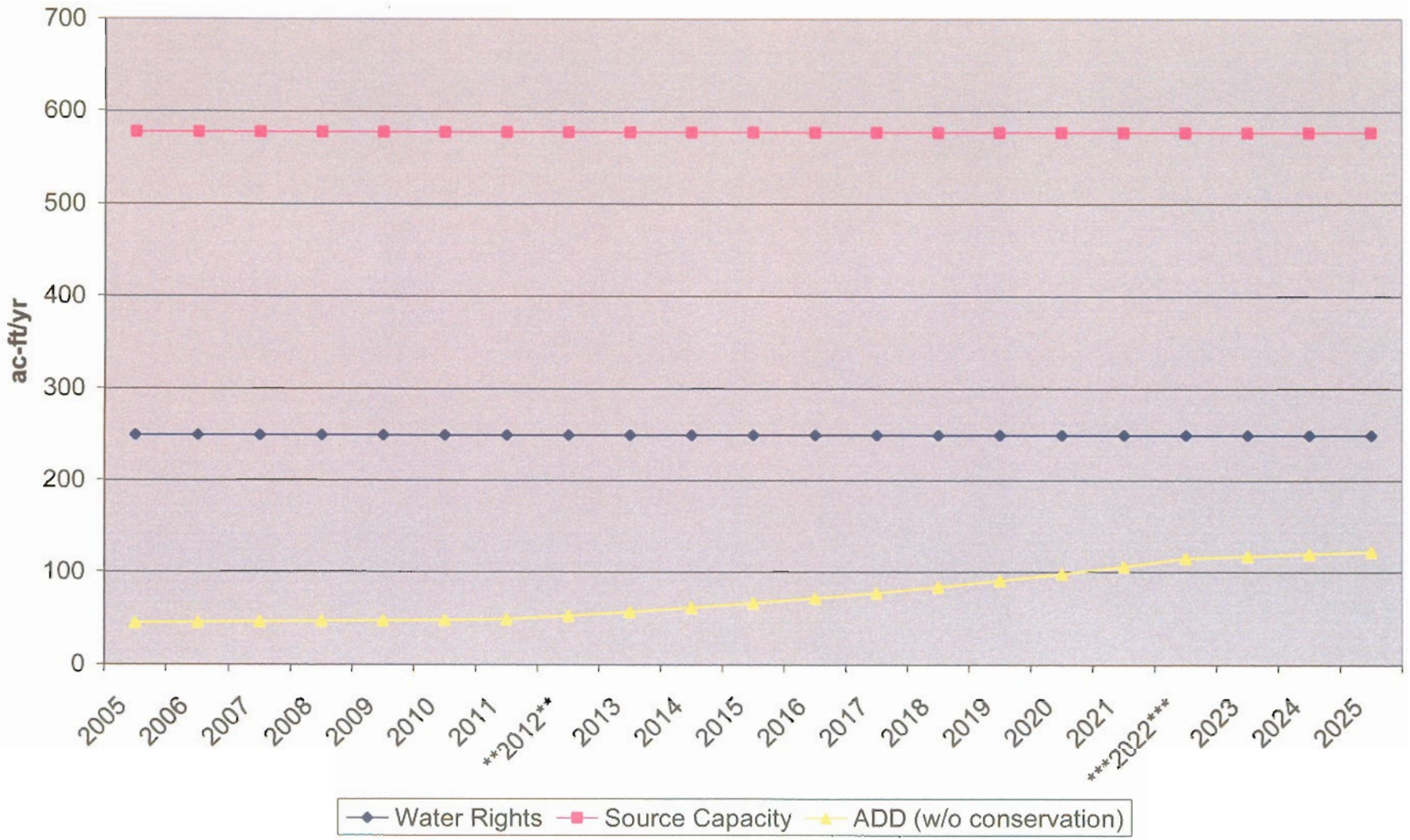


Figure 5-1

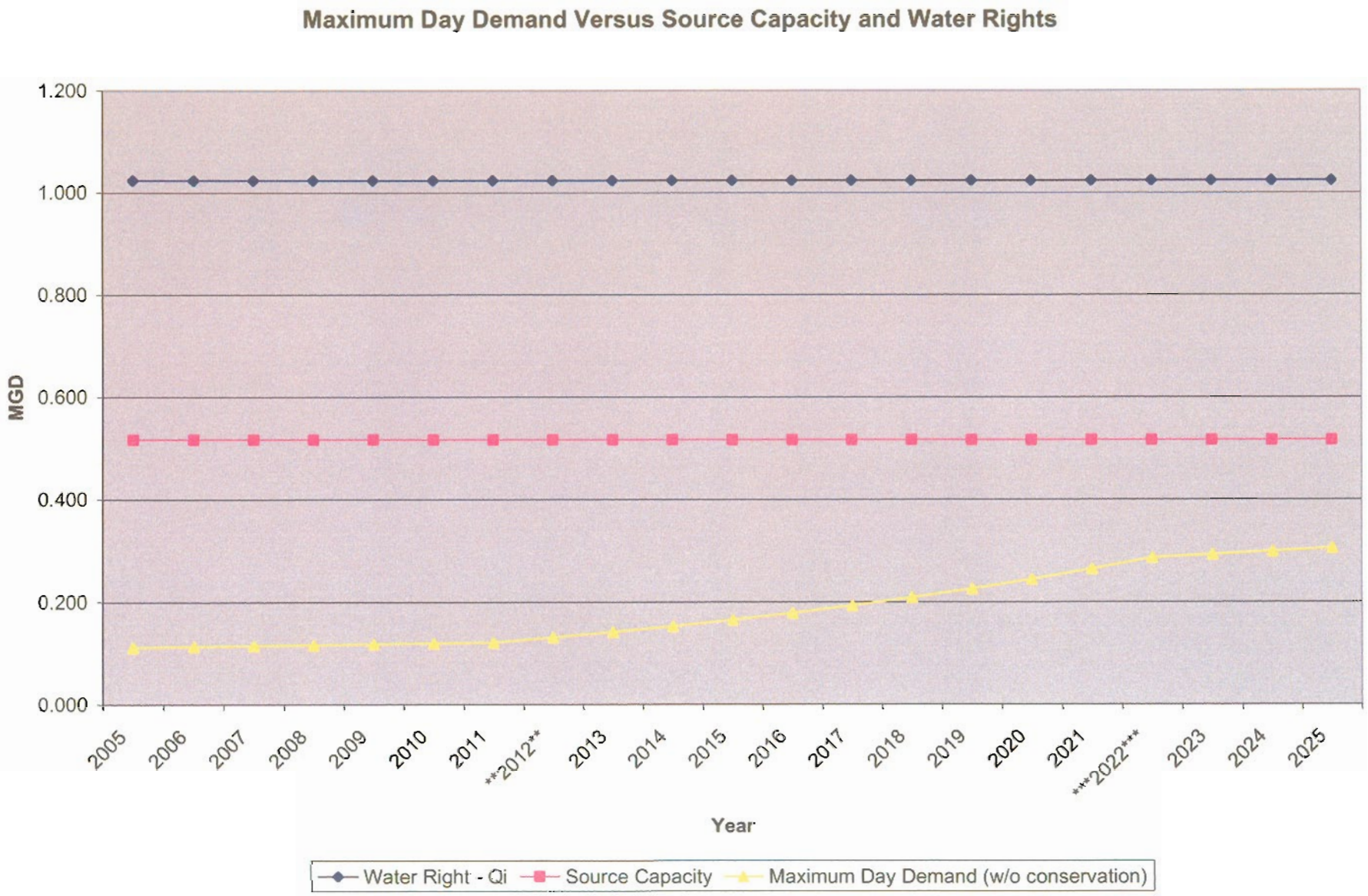

Maximum Day Demand Versus Source Capacity and Water Rights
1.200
1.000
0.800
0.600
0.400
0.200
0.000
MGD
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Year
Water Right - Qi
Source Capacity
Maximum Day Demand (w/o conservation)

Figure 5-2

From this analysis, South Prairie's current source capacity will likely meet the maximum day demands of the community for the foreseeable future. The current water rights appear to be sufficient for annual consumption demands. Figure 5-1 and Figure 5-2 compare the projected average day demand and maximum day demand through 2025 to the current source capacity and water rights.

5.3 WATER RIGHT EVALUATION

5.3.1 Existing Water Rights

The Town of South Prairie currently holds four certificated municipal purpose water rights that authorize a total annual withdrawal (Qa) of 250 ac-ft/yr, and a total instantaneous withdrawal (Qi) of 711 gpm. Within that total number of water rights, the Town holds one primary right and three supplemental rights. The Town's primary sources of water are Well No. 1/School Yard Well, and Well No. 2/Tubbs Road Well. The complete water rights information on file with the Department of Ecology is attached in Appendix I. The Town's other existing water rights include a spring-based surface water right and additional groundwater right. A DOH "Existing Water Right(s) Status" form is included as Table 5-4 (page 5-14). The following is a summary of South Prairie's existing water rights.

Well No. 1 – School Yard Well: GW Certificate 6013

The Well No. 1/School Yard Well source is based on certificated groundwater right G-6013 which authorizes an instantaneous quantity (Qi) of 100 gpm and a supplemental annual quantity (Qa) of 90 ac-ft/yr. Well No. 1/School Yard Well has a priority date of 1967. When issued, the Report of Examination (ROE) for this right determined that its authorized annual quantity would be supplemental to SW Certificate 9394 (Unnamed Springs – 90 ac-ft/yr/Qa) and GW Certificate 768 (Well No. 3 located in close proximity to Well No. 1). Subsequent to the issuance of the Tubbs Road Well right (G2-24542 below), the annual quantity (Qa) was made supplemental to this primary right, which authorizes a total annual quantity (Qa) for all of the Town's water rights of 250 ac-ft/yr.

The purpose of use for this water right is for "municipal supply," and the designated place of use is the area served by the "Town of South Prairie." The well is drilled and screened to an approximate depth of 140 feet. Although authorized to pump 100 gpm (Qi), production of this source has declined to approximately 55 gpm due to reduced pumping capacity. Efforts are underway to examine how full production of the well can be restored and/or if an alternate/replacement well should be drilled.

Well No. 2 – Tubbs Road Well: GW Certificate G2-24542

The Well No. 2/Tubbs Road Well source is based on certificated groundwater right G2-24542 which authorizes an instantaneous quantity (Qi) of 350 gpm and an annual quantity (Qa) of 250 ac-ft/yr. The annual quantity of this right is primary to the supplemental annual quantities (Qa) of the Town's other certificated rights, including the Well No. 1/School Yard Well, Well No. 3, and the Unnamed Springs Surface Water Right (described below). Well No. 2/Tubbs Road Well has a priority date of 1977, and is the most recent right issued to the Town. The purpose of use of this water right is for "municipal supply," and the designated place of use is the "area served by the Town of South Prairie." The well source is drilled and screened to an approximate depth of 450 feet. This source is generally reliable for a pumping rate of 325 gpm. This source/water right is the most significant currently held and operated by the Town.

Well No. 3 – GW Certificate 768-A

The Well No. 3 source is based on certificated groundwater right G 768-A which authorizes an instantaneous quantity (Qi) of 100 gpm and an annual quantity (Qa) of 60 ac-ft/yr. The priority date of this right is 1964, and it is the oldest certificated right held by the Town of South Prairie. The annual quantity (Qa) of this right was made supplemental to SW Certificate 9394 when this right was issued in 1964, and then later to the Tubbs Well right (G2—24542). The purpose of use of this water right is municipal supply ("serve the community of South Prairie"), and the designated place of use is the "Community of South Prairie." The well source is drilled and screened to an approximate depth of 57 feet. Because of the greater productive capacity of Well No. 1/School Yard Well, which is located across the street, and Well No. 2/Tubbs Road Well, this source was placed in standby mode some years ago, pending the need to redevelop the well site to make use of its instantaneous quantity (Qi) for peaking purposes. Because the need for additional peaking water has now arisen, the Town is studying opportunities to redevelop the existing well site and/or develop a replacement well.

Surface Water Right 9394 (Unnamed Springs)

The Unnamed Springs surface water source is based on certificated surface water right SW 9394, which authorizes an instantaneous quantity (Qi) of .15 cfs/161 gpm and an annual quantity (Qa) of 90 ac-ft/yr. The priority date of this right is 1965 and its Qi and Qa are referenced in the ROE for Well No. 1/School Yard Well. The purpose of use of this water right is municipal ("to serve the Community of South Prairie") and the designated place of use is the "Community of South Prairie." The source springs are a tributary to South Prairie Creek. Because of the greater productive capacity of Well No. 1/School Yard Well, and Well No. 2/Tubbs Road Well, use of this source has been suspended for some years. However, the water right, including its Qi, remains valid and is referenced in the ROE for Well No. 1/GW 6013. Because the need for additional peaking water has now arisen, the Town is studying opportunities to capture the instantaneous quantity (Qi) of this source by way of the replacement well(s) under consideration for Well No. 1 and Well No. 3, discussed above.

5.3.2 Forecasted Needs

The Town of South Prairie has sufficient annual water rights to meet the forecasted needs of the community.

A DOH "Forecasted Water Right(s) Status" form is included as Table 5-5 (page 5-15). South Prairie's water usage appears to be within its instantaneous and annual water rights authorization.

The Department of Ecology has reviewed this water rights assessment and indicated that it is generally consistent with Ecology's records. A copy of the letter, as provided during the DOH and Ecology reviews of the Water System Plan, is included in Appendix S.

Table 5-4. Water Rights Self-Assessment For Existing Water Right(s) Status

Permit Certificate or Claim No.	Name of Rightholder or Claimant	Priority Date	Source Name/ Number	Primary or Supplemental	Existing Water Rights		Existing Consumption (2004)		Current Water Right Status (Excess/Deficiency)	
					Maximum Instantaneous Flow Rate (Qi) (gpm)	Maximum Annual Volume (Qa) (ac-ft)	Maximum Instantaneous Flow Rate (Qi) (gpm)	Maximum Annual Volume (Qa) (ac-ft)	Maximum Instantaneous Flow Rate (Qi) (gpm)	Maximum Annual Volume (Qa) (ac-ft)
1. G-6013A	Town S. Prairie	6/12/67	S-01 Well 1	Supplement	100	90	55	9.2	45	Total volume not to exceed 250 ac-ft/yr. Individual volume analyses for each well does not apply here. Total volume of 47.3 ac-ft withdrawn is less than 250 ac-ft allowed by rights.
2. G 2-24542	Town S. Prairie	05/05/77	S-02 Well 2	Supplement	350	250	325	38.1	25	
3. S-9394	Grant L xxxxx[a]	02/21/64	Surface	Supplement	161	90			161	
4. G-768-A	J.C. Clarke	7/18/50	Well	Primary	100	60			100	
5.										
6.										
7.										
8.										
Claims										
1.										
2.										
Total:					711	250	380	47.3	331	175

Intertie Name/Identifier	Name of Purveyor Providing Water	Existing Limits on Intertie Water Use		Existing Consumption Through Intertie		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)
1.							
2.							
Total:							

Pending Water Right Application	Name on Permit	Date Submitted	Primary or Supplemental	Pending Water Rights	
				Maximum Instantaneous Flow Rate (Qi) Requested	Maximum Annual Volume (Qa) Requested
1.					
2.					

[a] Name is illegible on certificate.

Table 5-5. Water Rights Self-Assessment For Projected Water Right(s) Status

Permit Certificate or Claim No.	Name of Rightholder or Claimant	Priority Date	Source Name/ Number	Primary or Supplemental	Existing Water Rights		Forecasted Water Use From Sources (20-Year Demand)		Forecasted Water Right Status (Excess/Deficiency – 20-Year Demand in Water Right)	
					Maximum Instantaneous Flow Rate (Qi) (gpm)	Maximum Annual Volume (Qa) (ac-ft)	Maximum Instantaneous Flow Rate (Qi) (gpm)	Maximum Annual Volume (Qa) (ac-ft)	Maximum Instantaneous Flow Rate (Qi) (gpm)	Maximum Annual Volume (Qa) (ac-ft)
1. G-6013A	Town S. Prairie	6/12/67	S-01 Well 1	Supplement	100	90	100	22	0	Total volume not to exceed 250 ac-ft/yr. Individual volume analyses for each well does not apply here. Total volume of 122 ac-ft withdrawn is less than 250 ac-ft allowed by rights.
2. G 2-24542	Town S. Prairie	05/05/77	S-02 Well 2	Supplement	350	250	350	100	0	
3. S-9394	Grant L xxxxx[a]	02/21/64	Surface	Supplement	161	90			161	
4. G-768-A	J.C. Clarke	7/18/50	Well	Primary	100	60			100	
5.										
6.										
7.										
8.										
Claims										
1.										
2.										
Total:					711	250	450	122	261	128

Intertie Name/Identifier	Name of Purveyor Providing Water	Existing Limits on Intertie Water Use		Existing Consumption Through Intertie		Forecasted 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) (ac-ft)
1.							
2.							
Total:							

Pending Water Right Application	Name on Permit	Date Submitted	Primary or Supplemental	Pending Water Rights	
				Maximum Instantaneous Flow Rate (Qi) Requested	Maximum Annual Volume (Qa) Requested
1.					
2.					

[a] Name is illegible on certificate.

5.4 WATER SYSTEM RELIABILITY ANALYSIS

5.4.1 Source Reliability

The Town of South Prairie has sufficient water rights and capacity to meet the forecasted needs of the community. However, it is facing a situation in which Well No. 1 will exceed the Maximum Contaminant Level for arsenic in January 2006 due to tightened regulations. As discussed in Section 4.2.1, that may require the deactivation of Well No. 1. While Well No. 2 could still meet the community's future water demands, system redundancy would be severely limited and require either a new source or an intertie.

Well No. 1 has had periodic problems providing sustained flows when Well No. 2 is not operational, especially during summer months when the water demand is highest. With improvements to the iron and manganese treatment in the system, however, Well No. 2 now provides a majority of the water to meet demands. There have been no issues identified with the water level drawdown at this well.

South Prairie is served by two separate power stations, both of which are operated by Puget Sound Energy (PSE). The City of Buckley power station supplies power to the School Yard Well. The Wilkeson Power Station to the south of the Tubbs Road Well supplies power to the Tubbs Road Well. There are no backup power features at either well. During power outages, there has been enough storage capacity to supply the Town's water needs. The Town may want to explore the possibility of a generator for the Tubbs Road Well in the event of a sustained power outage.

Further discussion of source reliability is performed in Section 3.3 of this document.

5.4.2 Facility Reliability

A facility reliability analysis was discussed in Section 3.3 of this document.

5.4.3 Water Shortage Response Planning

The Water Shortage Response Plan is included in the Emergency Response Plan presented in Chapter 7.

5.4.4 Monitoring Well Levels

The Tacoma-Pierce County Health Department began implementing a groundwater monitoring component of the Pierce County Coordinated Water System Plan in 1996. South Prairie and 145 other well owners were invited to participate in this long-term study by providing the following well data: 1) depth to water level in the well; and 2) total monthly production of water from the same well reported in gallons. The information was gathered as close to the first day of each calendar month from the Tubbs Road Well using a manual probe (there is no probe installed at the Tubbs Road Well), regardless of whether or not the pump was running at the time of data collection. No routine monitoring of the School Yard Well was performed since it is an artisan well when the pump is turned off.

The results were made available to each participant on CD ROM in 2005 and included data collected through December 2004. A chart showing the water level is provided on Figure 5-3. The report did not highlight South Prairie in its listing of wells with significant drops in water level.

Monitoring of the Tubbs Road Well is currently ongoing and will likely be available at the next update to this Water System Plan.

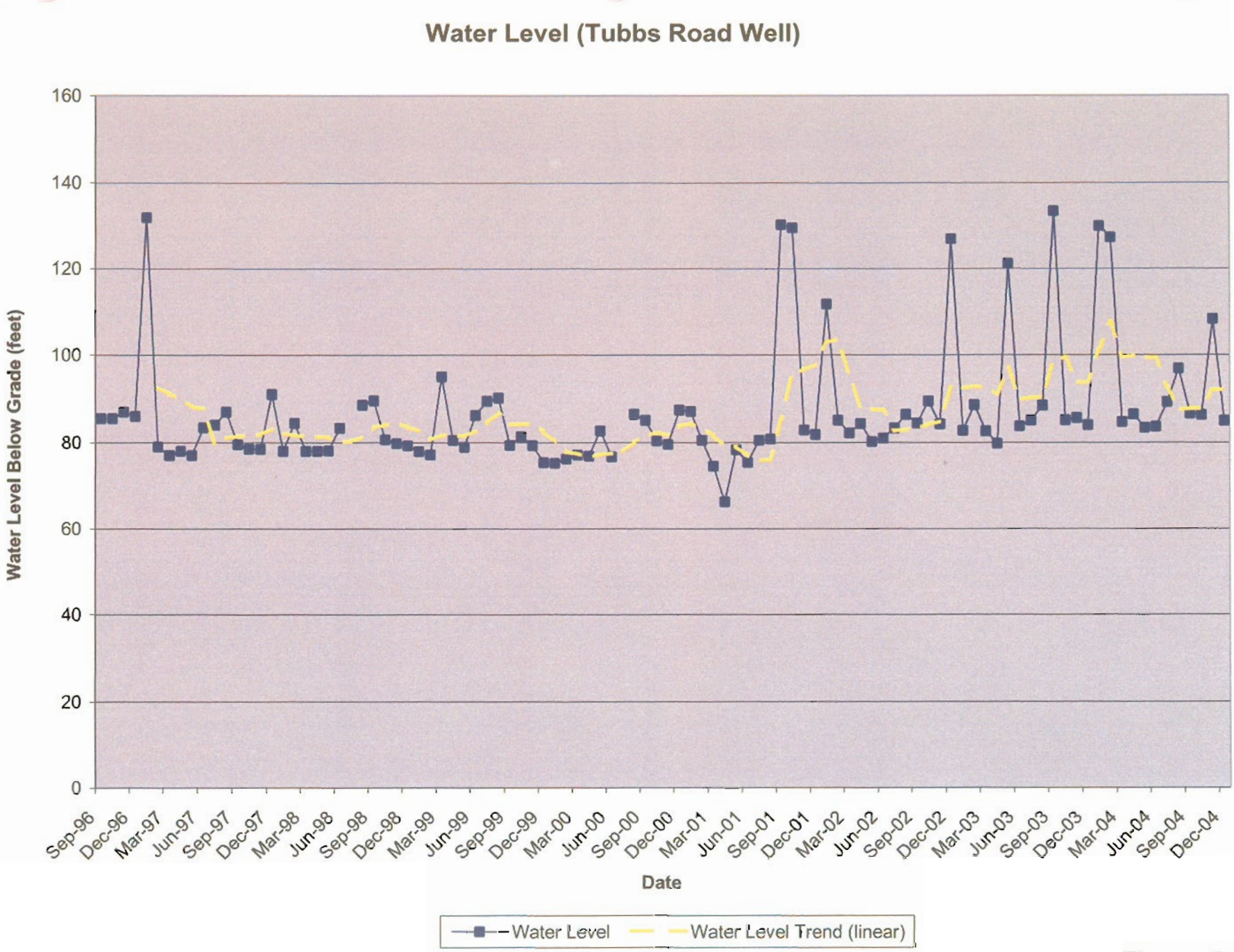

Water Level (Tubbs Road Well)
Water Level Below Grade (feet)
160
140
120
100
80
60
40
20
0
Sep-96
Dec-96
Mar-97
Jun-97
Sep-97
Dec-97
Mar-98
Jun-98
Sep-98
Dec-98
Mar-99
Jun-99
Sep-99
Dec-99
Mar-00
Jun-00
Sep-00
Dec-00
Mar-01
Jun-01
Sep-01
Dec-01
Mar-02
Jun-02
Sep-02
Dec-02
Mar-03
Jun-03
Sep-03
Dec-03
Mar-04
Jun-04
Sep-04
Dec-04
Date
Water Level
Water Level Trend (linear)

Figure 5-3

5.5 INTERTIES

Water system interties are a valuable asset to a water system. An intertie provides an additional source for emergency and high demand periods, redundancy in the event of power failure, and an alternative source in the event of source contamination.

5.5.1 Existing Interties

The Town of South Prairie currently has no interties.

5.5.2 Proposed Interties

The Town has been self-sufficient in supplying its customers' water demands to date. Developing an intertie would ensure the Town's ability to supply adequate water supplies to meet peak hourly demands, add system redundancy in the event of an emergency, and increase fire flow. Figure 3-8 illustrates the potential *fire flow* available through an intertie, while Figure 3-7 illustrates the potential *water pressure*. This intertie may be for wholesale water purchased for resale, or it may be for emergency supply only, depending upon the Town's decisions regarding system expansion, source maintenance, and water treatment.

A detailed study of intertie feasibility, including appropriate location, physical capacity, proposed usage, water quality, and hydraulic issues will be required to make an appropriate recommendation to the Town. Preliminary costs are projected in Chapter 9 as Project S2, "Construct Intertie with Neighboring Water Purveyor."

5.6 INTERLOCAL AGREEMENTS

5.6.1 Signed

The Town has no existing interlocal agreements for water service.

The Town and Fire District 20 have an agreement for joint operations. The fire hall for Fire District 20 is housed with the Town's community center, and the separately owned firefighting equipment of the Town and District is jointly stored, maintained, and operated. The Town maintains, repairs, and installs new hydrants located within the Town service area for use by Fire District 20. This agreement is included in Appendix C.

Fire District 20 recently voted to consolidate fire fighting operations with two other districts under Fire District No. 22. The final agreement between the Town and Fire District No. 22 has not yet been developed, but is anticipated to be similar to that with Fire District No. 20.

The Town and Puget Sound Energy have a pole attachment agreement for the attachment of telemetry wires between the School Yard Well and the reservoir site. This agreement is included in Appendix C.

6. SOURCE WATER PROTECTION

6.1 WELLHEAD PROTECTION PROGRAM

A wellhead protection plan for the two wells was performed in 1997 and further updated in 2006 by Evergreen Rural Water of Washington. The plan and update to the plan are included in Appendix J of this Water System Plan. The plan indicates that South Prairie's water supply is moderately well protected.

Sanitary control areas with radii of 100 feet around each of the Town's two wells are owned by the Town, Pierce County, or the White River School District. A portion of the sanitary control area of the School Yard Well lies within the Town's 3rd Street right-of-way and is subject to potential spills. The risk of contamination is minimal, however, because 3rd Street is paved with positive drainage. Portions of the Tubbs Road sanitary control area lie within Pierce County's existing rights-of-way and are subject to similar concerns.

The results of the most recent sanitary survey performed by DOH on March 8, 2004, were recorded in a report dated March 15, 2004. A copy of this report has been included in Appendix K. All of the recommendations presented in this report have been addressed in this Water System Plan.

6.2 WATERSHED CONTROL PROGRAM

The South Prairie water system uses groundwater wells which are more than 50 feet deep and more than 200 feet from any apparent surface water source. The wells do not appear to have characteristics of groundwater under the influence of surface water; therefore, the Town is not required to implement a watershed control program.

7. OPERATION AND MAINTENANCE PROGRAM

7.1 WATER SYSTEM MANAGEMENT AND PERSONNEL

7.1.1 Purpose

The operations and maintenance program is designed to ensure that the water system:

- Is properly and reliably managed and operated.
- Continues to exist as a functional and viable entity.

This chapter will describe the water system operations as they now exist and will project the system operation requirements through the planning period. Currently, one individual is responsible for maintenance and operation of both the water and sewer systems in South Prairie. With growth and expansion of these systems, the staffing requirements may increase.

7.1.2 Responsibilities

Individual positions within the government of the Town of South Prairie are matched with specific water system responsibilities, as shown in Table 7-1. The staff report directly to the mayor.

Table 7-1. Operations and Maintenance Responsibilities

Responsibility	Responsible Position
Normal Day-to-Day Operations	Water Department Operator (WDO)
Preventive Maintenance	WDO
Field Engineering	Town Engineer/ WDO
Water Quality Monitoring	WDO /DOH Laboratory
Troubleshooting	WDO/Town Engineer
Emergency Response	WDO
Cross-Connection Control	WDO
Capital Improvement Program	WDO/Town Council
Budget Formulation	Mayor/Town Council/WDO
Response to Complaints	WDO
Public/Press Contact	Mayor
Billing	Town Clerk

In general, the Water Department Operator is responsible for effectively performing any activities for the daily operation of the water system. Field operations include recording well production in gallons, time, and chlorine used, and general up-keep and visual security of each facility on a daily basis. Field operations also include individual meter reading, service activations and deactivations, water quality testing, flushing of main and hydrants, and maintenance of filtration facilities. There are typically no seasonal workers or field staff available to assist in the daily water system operation and maintenance activities. Occasionally, additional staff has been hired to help during the summer.

7.2 OPERATOR CERTIFICATION

7.2.1 Certification Requirements

RCW 70.119 and WAC 246-292 require all public water systems to have a certified operator. For the purposes of determining system certification requirements, water systems are classified as "distribution" and/or "treatment." The distribution classification is based on the number of people served. The treatment classification is based on the complexity of the treatment processes and other factors. In addition, specialty certification may be required for backflow device testing, cross-connection control, and asbestos-cement pipe handling.

Distribution Certification

The required certification level is defined by population ranges in WAC 246-292-040. South Prairie currently serves an approximate population of 450 (assuming an equivalent population of 2.5 per ERU), which requires a Group 1 operator certification as a water distribution manager. The population is not anticipated to exceed 1,500 within the 20-year planning cycle, therefore no additional certifications will be required. South Prairie's Water Department Operator, Larry Harter, is certified by the state of Washington as a Level 1 Water Distribution Manager (WDM) and is capable of individual operations.

Treatment Certification

Water Treatment Plant Operator (WTPO) certification is based on the level of complexity in the treatment process and source water quality. A point system scale is used to determine the level of certification required. Currently, the only water treatments performed in the South Prairie water system are chlorination and iron/manganese treatment and are not considered complex. Therefore, only a Basic Treatment Operator Certification is required. South Prairie's Water Department Operator is certified as a Basic Treatment Operator. There is no need for the Town of South Prairie to obtain increased WTPO certification at this time.

Asbestos Cement Pipe Handling

The Washington Industrial Safety and Health Act (WISHA) requires staff members exposed to asbestos cement (AC) pipe to have certification. A substantial portion of the South Prairie transmission system contains AC pipe that must be handled and disposed of in an appropriate manner. Old AC pipe may be left in the trench when future improvements are made if properly backfilled. The Water Department Operator has received training in asbestos pipe handling but is not certified; therefore, certified contractors must perform all repair and construction activities on asbestos cement pipe.

Cross-Connection Control Specialist

Cross-Connection Control Specialist (CCS) certification is required for staff involved in the cross-connection control program as outlined in Section 7.9. The Water Department Operator has a CCS-1 certification.

Continuing Education

Table 7-2 below summarizes the water system personnel certification and education requirements applicable to the South Prairie system.

Table 7-2. Water System Personnel Certification and Education Requirements[a]

Classification	Education	Operating Experience	Exam
WDM – Water Distribution Manager	12 years	1 year	Required
BTO – Basic Treatment Operator	12 years	6 months	Required
CCS – Cross-Connection Control Specialist	12 years	6 months	Required

[a] Water Distribution System Classification Group 1 – Population Less than 1,500.
Purification Plant Criteria Group 1 Classification – Less than 31 Points.

All operator certifications must be renewed annually. Evidence must be presented to the state board that the operator has demonstrated continued professional growth in the field. Accumulation of three college credits or continuing education units every three years is considered satisfactory evidence of professional growth (WAC 246-292-090).

Miscellaneous Training

The Town's Water Department Operator is also trained in First Aid/CPR.

7.3 SYSTEM OPERATION AND CONTROL

7.3.1 Operating Permits and Fees

In 1991, the legislature passed a law that requires all Group A water systems to have an operating permit. The purpose of the law is to generate revenue to carry out state and local drinking water programs and to serve as a compliance tool. The operating permit must be renewed annually.

Operating permits are issued in four colors:

- *Green* designates substantial compliance with no conditions.
- *Yellow* designates substantial compliance with conditions.
- *Red* designates nonsubstantial compliance with conditions.
- *Blue* designates a system substantially in conformance, but does not meet design approval requirements or has exceeded the number of approved connections.

The Town currently operates under a "green" operating permit which indicates substantial compliance with no conditions.

A permit may be withheld or lower compliance ranking permit issued for one or more of the following reasons:

- Failure to have approved construction documents.
- Work stoppage on system improvements.
- Failure to meet pressure requirements.
- Failure to meet water treatment requirements.
- Failure to have a certified operator.
- Failure to meet water quality MCLs.
- Violation of departmental order.

- Noncompliance with Water System Plan provisions.
- Failure to notify public of coliform and turbidity MCL exceedance.
- Noncompliance with coliform and inorganic chemical monitoring.
- Noncompliance with inorganic chemical and volatile organic chemical MCLs.
- Other DOH criteria described in draft WAC 246-294.

7.3.2 System Overview

Chapters 1 through 3 of this Water System Plan discuss the Town's existing water system facilities, including wells, reservoirs, treatment facilities, and the distribution system. This section describes operation and control of these water system components as well as valves, meters, and hydrants. See Figure 3-1 for a layout of the existing water system.

Routine Operations

Sources

Both the School Yard Well and Tubbs Road Well are activated at the same time through wire telemetry whenever the tank water level reaches 22.5 feet (total effective height of the tanks is each 24 feet). The pumps turn off when the tank water level reaches 24 feet. Both wells pump directly into the distribution system, with any excess pressure causing the tanks to fill. The tanks are at the same hydraulic grade elevation and fill at the same time. The well pumps consist of the following:

- School Yard Well – Berkley pump, Model 6T7.5-90 installed on March 22, 1994. The motor was replaced on July 13, 1999, with a 7.5 hp, 6-inch, Hitachi submersible motor, 230 volt, three-phase.
- Tubbs Road Well – Berkley pump, Model 652 AH-7 installed in 1978. The motor was replaced on May 20, 1993, with a 30 hp, 6-inch, Franklin submersible motor, 460 volt, three-phase.

At the School Yard Well No. 1, the pump is set at 105 feet below ground level and includes a start and low water shutoff probe at 82 feet and 92 feet below ground level, respectively. Above-grade plumbing is 2-inch-diameter galvanized iron. Flow metering is by 2-inch WT Turbine meter. Sustained operation at the maximum capacity of 55 gpm with Well No. 2 shut off, particularly in heavy irrigation summer months, has led to low-level shut off and excessive pump cycling.

At the Tubbs Road Well, the pump is set at 320 feet and has no water level probes installed. Above-grade plumbing is 4-inch-diameter galvanized iron. Flow metering is by 6-inch Sparling tube meter. The well has not had problems with sustained operations.

There are no backup generator systems available for either well source.

During high water usage in the summer months, the Tubbs Road Well operated as a secondary water source to the School Yard Well. With improvement of water quality at the Tubbs Road Well through iron/manganese treatment in 2001, the annual School Yard Well production was reduced and the well was programmed to operate concurrently with the Tubbs Road Well. Iron and manganese treatment was installed at the School Yard Well in 2002.

Chlorinators

Both sources are chlorinated with 12.5 percent sodium hypochlorite solution diluted in 55-gallon barrels before injection into transmission mains. The hypochlorite solution is injected immediately after water is withdrawn from the well but before the water is treated in the iron/manganese filtration system. Injection is metered static to water flow.

Approximately 1 gallon sodium hypochlorite per 1 gallon of water is mixed in the barrel at the Tubbs Road Well, while 1 gallon sodium hypochlorite per 2 gallons of water (2 inches as measured on the barrel) is mixed at the School Yard Well. Levels of solution are monitored during weekdays and adjusted as required. Additional solution is mixed at the Tubbs Road approximately three to seven times per month, and one to two times per month at the School Yard Well.

Chlorine residuals are normally taken daily at Station No. 1 (see Section 4.1.4 for a location and description of sampling stations and operations). Chlorine residual is typically kept in the range of 0.2 mg/L to 0.3 mg/L. Samples at two other stations taken on a rotating monthly basis indicate chlorine residuals closer to 0.1 mg/L. Chlorine stations consist of a Kupferle No. 93-WM sampling station in a water meter box.

Iron and Manganese Filters

Both water sources are filtered by an ATEC iron and manganese filter package. The filters use AS-721 Process Media, a granular manganese dioxide media derived from naturally occurring pyrolusite. Both packages consist of a series of four pressure vessels sized appropriately for their production volume. After a period of filtration, treated water is flushed through the filter in the reverse direction at high pressure to wash the filter media. This cycling is performed by a packaged control system and is based on total pump run time. Control systems include:

- School Yard Well – ATEC Model No. 184804, backwashes at 42 to 50 gpm for approximately 6 minutes and an average four times per week.
- Tubbs Road Well – ATEC Model No. 364804, backwashes at 170 to 198 gpm for approximately 4 minutes and an average five times per week.

Chlorination ensures the proper functioning of the media; the media will not need replacement if proper chlorination is maintained. The backwash from both systems is discharged out of the building through galvanized iron pipe into a settling tank and out to a flow dispersion trench.

Storage Tanks

The two 100,000-gallon storage tanks are located at the Tubbs Road Well site. The tanks are 27 feet in diameter and 24 feet tall. The tanks are fed simultaneously from both wells. The water level for both tanks is monitored with a single set of floating gauges. No maintenance has been performed on the tanks since the last Water System Plan update.

Distribution System

The distribution system consists of various pipe sizes and materials including polyethylene, ductile iron, and asbestos cement. A full system description is provided in Section 3.3. No maintenance of the system is currently performed. Flushing of distribution pipes was last performed in 2001 but should be conducted annually.

Valves

The system contains less than 100 isolating valves and blow-off valves. Valve exercising was last performed in 1999 and 2004 but is generally not performed unless there is a problem in the system. A written description of each valve to include depth to nut, number of turns necessary to fully engage the valve, installation date, and maintenance schedule should be developed for each valve.

Meters

All wells are metered, the Tubbs Road Well with a 6-inch Sparling propeller meter and the School Yard Well with a 2-inch WT Turbine meter. Both source meters are read every weekday. All customers are metered and invoiced monthly. Meters are manufactured by Sensus Metering Systems, Model SR II, and all have been replaced within the last 13 years. Meter reading is currently performed by hand and then input into a utility billing program at Town Hall. No calibration of source meters is currently performed. Customer meters are not replaced on an ongoing basis.

Hydrants

Hydrants are tested, flushed, maintained, and installed by the South Prairie Water Department Operator and reported to the Pierce County Fire Protection District No. 20. See Appendix C for a copy of the interlocal agreement between South Prairie and Fire District No. 20. Flushing and valve operation was last performed in 1999 and 2004 but needs to be done on an annual basis. Hydrant records have been created but need to be kept up to date.

Booster Pumps

A simplex booster pump system consisting of a PACO Miniflo Simplex Water Booster System, Model 837A, is housed in the Tubbs Road Well building. The system provides increased water pressure to 45 psi for five residents along Tubbs Road. The system is actuated by low water pressure and is turned off with an increase in water temperature. (Water flow slows as the system is pressurized and heats up from movement from the pump impeller. A sensor turns the booster pump off.)

Telemetry

The existing telemetry system is manufactured by B/W Controls and is housed in Well House No. 2 on Tubbs Road Well. The system is activated by low water level in a single tank and operates by turning on both well pumps simultaneously. The system coordinates the pump operations between both wells using simple power cable connected to PSE electrical poles between the two wells. The system turns off both well pumps when the high-water level in the tank is reached.

Maintenance Activities

The current and recommended operation and maintenance (O&M) program is summarized in Table 7-3 (page 7-7). Those items that require funding are addressed in Chapter 10.

Table 7-3. Existing and Proposed System Routine Maintenance Program

Component	Present Maintenance Activity and Frequency	Recommendation	Frequency
Wells	Visual inspection and daily reading of source meter (weekdays only).	Pump and motor overhaul.	Every 15 years.
Chlorination System	Visually inspect and mix hypochlorite solution.		
	Test chlorine residual daily.		
Reservoir	Emergency maintenance.	Clean and paint reservoir exterior.	Every 10 to 15 years or as needed.
		Inspect and clean interior to remove sediment accumulation.	Every 3 to 5 years.
		Apply protective interior coating.	Every 10 to 15 years or as needed.
Distribution Piping	Repair as needed.	Flush dead-end mains.	Annually.
		Conduct leak detection tests.	Semiannually.
Valves	Repair as needed.	Operate valve fully closed to fully open. Repair as necessary.	Annually.
		Record number of turns to fully operate valve.	As needed.
		Record depth to valve nut.	As needed.
		Clean valve box and replace lid.	As needed.
Hydrants	Repair as needed.	Operate hydrant and tee valve.	Annually.
		Lubricate hydrant ports.	Biannually.
		Complete hydrant flow test.	Biannually.
		Paint hydrants (color coding based on available flow).	Rotating two-year schedule.
		Hydrant replacement.	As needed.
Meters	Read source meter daily (weekdays only).	Calibrate source meters.	Annually.
	Read customer meters monthly.	Initiate a meter testing and repair program for a representative sample of service meters.	Annually.
Iron/Manganese Filtration System	Check equipment and operation daily.	Manually operate flush cycle.	Quarterly.
	Check for noise and vibration daily.		
		Check and flush backwash disposal system for sludge buildup.	Yearly.

7.3.3 Equipment, Supplies and Chemical Listing

Table 7-4 shows the equipment and materials currently owned by the Town of South Prairie for the maintenance of the water system and other utilities.

Table 7-4. Equipment and Materials Inventory

Description	Model	Quantity
Equipment		
Pickup Truck	3/4 Ton	1 EA
Materials		
Fire Hydrants		0 EA
Repair Bands	4 Inch to 8 Inch	0 EA
Meters	3/4 Inch	0 EA
	1 Inch	1 EA
	1.5 Inch	0 EA
Chemicals		
Sodium Hypochlorite Solution (12 percent)		8 to 144 gallons

In addition to the items listed above, the Town has on hand various lengths of pipe, tubing, and miscellaneous small fittings. The Town of South Prairie has a charge account arrangement with several local suppliers that allows the maintenance staff to acquire materials as needed.

Table 7-5 lists the names and addresses of all regular suppliers and manufacturers of equipment supplies and chemicals used for water system operation and maintenance. Specific suppliers for individual components can be found in the equipment operations and maintenance manuals on file at the Water Department Operator's office.

Table 7-5. Frequently Contacted Manufacturers and Suppliers

Item	Manufacturer and/or Supplier
Bleach (Sodium Hypochlorite)	Univar 8201 South 212th Kent, Washington 98032-1925 253.872.5000
Water Distribution Parts (including telemetry equipment manufactured by B/W Controls)	H. D. Fowler, Inc. 1225 132nd East Sumner, Washington 98390 253.863.8600 National Waterworks 602 Valley Avenue NE Puyallup, Washington 98372 253.840.5505
Emergency Construction Services	Burbank Construction 26708 100 Street E Buckley, WA 98321 360.829.2443 Kelly (cell) 253.381.8386 Don (cell) 253.350.0187

(Table Continues)

Table 7-5. Frequently Contacted Manufacturers and Suppliers (Continued)

Item	Manufacturer and/or Supplier
Emergency Construction Services (Continued)	Doug Britschgi, Inc. P.O. Box 820 Orting, WA 98360 W: 360.897.6941 C: 253.606.5072
Pumps	Aqua Flow 37335 32nd Avenue Auburn, WA 98001-8730 253.952.9363
Iron/Manganese Filtration Systems	ATEC Systems Assoc., Inc. P.O. Box 518 Longview, WA 98632 360.901.2273

7.4 COMPREHENSIVE MONITORING (REGULATORY COMPLIANCE) PLAN

A complete discussion of the monitoring requirements, schedules, waivers, and future monitoring requirements is provided in Chapter 4.

7.5 EMERGENCY RESPONSE PROGRAM

All water systems experience emergencies including pipe breaks, hydrant rupture, and short-term power outages. Less frequently, water utilities must deal with natural and manmade disasters of greater proportions. These include earthquakes, watershed fires, hazardous materials spills, vandalism, extended sub-zero weather, extended droughts, flooding, major power outages, and windstorms. Less extensive emergencies include injury of water system staff and large mechanical failures. The Town of South Prairie should be prepared for these types of disasters and be able to circumvent serious public health consequences and wide-scale disruption in water service and fire fighting capabilities.

This chapter presents information for general emergency preparedness and an emergency call-up list for a variety of potential disasters. A vulnerability analysis with a contingency plan for each emergency situation is also presented. As part of the contingency plan, a Water Shortage Response Plan detailing a step-by-step approach for water rationing during emergency periods is also included.

7.5.1 General Emergency Preparedness

To establish an effective emergency response program, all Utility Managers/Operators, Police, and Fire Department staff must be trained and assigned specific duties. Assignments of duties in each type of emergency situation should be specific, but not so rigid that another member on the staff could not also perform the function. All staff should be made aware of each other's assignments in case:

- An operator is absent or injured and unable to attend to his/her duties.
- A disaster occurs for which the Town is unprepared.
- More than one staff member is needed for a response for which only one was anticipated.

General emergency preparedness should be common to all personnel. General emergency preparedness is the greatest single emergency response action that can be taken, even though it occurs well before the emergency situation presents itself.

The following subsections list activities and measures that should be undertaken as part of emergency preparedness. These measures include staff training and preparation, assuring repair material availability, routine inspections, and hardening of facilities.

Personnel Training and Preparation

- Provide all personnel involved in the emergency response program with a copy of the Water System Staff and Emergency Call-Up Lists.
- Train all personnel for hazardous spill response and fundamentals in emergency water treatment. Water quality is the foremost concern in any emergency situation. Emergency water treatment includes substance detection, manual chlorine addition, and filtration.
- Conduct annual mock emergencies to find flaws in the current Emergency Response Plan.
- Provide pagers and/or radios to all lead team members at all times.
- Assign general emergency response duties to all personnel. All personnel should know who is responsible for each of the following:
  - Alerting personnel and assigning specific duties.
  - Assessing overall water system damage.
  - Coordinating and/or directing Police and Fire Departments.
  - Testing the communication system.
  - Informing public of health dangers or water shortages.
  - Placing and starting auxiliary power supplies.
  - Recruiting volunteers.
  - Acquiring additional emergency repair equipment.
  - Isolating damaged facilities from the system.
  - Coordinating logistics and obtaining supplies from Town shops and local suppliers/ merchants.
  - Monitoring water quality.
  - Applying treatment chemicals to water supply.
  - Turning on pumps.
  - Opening interties (if available).
  - Monitoring water tank levels.

Material Availability

- Keep extra fuel at Public Works for chainsaws, electric generators, and vehicles.
- Keep keys, bolt cutters, saws, axes, crowbars, water main shutoff wrenches, and other water system access parts in all maintenance vehicles.

- Ensure repair materials are available from local suppliers and merchants on short notice (see Emergency Call-Up List).
- Arrange with local suppliers for access to stored chemicals, tools, repair parts, etc., which may be required immediately after the emergency.
- Determine the need to relocate materials to outlying sites. As a suggestion:
  - Keep personnel protection equipment and operations and maintenance manuals at facilities where they will most likely be needed.
  - Keep extra sodium hypochlorite solution at all treatment facilities for emergency treatment.
  - Keep spare flashlights at key locations for easy access.
  - Keep fire extinguishers in all buildings.

Routine Inspection

- Check automobiles, auxiliary electric power, and pumping units in periods of nonuse.
- Periodically check emergency communications equipment.
- Maintain emergency rations of food, water, and bedding at Fire Station and Town Hall.

7.5.2 Water System Personnel Emergency Call-Up List

The Town of South Prairie maintains an emergency response program designed to protect public safety and restore essential services following common water utility emergencies. Telephone numbers of responsible personnel are listed in Table 7-6.

Table 7-6. Water System Emergency Call-Up List

Agency or Company and/or Position	Name	Telephone Numbers	
		Work	Home (H) or Pager (P)
SOUTH PRAIRIE			
Mayor	Peggy Levesque	360.897.8878	
Utilities Manager	Larry Harter	360.897.8969	253.552.0097 (P)
On-Call Operator	—	911 Emergency	
ADJACENT WATER PURVEYORS			
Pierce County Public Works		253.591.7272	
Wilkeson	Jack Cole	360.829.4235	253.596.7279 (P)
Carbonado	Bob Fleis	360.829.0125	253.404.2703 (P)
Pierce County Emergency/After Hours		253.845.8813	
	24-hour number:	253.798.6595	
Tacoma Water	Trouble Calls, Monday–Friday 8 a.m. to 4:30 p.m.	253-502-8384	
	Trouble Calls, Evenings and weekends:	253-502-8344	

(Table Continues)

Table 7-6. Water System Emergency Call-Up (Continued)

Agency or Company and/or Position	Name	Telephone Numbers: Work	Telephone Numbers: Home (H) or Pager (P)
UTILITIES			
Puget Sound Energy		1.888.225.5773	
Century Tel		611 or	
or if calling from out of area or while using cell phone		800.824.2877	
WASHINGTON STATE DEPARTMENT OF HEALTH			
State Office General Information		360.236.4010	
(Drinking Water Information)		800.521.0323	
Emergency Operations Center (24-hour Regional Coordination)		253.798.7470	
Northwest Regional Office		253.395.6757	
EMERGENCY MEDICAL SERVICES			
Hazardous Waste Information and Response		800.287.6429	
Water Management Laboratories		253.531.3121	
Chemical Spills (State Duty Officer)		800.258.5990	
Division of Drinking Water		206.361.2800	
STATE/FEDERAL ASSISTANCE AGENCIES			
Washington State Department of Ecology		360.407.6300	
24-Hour Emergency, Including Spill Response – OIL ONLY		800.258.5900	
Washington Department of Fisheries (Olympia Office)		360.902.2200	
Department of Natural Resources – Forest Fire Reports		800.562.6010	
National Weather Service		206.526.6087	
U.S. Army Corps of Engineers (Seattle)		206.764.3495	
POLICE AGENCIES			
Washington State Patrol		253.536.6210 or 911	
Washington National Guard (Tacoma)		253.597.4150	
EQUIPMENT RENTAL/SUPPLIES			
Emergency Chemical Supplies:			
Jones Chemicals		253.572.9034	
Bulk Water Suppliers:			
Pure Water Corporation		253.796.2600	
Water Purification and Filtration Consultants:			
Parametrix, Inc. (Sumner)		253.863.5128	
Water Treatment Equipment, Service and Supplies:			
Clean Water Systems Northwest (Sumner)		253.863.0397	
M S Pure Water Technology (Tacoma)		253.383.8357	
Filtration/Treatment Systems, Ltd. (Kent)		253.872.9007	
Water Works Equipment and Supplies:			
H. D. Fowler, Inc. (Sumner)		253.863.8600	
Hughes Supply (Tacoma)		800.772.6004	
Trident Water Works (Puyallup)		253.848.9337	

(Table Continues)

Table 7-6. Water System Emergency Call-Up (Continued)

Agency or Company and/or Position	Name	Telephone Numbers: Work	Telephone Numbers: Home (H) or Pager (P)
Safety Equipment and Clothing:			
Safety and Supply Co. (Federal Way)		253.922.8000	
Firesafe Fire and Safety Equipment Co., Inc. (Tacoma)		253.922.6897	
Water Main Contractor:			
Don Olson Construction, Inc. (Sumner)		253.862.6161	
Chain Saws, Dewatering, Tools, Vehicles:			
Bunce Equipment Rentals (Puyallup)		253.845.7527	
Generators:			
United Rentals (Puyallup)		253.845.9441	
Prime Equipment (Tacoma)		253.383.1515	
Contractors' Equipment:			
Aggreko, Inc. (Auburn)		253.939.3443	
United Rentals (Puyallup)		253.845.9441	
US Filter (Puyallup)		253.840.5505	
RADIO STATIONS/TELEVISION STATIONS/NEWSPAPERS			
KOMO AM 1000		206.223.5700	
KIRO AM 710 News Radio		206.726.7000	
KONP AM 1450		360.457.1450	
KISS FM 106		206.805.1061	
KISW FM 100		206.421.5479	
KBRD FM 104		360.943.5539	
KCPQ Channel 13		206.674.1313	
KIRO Channel 7		206.728.7777	
KOMO Channel 4		206.443.4000	
KING Channel 5		800.455.3975	
KSTW Channel 11		206.441.1111	
Tacoma News Tribune		253.597.8742	
Orting Gazette		360.893.5103	
Pierce County Herald		253.597.8742	

7.5.3 Notification Procedures

Public notification requirements are mandated by the Safe Drinking Water Act and the Environmental Protection Agency. These requirements apply whenever a system is in violation of:

- Drinking water quality or monitoring requirements;
- Operating under a variance or exemption; or
- Other situations that pose a public health risk, such as a disruption in service.

Public notification also provides an opportunity for water purveyors to educate their customers about their drinking water quality – building trust by sharing information openly. Notices used in this positive way can help customers understand the basis for rate increases that may be needed for additional drinking water treatment and protection.

Very specific details regarding the text, timing, and distribution of notices are detailed in *Public Notification Handbook*, dated June 2000, and published through the Department of Health. In general, violations and events are separated into three tiers based on potential health impact of the violation or event:

- **Tier 1**: Acute health concerns require notification within 24 hours.
- **Tier 2**: Chronic health concerns require notification within 30 days.
- **Tier 3**: Reporting and monitoring violations require notification within 365 days.

Other aspects of the public notification rules include:

- An expanded list of violations and situations requiring 24-hour notification.
- Simplified health effects language.
- Standard language for monitoring violations.
- A requirement that purveyors send a copy of all public notifications and the certification of compliance with public notification regulations to the Department of Health.
- Allowing notices for individual violations to be combined into the annual Consumer Confidence Report, if public notification requirements can still be met.

7.6 VULNERABILITY ANALYSIS

The emergency response contingency plans in Appendix L describe corrective measures for damage caused by the most likely disasters to affect the water system.

7.7 WATER SHORTAGE RESPONSE PLAN

The Water Shortage Response Plan (WSRP) is a tool to manage a major water use reduction during extreme water-shortage periods. The WSRP is based on demand management techniques and conservation including voluntary restrictions, mandatory restrictions, water curtailment, and development of long-term water supply, storage, and distribution systems.

This WSRP considers water shortages for two different scenarios, short-term and long-term. Trigger criteria and specific Town actions are identified for both short-term emergency (line break, loss of well) and long-term (drought) conditions. Table 7-7 identifies the likely events to create water shortages for the Town of South Prairie.

Table 7-7. Events Causing Water Shortages

Event	Probability or Risk (High–Med–Low)	Immediate or Anticipated Event[a]	Comments
Earthquake	High	Immediate	Tank No. 1 does not have anchor bolts and moved approximately 1 inch on its foundation during the 5.0 magnitude earthquake in February 1995.
Extended Drought	High	Anticipated	Well No. 1 at School Yard Well has already reached low-water levels and been turned off during high-water-usage months.
Mechanical Failure	High	Immediate	
Power Outage	Medium	Immediate	Power outage in 1990s lasted nearly 3 to 4 days.
Sub-Zero Weather	Low	Anticipated	
Hazardous Spill	Low	Immediate	
Watershed Fire	Low	Anticipated	

[a] Immediate = Water shortage is created without notice, such as earthquake or equipment failure.
Anticipated = Water shortage can be anticipated and planning may reduce or avoid the impact altogether, as in drought.

Water Shortage Stages, Criteria, and Conservation Actions

Determination of a water shortage stage and specific actions to be taken depends on the anticipated longevity of the shortage. Specific trigger criteria will correlate with specific actions outlined below, as well as initiate an impact analysis of the water supply deficit and length of conservation activities. The triggering criteria and suggested responses are summarized below in Table 7-8.

Table 7-8. Water Shortage Response Plan – Triggering Criteria

Stage	Trigger Condition	Conservation Action
1 – Voluntary	Loss of Well No. 1. Decline of water level in either source. Drought declaration.	Keep up-to-date weekly on drought; monitor at: http://www.drought.unl.edu/dm/monitor.html Provide informational brochures or notices to affected water system customers of situation. Consider enhanced conservation pricing.
2 – Mandatory	Loss of any one storage tank for greater than 48 hours. Severe drought declaration.	Keep up-to-date weekly on drought; monitor at: http://www.drought.unl.edu/dm/monitor.html Provide notices to affected water system customers of situation. Require water system customers to conserve water by: a. Limiting outside watering to 2 days a week between 7:30 p.m. and 7 a.m.; b. AND/OR prohibit any outdoor irrigation; c. AND/OR ban excessive uses of water such as car washing, driveway cleaning, etc. d. AND/OR monitor customer consumption and provide additional notices or visits. Fire hydrants limited to use only during fire fighting operations. Prepare a press statement concerning the shortage.
3 – Emergency	Loss of Well No. 2. Loss of both storage tanks. Breakage of main transmission line from Tubbs Road.	Bring in bottled and trucked water. Provide notices to affected water system customers of the situation. Notify Department of Health and Pierce County Health Department. Mandatory curtailment of all water usage except for domestic potable use. Consider enforcement measures, including: a. One warning for unnecessary water usage. b. Termination of service following repeat warning. c. Fine for excessive use. Prepare a press statement concerning the shortage.

Example Public Announcements

Every potential water shortage is unique; therefore, specific announcements prepared in advance are not a part of this WSRP. However, it is wise to have several example announcements available that can be modified to fit the circumstances. The following paragraphs list several example public announcements that South Prairie can use in the case of a water shortage.

Sample I – Stage 1 Water Shortage

The Town of South Prairie is experiencing unusually high water demand this summer season and is having difficulty maintaining adequate water supplies. Residents of the town are requested to reduce water consumption and to avoid wasting water wherever possible. The problem is expected to extend through the entire summer season. Conservation pricing may be implemented to encourage residents to reduce water consumption. Additional notices will be forthcoming as the summer progresses.

Sample II – Stage 1 Water Shortage

The Town of South Prairie is experiencing a loss of its water production capacity due to failure of one of its pump stations. The Town's customers are requested to reduce their water usage and to avoid wasting water until the Town can repair the pump. It would be particularly helpful if homeowners will make every effort to reduce lawn irrigation. The problem is expected to be temporary in nature, and a public announcement will be made when normal water consumption can be resumed.

Sample III – Stage 2 Water Shortage

The Town of South Prairie has experienced a major loss in water production and storage capacity, and, therefore, is unable to maintain normal water deliveries. It is mandatory that certain water usage activities be curtailed. This includes the imposition of alternate day lawn watering restrictions on all customers and a complete ban on other nonrequired outside uses of water such as car washing and driveway cleaning. Your cooperation is urgently requested. The Town is doing everything possible to restore the water system to normal operations. You will be notified of any change in the situation.

Sample IV – Stage 3 Water Shortage

The Town of South Prairie has experienced a major loss of its water production capacity. Immediate mandatory curtailment of all water usage except for in-house domestic use is hereby imposed. Your cooperation is urgently requested. Failure to comply with the restrictions may result in termination of service with possible fines being imposed. The Town is doing everything possible to restore the water system to normal operations. You will be notified of any change in the situation.

Supply Augmentation

South Prairie is undertaking an improvement program to construct an intertie with neighboring water suppliers. A conservation and water use education program will be implemented and is being reviewed and improved during the course of development of the Water System Plan.

South Prairie is also committed to a long-term program to improve the efficiency of the existing facilities. The Town will implement a leak detection program to identify maintenance, upgrades, and replacement of pipes to enable more efficient distribution of the existing supplies.

Schedule and Funding

South Prairie is preparing a capital improvement plan, part of which includes improvements to existing sources to maximize source capacity. Funding for this construction program will be through the use of general revenue funds, developer participation, and grants and loans available from the federal, state, and local governments. A financial plan for improvements is included in the Water System Plan and will be implemented through annual budget revisions. South Prairie performs reviews of water rates and considers the changing maintenance and operation costs, as well as necessary scheduling of proposed improvement projects.

Monitoring Program

South Prairie has several mechanisms already in place that can be used to monitor the effectiveness of this Water Shortage Response Plan. The Town maintains daily readings on the flow from the wells and the water level in the storage tanks. Monthly meter reading is also performed. Use of this information will enable South Prairie to identify and locate major leaks in a timely manner. South Prairie is committed to the development of interties and an aggressive leak detection program and will oversee the construction effort with professional contract managers to ensure its timely completion.

South Prairie will periodically review this WSRP and upgrade it as needs arise. This WSRP reflects what South Prairie feels to be a sound implementation WSRP based on fact, professional opinion, comparison with other programs, public expression, and future supply and demand.

7.8 SAFETY PROCEDURES

The Town of South Prairie does not have a documented safety program.

7.9 CROSS-CONNECTION CONTROL PROGRAM

The Town of South Prairie, as the purveyor, has primary responsibility for preventing the contamination of its public water supply through cross connections. Cooperation is, however, required on the part of all parties, including the purveyor, the customer, the local health officer, and the local plumbing authority, to prevent the possibility of contamination of the public water supply through backflow from connections to nonpotable uses. Implementation of a cross-connection control program must be an aggressive and continuing effort in requiring installation of proper backflow prevention devices and conducting thorough inspections.

The Town of South Prairie adopted a Water Supply Cross-Connection Policy in Ordinance No. 338, which is included in Appendix A.

The Town of South Prairie water system has implemented a REVISED cross-connection control program as part of this Water System Plan and has attached it in Appendix D of this document.

7.10 CUSTOMER COMPLAINT RESPONSE PROGRAM

Water system complaints can cause much worry and distrust on the part of customers. It is of the utmost importance that all complaints be taken seriously and handled in a timely manner. Town personnel should conduct themselves in a calm and professional manner when dealing with customer complaints. Good record keeping can help in complaint resolution by ensuring that all relevant data is gathered and by serving as a reminder to resolve the complaint and notify the complainant.

When a complaint is received, a complaint form should be filled out as completely as possible. The complaint should be investigated at the earliest possible time. If no system problem is found, the customer should be notified of this fact, and the complaint form should be filed. If a system problem is found, Town personnel, the Town Engineer, or other technical professionals should determine the corrective action required and the timeline for the correction. Notification to the complainant or all users, depending on the severity of the problem, should be as rapid as possible. Upon resolution, a note should be added to the original complaint form indicating the problem, solution, and date of resolution.

If a problem is found to be the sole responsibility of the property owner, such as a broken service line on private property, the property owner should be advised of their responsibilities. If necessary, the meter can be shut off until the property owner has resolved the problem.

If a problem persists and cannot be identified by Town personnel, outside technical assistance from the Town Engineer or other technical professionals should be sought until the problem can be identified and corrected.

7.11 RECORD-KEEPING AND REPORTING

Information relating to the various aspects of the water system is extremely helpful in planning for the future of the system. In order to keep efforts from being duplicated, all water system information must be kept in an organized fashion. The more organized and available the information is, the more easily that information can be found and processed when needed. Good record keeping and reporting practices will also aid South Prairie in achieving and maintaining compliance with water quality monitoring requirements.

There are two sources that outline the record keeping requirements for public water systems. These sources are *Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs: September 1993* (Ecology, DOH, and Washington Water Utilities Council), and WAC 246-290-480 *Record Keeping and Reporting*.

Water systems are required to keep records of water usage as outlined in the Guidelines and Requirements. The South Prairie water system has less than 1,000 service connections. According to the Guidelines and Requirements, the minimum reporting requirements are as follows:

- Source of supply meters (master meter) – Monthly and annual totals in cubic feet.
- Imported and exported water from emergency interties – Monthly total in cubic feet.
- Imported and exported wholesale water – Monthly total in cubic feet.
- Peak day and month totals – Each year's peak month total in cubic feet.
- Service meter usage – Monthly total, in cubic feet.
- Unaccounted-for water – Annual total in cubic feet.
- Accounted-for non-revenue water – Annual total in cubic feet.
- Population served – Annual total, by single family, commercial, industrial, etc.
- Economic data – Existing water rates for each customer class.
- Conservation data – Annually, indicating type of measure, level of implementation, duration, and date begun.

Table 7-9 has been prepared to outline the applicable record-keeping requirements of WAC 246-290-480.

Table 7-9. Record-Keeping Requirements

Records to be Maintained	Length of Time Records Must be Maintained
Bacteriological monitoring	5 years
Chemical analysis (IOCs, VOCs, radionuclide monitoring)	Life of the system
Additional records of operations and/or analysis completed at the request of DOH	3 years
Records of action taken to correct violations of primary drinking water standards and public notifications of such violations	3 years after the last corrective action
Project reports, construction documents and drawings, and construction inspection reports and approvals	Life of the facility
Daily chlorine residual, turbidity, source meter readings, and treatment plant performance	3 years
Copies of written reports, summaries, or communication relating to sanitary surveys	10 years

All records shall bear the signature of the operator responsible for the water system or his/her representative. Systems shall keep these records available for inspection by DOH and shall send the records to DOH, if requested. Actual lab reports may be kept or data may be transferred to tabular summaries provided the following information is available:

1. Time, date, place of sampling, and name of person sampling.
2. Sample Type ID.
3. Analysis data.
4. Lab and person responsible for analysis.

7.12 O&M IMPROVEMENTS

Improvements have been identified based on review of the operations and maintenance program in Chapter 9, "Improvement Program." A full discussion of the financial impact will be evaluated and included in Chapter 10, "Financial Program."

8. DISTRIBUTION FACILITIES DESIGN AND CONSTRUCTION STANDARDS

8.1 MINIMUM DESIGN CRITERIA AND ANALYSIS METHODS

South Prairie's system is a Group A Level 1 Community System, in accordance with the requirements of WAC Chapter 246-290. As such, the system is subject to federal regulations, WAC, and DOH guidelines.

Federal regulations that apply to South Prairie include the Federal Safe Drinking Water Act (1986).

WACs that apply to South Prairie's system include:

- Chapter 246-290, "Group A Water Systems."
- Chapter 246-292, "Water Works Operator Certification."
- Chapter 246-294, "Drinking Water Operating Permits."

The objectives of the design criteria are:

- To provide adequate quantities of safe and palatable drinking water to the people within the water service area.
- To provide adequate water for fire protection to the community.
- To provide sufficient quantities of water to industry and commerce for production processes.

In the process of attaining these objectives, this plan conforms to the *Pierce County Coordinated Water System Plan and Regional Supplement*, 2001, adopted September 23, 2003.

8.2 PROJECT REVIEW PROCEDURES

All projects to be constructed by the Town will be prepared by the Town Engineer. These projects will be prepared per the standards established by the Town and consistent with the requirements of WAC 246-290. The performance and sizing criteria established in Section 8.4 will be the basis for all expansions and modifications to the system.

DOH will be contacted and given opportunities for comments at various project phases, i.e., report preparation, predesign, final design, and construction review and closeout. The Town of South Prairie Fire Chief's office will also be provided with a copy of construction documents for distribution system improvements and other projects that may impact fire flow. The Tacoma-Pierce County Department of Health will be provided with a copy of reports and construction documents for source and treatment projects. Ecology will be provided with copies of all reports and plans related to source expansion or modification.

8.3 POLICIES AND REQUIREMENTS FOR OUTSIDE PARTIES

8.3.1 Requirements for Developer Improvements

All water system facilities needed within a new development will be installed and paid for by the developer. Distribution improvements needed beyond the existing distribution system to directly supply a new development will also be installed by and paid for by the developer. A Developer's Extension Agreement will be required for all developer-financed projects. The Developer Extension Process Outline and other related forms have been included in Appendix E.

Where an improvement to the existing distribution system will be required to supply a new development, the developer will be required to install and pay for the improvement to the distribution system. Distribution improvements will include, but not be limited to, the following items:

- Pipelines and associated appurtenances.
- Meters required for new services.
- Fire hydrants.

If the developer is required to complete improvements within the existing distribution system, the Town may request that the developer install additional improvements such as new service connections, fire hydrants, or service meters. The developer may be reimbursed for the added costs associated with the additional improvements.

Under certain situations, the Town may request that a developer install a pipeline of a size greater than that required by the development to accommodate hydraulics or future growth as determined by the Town of South Prairie. In order to receive service, the developer will be required to install the pipeline size and type requested by the Town. The Town may NOT reimburse the developer for those costs over and above the cost that would have been incurred if a smaller size or different type of main had been installed. See additional discussion about pipe oversizing in Section 1.8, Service Area Policies.

All water system improvements shall meet the requirements of the Town of South Prairie Standard Specifications. All water system improvements installed by developers will be inspected by a Town-appointed construction inspector. The developer will be required to reimburse the Town for the costs of this inspection. All developer-installed improvements within the town shall be deeded over to the Town of South Prairie.

8.3.2 Service Connection Meters

All service connections to the water system shall be metered, and all meters shall be owned and operated by the Town. Water meters shall be sized to provide adequate domestic water to the customer. All single-family residences and duplexes will be required to have a meter for each unit, except multifamily units and apartment buildings, which shall have minimum water meter sizes determined from the number of units served as follows:

- 1 Through 5 Units (Inclusive): 3/4-inch meter
- 6 Through 10 Units (Inclusive): 1-inch meter

Requests for service to 10 or more units through a single meter shall be subject to review and approval of the Town or Town Engineer.

Water meters for commercial establishments and services larger than 20 units shall be approved by the Town Engineer. Replacement of existing water meters shall comply with minimum sizes listed in this section.

8.3.3 Cross-Connection Control

An assessment will be completed to determine potential cross-connection hazards for all commercial users. The inventory will be completed prior to hookup of any nonresidential users. This will provide assurance that there is compliance with the cross-connection control policies of the Town. The developer will be responsible for installing the cross-connection control device required by the Town, at the developer's expense. The developer shall provide the Town with a copy of certification for the cross-connection control device.

8.4 DESIGN STANDARDS (PERFORMANCE STANDARDS AND SIZING CRITERIA)

8.4.1 General Design Standards

There are several regulations that affect water system performance standards and sizing criteria, *Group A Public Water Systems*, WAC 246-290; and the *Pierce County Coordinated Water System Plan and Regional Supplement*, 2001. In addition, there are publications that provide guidance for system design criteria, such as DOH's *Water System Design Manual*, August, 2001, and *Recommended Standards for Water Works*, 2003, from the Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers (the "Ten-State Standards").

8.4.2 Source Capacity

The total source capacity must be sufficient to meet the peak day demand placed upon a system by its customers per WAC 246-290-222(4).

The Great Lakes-Upper Mississippi Board of State Public Health and Environmental Managers' *Recommended Standards for Water Works* ("Ten-State Standards"), 2003, recommends total groundwater sources shall meet or exceed design maximum-day demand and equal or exceed average-day demand with the largest producing source out of service.

8.4.3 Water Quality Parameters

The following minimum standards apply to quality and treatment of water provided:

- WAC 246-290
- Safe Drinking Water Act, Public Law 104-182

The Town of South Prairie will meet the state or federal Standards for Primary Constituents, whichever is greater.

8.4.4 Storage Requirements

System storage must meet the requirements of WAC 246-290-235 and will be sized in accordance with DOH's *Water System Design Manual*, August, 2001. Storage tanks shall be sized to include the following elements:

- Operating Storage – The volume of water used under normal operating procedures. Normally it is the volume of water that is used between the top of tank and a pump-on-float switch.
- Equalizing Storage – Water volume required to meet peak demands when the source capacity is less than peak hourly demands.
- Standby Storage – The volume used during power outages or when a source is unable to operate.

- Fire Flow – Required in order to deliver the appropriate level of fire flow for the required duration.
- Dead Storage – Unusable water necessary to maintain minimum system pressures and to provide chlorine contact time (CT).

Sizing of storage facilities shall be adequate to provide for the sum of equalizing storage, standby storage, and fire storage requirements for all pressure zones. Fire storage volumes shall be determined using the fire flow and duration outlined in Table 8-1 of this chapter.

8.4.5 Fire Flow Rate and Duration

Sufficient fire-flow capability is a major concern for all combined water systems. New distribution facilities shall be designed to provide a level of service assigned to designated land uses within the town. Table 8-1 outlines the fire-flow volume and duration requirements of Pierce County Code 17.C, a copy of which has been included in Appendix B. The Town of South Prairie is required to provide these fire flows simultaneously with maximum day demand, while maintaining a residual pressure of at least 20 psi throughout the system.

Table 8-1. Minimum Fire Flow Requirements

Type of Development	Fire Flow Required (gpm)	Minimum Duration (minutes)	Minimum Fire Hydrant Spacing (feet)
One- and Two-Family, Urban	750	45	700
Multifamily, Urban	1,500	60	700
Commercial, Urban	1,500	60	500
Industrial, Urban	2,000	120	450

8.4.6 Distribution System

There are two basic aspects of a distribution system that must be considered in design, system pressure and flow rate. System pressures are determined by pipe sizes, system demands, and delivery pressure. Flow rate is based on potable needs and fire flow demands.

System Pressure

System pressures shall not be less than 30 psi at all nodes during peak hourly demand (WAC 246-290-230). Minimum system pressures should not be less than 20 psi during fire flows at maximum day demand (WAC 246-290-230). Normal pressures shall be between 40 psi and 80 psi.

The *Uniform Plumbing Code* requires installation of pressure-reducing valves (PRV in the water service pipe downstream from the service meter for new construction when street main pressure exceeds 80 psi. It is also recommended that individuals install their own PRVs as necessary for existing services in high-pressure areas.

Flow Rate

A minimum velocity of 2.0 feet per second (fps) and a maximum velocity of 8.0 fps are recommended.

Minimum Pipe Sizes

In addition to the required fire flow, minimum service line sizes ensure that the water system will have sufficient capacity in order to meet current and future service requirements.

WAC 246-290-230 specifies a minimum of a 6-inch-diameter main unless a smaller main can be justified through a hydraulic analysis. South Prairie requires a minimum pipeline size of 8-inch diameter for all system expansions and main replacements. Larger-than-minimum line sizes may be required for some locations due to hydraulic considerations.

8.4.7 Telemetry Systems

There is no standard for telemetry systems in South Prairie. The existing telemetry system is manufactured by B/W Controls and is limited to on/off operations of the well pumps. The current telemetry system does *not* gather water system information.

8.4.8 Backup Power Requirements

The *Recommended Standards for Water Works* ("Ten-State Standard") (Great Lakes-Upper Mississippi Board of State Public Health and Environmental Managers, 2003), recommends power sources to include connection to at least two independent public power sources or auxiliary power.

The *Water System Design Manual* (DOH August 2001) recommends sources be protected against loss of power and potential system depressurization. The following criteria have generally been applied to decisions regarding the reduced need for alternate power when the power grid is capable of providing service such that:

1. Outages would average three or fewer per year based on data for the previous 3 years with no more than 6 outages in a single year. (NOTE: Power loss for at least 30 minutes is usually what qualifies as an outage.)
2. Outage duration averages less than 4 hours based on data for the previous 3 years, with not more than one outage during the previous 3-year period exceeding 8 hours.

Consideration must be given, however, regardless of the power grid reliability, to the possibility for system depressurization under conditions of power outages, or other source-related failures, that may cause concern for cross connection problems.

8.4.9 Valve and Hydrant Spacing

Hydrant spacing is as specified in the Section 8.4.5 above, "Fire Flow Rate and Duration." Per WAC 246-290-230, installation of new standard fire hydrants is not allowed on mains less than 6 inches in diameter. Blowoffs should be installed at low points and deadends in the distribution system to allow for sufficient flushing and proper disinfection of distribution mains. Valves on distribution mains of 12 inches and smaller should be located at least every 1,000 feet.

8.5 CONSTRUCTION STANDARDS (MATERIALS AND METHODS)

Selection of materials and construction of water system facilities shall conform to the following, in order of hierarchy:

1. Town of South Prairie Ordinances and Resolutions.
2. Town of South Prairie Standard Specifications.
3. *Standard Specifications for Road, Bridge, and Municipal Construction*, Washington State Department of Transportation/APWA, latest edition.
4. *Pierce County Coordinated Water System Plan*, latest supplement.
5. *Standards of the American Water Works Association* (AWWA).

6. *National Fire Protection Association* (NFPA) *Standards*.
7. Manufacturer materials and equipment specifications and recommendations. The specific materials and methods are presented in Appendix N. The Town Engineer shall make the final determination of all applicable standards.

8.6 CONSTRUCTION CERTIFICATION AND FOLLOW-UP PROCEDURES

Upon award of contract or execution of a developer extension agreement, the Town will require the following from the contractor:

1. Photocopy of all recorded easement agreements.
2. Acceptance from an authorized Town representative for all buried portions of projects prior to backfill.
3. Disinfection testing in the presence of authorized Town representative with samples tested by a Town and DOH approved laboratory.
4. Hydrostatic testing in the presence of authorized Town representative.
5. Certified record drawings from the contractor utilizing the following standards:
   - Yellow marking or highlight – For items that are consistent with construction documents.
   - Red Markings – For new or modified items.
   - Green Markings – For deleted items.
6. Certified fixed-line Mylar record drawings of completed project from the design engineer showing:
   - Easement(s) with recording number(s).
   - All fittings, valves, hydrants, and services.
   - Pipe lengths and number of joints on mainline sections.
   - Distance to mainline from property corner or right-of-way monument line.
   - Distance to services as measured from mainline valves.
   - Distance to hydrant tees as measured from mainline valves.
   - Distance to mainline fittings as measured from mainline valves.
   - Depths of bury at hydrants.
   - AutoCAD compatible "as-built" drawing files on CD ROM.
   - Completion of DOH Construction Report form.

9. IMPROVEMENT PROGRAM

9.1 INTRODUCTION

The Capital Improvement Plan (CIP) has been developed to plan for system-wide improvements. These projects have been selected to not only meet the anticipated needs of a growing system, but also to improve the infrastructure of the existing system. Figure 9-1 and Table 9-1 (located at the end of Chapter 9) summarize the recommended CIP projects based upon the type of project, the proposed implementation/construction schedule, and the project cost in 2006 and at the expected time of completion. The table also prioritizes the projects based on anticipated growth and needs. The detailed project cost estimates for each project are included in Appendix O. The improvements are classified in the following manner:

- Distribution System (D Improvements)
- Source/Storage Improvements (S Improvements)
- Operations and Maintenance Improvements (O&M Improvements)

9.2 DISTRIBUTION SYSTEM IMPROVEMENTS

The following distribution system improvements are required to loop the system and thus provide better fire flows, water pressure, and prevent low chlorine residuals in the pipes. The Town also has existing pipes that are in need of replacement due to age, disrepair, and vulnerability to the overall system.

The Town anticipates growth after resolution of its sewer moratorium, and this will require installation of additional water lines. These lines will be installed at the developer's expense. Existing lines within the town will be replaced as needed. Many of the existing lines in the town are made of asbestos concrete cement (AC) and have reached the end of their design life. These water lines are proposed to be replaced as significant repairs are made or leaks are found on a segment, in coordination with street improvements, or as needed due to inadequate sizing.

Project D1: 2nd Street, 3rd Street, and South Prairie Carbon River Road East Loop

Project D1 will remove approximately 125 feet of existing 1-inch-diameter water main on 2nd Street and install approximately 820 linear feet of 8-inch-diameter ductile iron piping along 2nd Street, 3rd Street, and South Prairie Carbon River Road East. This project will loop existing water lines, remove dead-ends in the system, and improve chlorine residual and water pressure.

Project D2: Pioneer Way Loop

Project D2 consists of replacing approximately 360 linear feet of existing 4-inch asbestos cement pipe on the north side of Pioneer Avenue near Emery Street with 8-inch-diameter ductile iron pipe. The project will include approximately 200 linear feet of new 8-inch-diameter ductile iron pipe to loop the newly-replaced pipe to existing 8-inch-diameter polyvinyl chloride (PVC) pipe near Hydrant No. 22 (approximately half way between Emery and Rainier Street).

The project will be further supplemented by a developer-financed extension of the water line from the front of the Fire Department to Cross Creek Court and further east toward the RV Park. The proposed developer-installed water line is 8-inch ductile iron and is shown on Figure 9-1 but is not included in the cost estimate for Project D2. Both the Town-funded and developer-funded project will loop existing water lines, remove dead-ends in the system, and improve chlorine residual and water pressure.

Project D3: New Transmission Main

Project D3 consists of abandoning approximately 1,800 linear feet of 8-inch-diameter asbestos cement transmission pipeline and installing new 12-inch-diameter ductile iron pipe along Tubbs Road from the Tubbs Road Well to the existing 8-inch-diameter asbestos concrete pipe on 2nd Street. Approximately 600 linear feet of new 8-inch-diameter ductile iron pipe along Emery and Rainier Streets between Second and 3rd Street will also be installed. This project will reduce breakage susceptibility to the Town's only transmission main and ensure this critical infrastructure meets the Town's long-term growth needs. The project will also include adding additional loops in the system and increasing pressure and flow.

Project D4: Water Main Replacement and Upgrades – Next 20 Years

Project D4 does not consist of any one specific water main replacement or upgrade, but instead anticipates that existing water mains not identified in this capital improvement plan will be replaced in the future as part of street improvement projects or as identified in O&M 5: Leak Detection Program.

9.3 SOURCE AND STORAGE IMPROVEMENTS

The Town has enough storage to meet forecasted demands, but replacement of the Town's oldest reservoir should be considered since it is approaching the end of its design life within the 20-year planning period of this plan. The Town's only storage facilities and transmission line near the Tubbs Road Well make the Town vulnerable to interruptions in water service in the event of an emergency at these facilities. Without these facilities, the Town would be unable to provide fire flow, storage, or necessary pressures in the system. This lack of system redundancy makes it critical that the Town pursue an intertie with neighboring purveyors to ensure a secondary water source.

The Town lacks sufficient capacity to meet instantaneous demand within the 20-year outlook of this plan. The Town's well house, pump, and storage facilities are suffering from long-overdue repairs. Many of the proposed projects address critical repairs to the Town's existing facilities that will ensure reliable system operations in the future.

Finally, the Town must address the problem of high arsenic concentrations in its Well No. 1. The Town will be performing increased monitoring of the contaminant over the next 2 years to identify a baseline, but past results suggest the well will require some type of treatment.

Project S1a: Well No. 1 Study – Water Rights and Treatment Alternatives

The Town will seek to expand its use of its instantaneous water rights as detailed in Chapter 5 to meet long-term growth needs. This would require the Town to increase its pumping capacity. Well No. 1 has historically experienced problems with its pumping capacity, in addition to testing for high levels of arsenic contamination. This project would include evaluation of the full range of opportunities for Well No. 1 including (a) transfer water rights and rebuild the well to allow production in excess of existing water right Qi, or 100 gpm, (b) rehabilitate or rebuild the well to allow sustainable production of existing 100 gpm instantaneous right, (c) drill the well deeper and thereby pass any arsenic-containing geologic layers and allow for greater pumping capacity, (d) evaluate arsenic treatment alternatives, and (d) consider economic benefits of establishing an intertie with a neighboring water purveyor and decommissioning Well No. 1.

Project S1b: Well No. 1 Rebuild – 100 GPM

This project will be the outcome of any study results produced in Project S1a: Well No. 1 Study – Water Rights and Treatment Alternatives. In this project, Well No. 1 will be rebuilt to include a deeper well casing, a new well house and 100 gpm submersible well pump. Iron

and manganese treatment facilities will be upsized to treat the increased water flow (currently only 55 gpm). This project assumes that arsenic concentrations will be reduced by drilling the well deeper and avoiding arsenic-producing geological layers. With construction of this project, Project S1c will not be built. ***This project may still be required to meet long-term peak-hour system demands even if alternative arsenic treatments are used.***

Project S1c: Well No. 1 Arsenic Treatment

This project will be the outcome of any study results produced in Project S1a: Well No. 1 Study – Water Rights and Treatment Alternatives. In this project, water from Well No. 1 will be treated for arsenic. With construction of this project, Project S1b (or a variation of) will likely still be built to (1) increase physical capacity to capture full 100-gpm Qi or (2) increase physical capacity to allow increased production after water rights transfer.

Projects S2: Construct Intertie with Neighboring Water Purveyor

In the event that storage, well capacity, or power at the Tubbs Road Well is disrupted, the Town requires an alternative water source to meet current and future demands. This project will result from recommendations in Project S1a: Well No. 1 Study – Water Rights and Treatment Alternatives and an intertie will likely be proposed with the City of Tacoma.

Project S3: Well House No. 2 Improvements

The existing roofing at the Tubbs Road Well is extremely old and may fail in the near future. Interior piping is corroded although still serviceable. This project will include installing a new roof and painting interior piping. Well House No. 1 improvements will be completed under project S1b: Well No. 1 Rebuild.

Project S4: Replacement of 0.1-Million-Gallon (MG) Reservoir at Tubbs Road Well

South Prairie has sufficient storage for existing and projected demands through the year 2025. The oldest reservoir is reaching the end of its design life, however, and will require replacement within the 20-year planning period. This project will include replacing the existing reservoir with the same size reservoir, unless the Town wishes to expand its industrial center in which case the Town may consider a larger reservoir to meet industrial fire flows.

Project S5: Reservoir Upgrades

Since the oldest tank is projected for replacement in the near term, this project will address only the newer second tank. Activities for this project will include general upgrade of the existing reservoir No. 2, including replacement of roof vents and seals, and installation of safety appurtenances. Because the existing reservoir may be subject to draining in the event of a large earthquake, a flexible joint between the tank and the distribution line will also be included.

Project S6: Increase Chlorine Contact Time, Well No. 1

The chlorine contact time product provided between Well No. 1 and the first service connection is less than that required by the Department of Health. This project will increase contact time by installation of a 10-inch ductile iron transmission line from Well No. 1 to the existing 8-inch asbestos pipe transmission main near Tubbs Road, thereby increasing the length of time that it takes for water from Well No. 1 to reach Town services. This project will also provide blending of water from both well sources to reduce arsenic concentrations as required by the Department of Health. Immediate implementation of this project may extend the need for projects S1a, S1b and S1c.

Project S7: Replace Submersible Well Pump at Well No. 2

This pump was installed in 1978, with a motor replacement in 1993. Pumps have varying lifecycles depending on many conditions at the site, but 30 years for this pump will be assumed for the purposes of this document. It is recommended that the pump be replaced concurrently with the motor because of the age of the pump and the level of effort to remove and replace this pump system.

OPERATIONS AND MAINTENANCE IMPROVEMENTS

The following operations and maintenance (O&M) program activities are required to modernize the operations and maintenance program, increase the operational effectiveness and reliability of the system, and address deficiencies. The costs necessary to complete these projects are *in addition* to the existing operating budget requirements.

Project O&M 1: Meter Replacement Program – 15 Years

This project will include replacing a number of service meters throughout the system each year. As meters age, they become less accurate and read lower than actual usage. The manufacturer recommends the Sensus meters be replaced every 15 years or 1.5 mg of water demand (South Prairie's average resident currently consumes 1.5 mg approximately every 22 years). The meters will be replaced by in-house staff.

Project O&M 2: Meter Reading/Billing Software and Equipment

This project will include upgrading the current meters with registers for reading with a hand-held or touch-read device. Associated equipment, meter reading software, and billing software will also be included. This will increase the accuracy and efficiency of reading meters, improve customer awareness of water usage, provide technical support when problems are encountered using billing software, and provide increased data availability for future updates to the Water System Plan.

Project O&M 3: Hydrant Upgrades

Three of the Iowa/Corey style hydrants at locations No. 1, No. 6, and No. 15 will be replaced as a part of this project. See Figure 3-1.

Project O&M 4: Leak Detection Program

The Town currently has no leak detection program but incurs a high percentage of unaccounted water. This program is essential for identification and replacement of failing water distribution lines and to assist the Town in meeting water conservation goals. Any repair work will be performed under Project D4 – Replacement of Old Water Mains.

Project O&M 5: Paint Interior/Exterior of Storage Reservoirs

The Town's reservoirs are in immediate need of sandblasting and recoating to prevent corrosion. Since the oldest tank is projected for near-term replacement, this project will address only the second newer tank. This activity should be performed every 10 to 15 years and should be scheduled, as appropriate, with O&M 6: Clean and Inspect Storage Reservoirs.

Project O&M 6: Clean and Inspect Storage Reservoirs

The Town's reservoirs should be inspected and cleaned of sediment every three to 5 years. Accumulated sediment can harbor microbes in the potable water system. This activity should be scheduled concurrently with O&M 5: Paint Interior/Exterior of Storage Reservoirs.

Project O&M 7: Flushing Fire Hydrants and Water Mains, Exercising Valves

Flushing and operation of water system components has been falling behind in recent years. Additional assistance is required to ensure these tasks are performed and documented.

Project O&M 8: Public Education Program

Activities under this project are a mandatory element of the water conservation program required by the Department of Health. Activities include publicizing the need for water conservation through news articles, public water system bill inserts, or other means. South Prairie will accomplish this through distribution of Ecology, DOH and private industry conservation brochures or other printed material. Materials will be distributed with monthly billings to customers and through handouts to contractors prior to beginning work in the Town. Sources for materials have been provided in Chapter 5.

Project O&M 9: Purchase New Vehicle for Town O&M Department

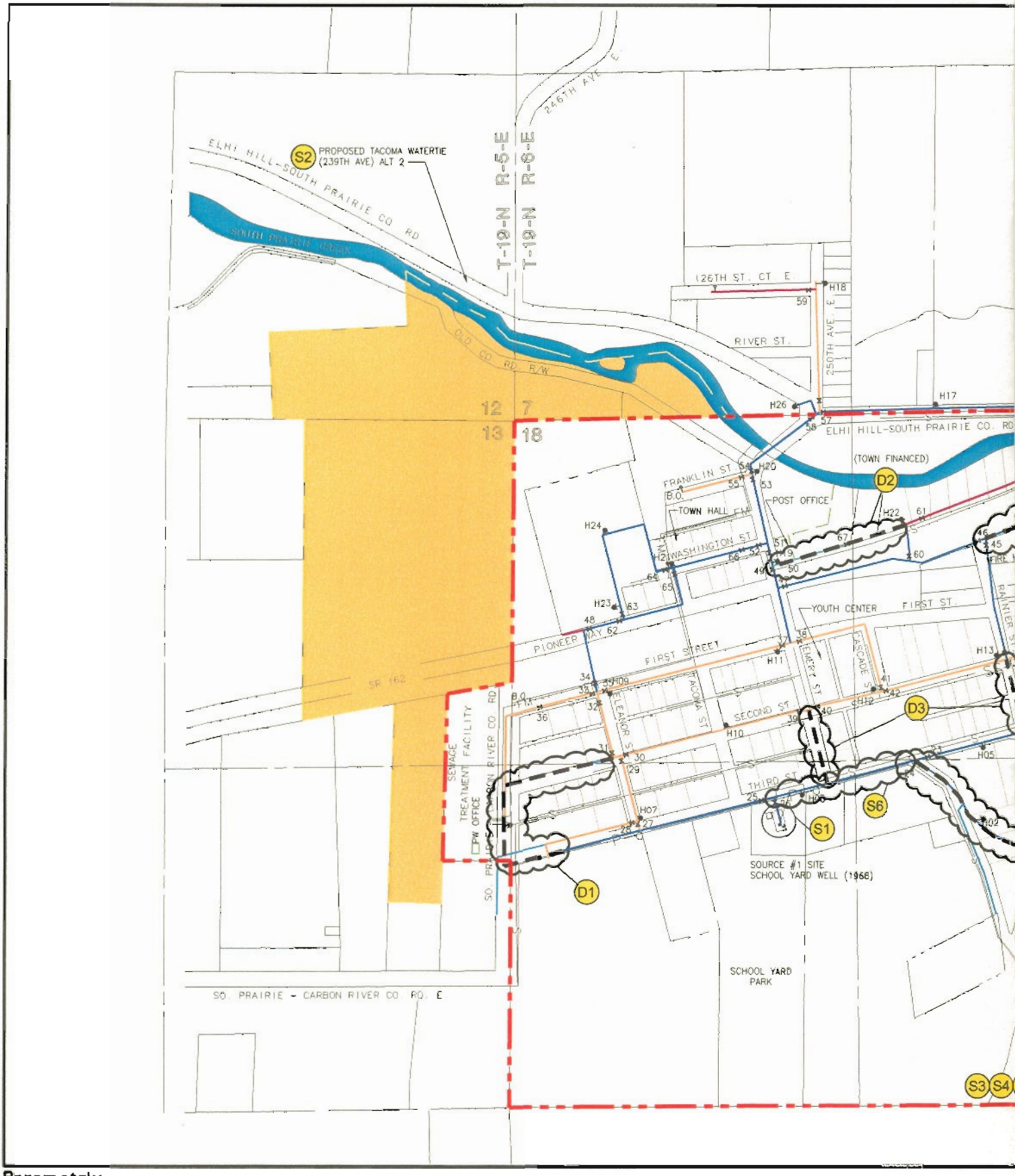
The water system operator's current truck is a 1995 model. Although currently functional, a new vehicle should be considered for long-term funding requirements.

Project O&M 10: Cross-Connection Control Plan

This project will implement the requirements of Section 7.9, Cross-Connection Control Program.

Project O&M 11: GIS Mapping and Database

A water infrastructure GIS mapping database will be developed under this project. This service will allow the water utility to accurately track and record information about its infrastructure. There is currently no system by which water infrastructure maps are routinely updated in South Prairie. Such a system is currently offered through Evergreen Rural Water of Washington, of which South Prairie is a member.



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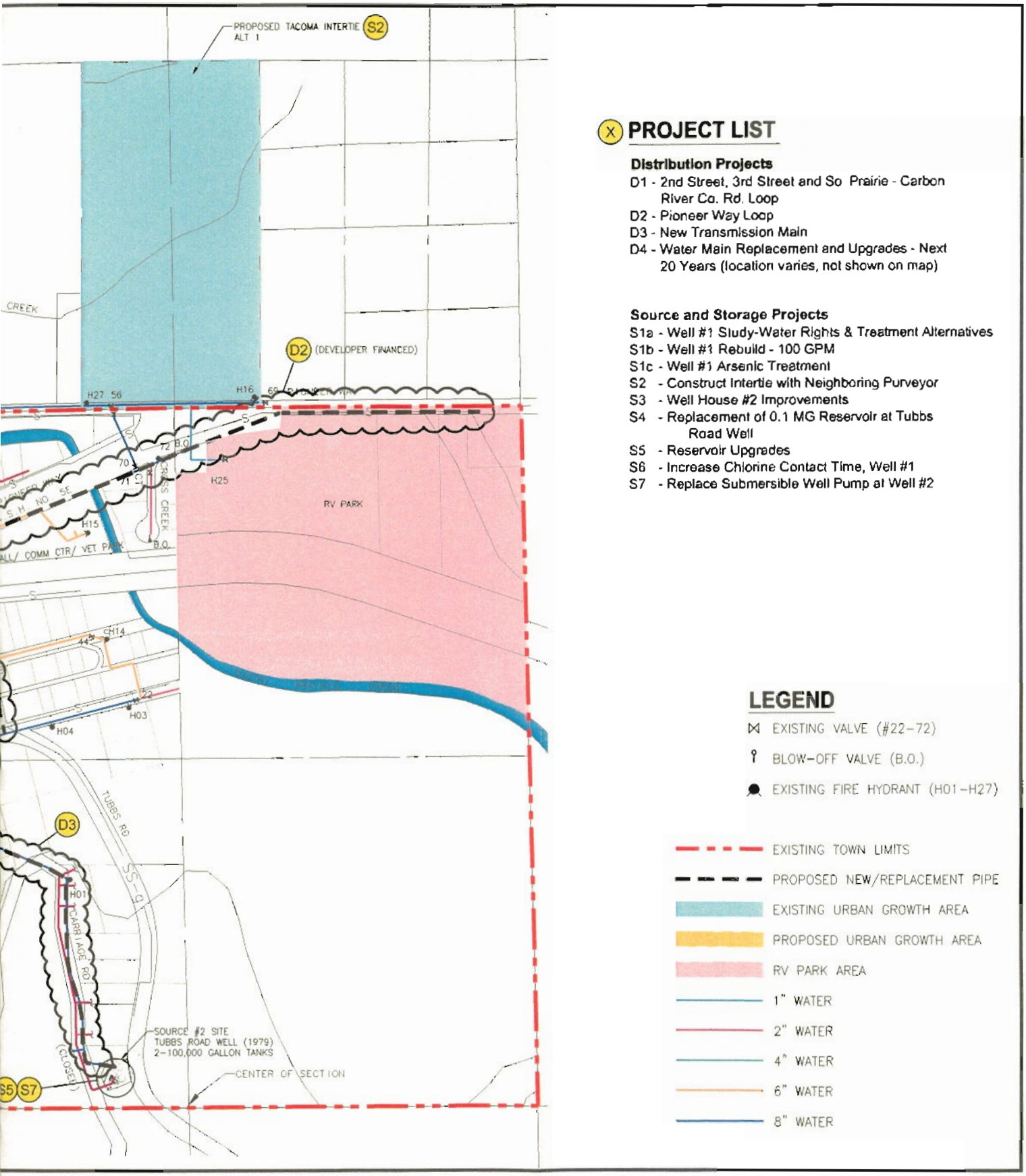


Figure 9-1
South Prairie
Capitol Improvement Plan

TABLE 9-1

TOWN OF SOUTH PRAIRIE
Capital Improvement Plan Schedule

Project No. - Description	Funding Source	Total Cost Year 2006 ($)	Year of Completion 2007 ($)	2008 ($)	2009 ($)	2010 ($)	2011 ($)	2012 ($)	2013 ($)	2014-2025 ($)
Seattle Construction Cost Index (increases at 4%)		8459	*8797*	*9149*	*9515*	*9896*	*10292*	*10703*	*11131*	*11577*
Distribution System Improvements										
D1 - 2nd Street, 3rd Street and So. Prairie - Carbon River Co. Rd. Lo	O	$146,000						184,737		
D2 - Pioneer Way Loop	O	$104,000							136,857	
D3 - New Transmission Main	O	$390,000		421,824						
D4 - Water Main Replacment and Upgrades - Next 20 Years	O	$50,950				119,209			201,140	976,200
Subtotal		**$690,950**	**$0**	**$421,824**	**$0**	**$119,209**	**$0**	**$184,737**	**$337,997**	**$976,200**
Source and Storage Improvements										
S1a - Well #1 Study - Water Rights and Treatment Alternatives	O	$73,000						$92,368		
S1b - Well #1 Rebuild - 110 GPM	C	$668,000								914,204
S1c - Well #1 Arsenic Treatment	***	$441,000								
S2 - Construct Intertie with Neighboring Purveyor	C	$378,000								517,319
S3 - Well House #2 Improvements	O	$32,000	33,280							
S4 - Replacement of 0.1 MG Reservoir at Tubbs Road Well	C	$361,000			406,076					
S5 - Reservoir Upgrades	O	$37,000		40,019						
S6 - Increase Chlorine Contact Time, Well #1	O	$117,000	121,680							
S7 - Replace Submersible Well Pump at Well #2	O	$73,000							96,063	
Subtotal		**$2,180,000**	**$154,960**	**$40,019**	**$406,076**	**$0**	**$0**	**$92,368**	**$96,063**	**$1,431,523**
Operations and Maintenance Improvements										
OM1 - Meter Replacement Program - 10 Years	O	$1,600	1,664	1,731	1,800	1,872	1,947	2,025	2,105	21,897
OM2 - Meter Reading/Billing Software and Equipment	O	$47,000			52,869					
OM3 - Fire Hydrant Replacement	O	$25,000						31,633		
OM4 - Leak Detection Program	O	$3,000	3,120				3,650			12,317
OM5 - Paint Interior/Exterior of Reservoir #2	O	$93,000						117,675		
OM6 - Clean and Inspect Storage Reservoirs	O	$7,000	7,280				8,517			19,160
OM7 - Flushing Fire Hydrants and Water Mains, Exercising Valves	O	$16,000		17,306		18,718		20,245		109,486
OM8 - Public Education Program	O	$600	624	649	675	702	730	759	790	8,211
OM9 - Purchase New Vehicle for Town O&M Department	O	$10,000						12,653		
OM10 - Cross Connection Control (CCC) Plan	O	$10,000	7,280	1,622	1,687	1,755	1,825	1,898	1,974	20,529
OM11 - GIS Mapping and Database	O	$4,000	2,080	541	562	585	608	633	658	6,843
Subtotal		**$217,200**	**$22,048**	**$21,848**	**$57,593**	**$23,631**	**$17,276**	**$187,520**	**$5,527**	**$198,443**
TOTAL - OPERATION FUNDS		**$1,681,150**	**$177,008**	**$483,692**	**$57,593**	**$142,840**	**$17,276**	**$464,625**	**$439,587**	**$1,174,643**
TOTAL - CAPITAL ASSET FUNDS		**$1,407,000**	**$0**	**$0**	**$406,076**	**$0**	**$0**	**$0**	**$0**	**$1,431,523**

*** S1c - Arsenic Treatment not included in CIP summations. CIP assumes larger of S1a and S1b to address arsenic problem at Well #1.

10. FINANCIAL PROGRAM

Effective implementation of the Water System Plan for the Town of South Prairie depends upon developing improvements that can be financially supported by the utility, will meet state and local regulatory requirements, and will provide the flexibility to accommodate growth and unforeseen changes. This section presents a review of the past financial status of the Town, the water utility monthly rate structure, and possible improvement program financing. Also included in this section, as required by the Department of Health for water systems with less than 1,000 connections, is a Financial Viability Test.

10.1 PAST FINANCIAL STATUS

10.1.1 Balance Statement

The Town of South Prairie maintains a single fund for the water utility which funds operating expenses as well as any capital improvements. Table 10-1 lists revenues and expenditures for the water utility from 1999 through 2005.

Historically, system improvements have been funded through loans and in-house reserves.

10.1.2 Debt and Debt Service Obligations

The Town recently completed payment of a water bond in December 2005 for a $25,000 bond issued in June 1967 for construction of water supply improvements. The Town has one outstanding water bond issued in July 1968 for water distribution system improvements in the amount of $68,000. The annual debt service remaining for this bond is approximately $4,100 per year through January 2008. The debt service for this bond will be paid from the water utility.

The Town will also begin payment for a Public Works Trust Fund Loan in the total amount of $53,045 from 2006 through 2011. The loan is a 0 percent loan that will be paid in 1/5th increments ($10,609 per year) until the loan balance is zero.

10.2 WATER UTILITY MONTHLY RATE REVIEW

The largest source of revenues for the water system is from monthly water rates. Residential and commercial/nonresidential accounts are billed under two different rate structures, both of which are a fixed fee (base rate) based on the size of the water service meter and an additional usage rate charged per 100 cubic feet (ccf) of water consumption. The usage rate is implemented under a three-tiered structure where the customer pays successively higher usage rates for water consumed above the preset usage thresholds.

Table 10-2 lists the billing rate schedule as of 2006, which is described in detail under Town Ordinance 401. Connections outside the town limits are billed under the same rate structure as those within town limits, but are assessed an additional 20 percent over the base rate. No future rate increases have been detailed in the Town's ordinance. Increases to water rates are discussed in Section 11.3.6.2 as a source for potential income to offset the cost of the Town's capital improvement plan.

Table 10-1. Revenues and Expenditures for Water Utility from 1999 through 2005

	1999	2000	2001	2002	2003	2004	2005
REVENUES							
Beginning Balance	$8,263.25	$1,573.52	$10,986.91	$24,526.77	$20,984.26	$30,297.07	$36,008.45
Water Rates	56,884.29	66,981.77	71,905.07	76,076.48	79,100.37	78,027.99	63,836.09
Fees and Service	2,202.89	3,883.64	9,660.40	3,530.77	2,058.61	3,441.35	3,850.44
Other Revenue	697.73	8,356.67	4,019.24	1,371.87	4,802.58	2,002.55	1,853.89
TOTAL REVENUE:	**$68,048.16**	**$80,795.60**	**$96,571.62**	**$105,505.89**	**$106,945.82**	**$113,768.96**	**$105,548.87**
EXPENSES							
Total O&M Expenses	$29,671.19	$21,667.77	$23,985.63	$23,604.44	$26,327.03	$24,825.98	$28,956.51
Total Gen. and Admin.	24,307.41	21,563.58	24,280.79	35,943.96	26,653.41	29,313.15	26,329.00
Taxes (Property, B&O, etc)	2,800.99	3,369.08	3,540.93	3,844.06	3,790.81	3,923.88	4,707.40
Annual Debt Payments (Loans/Bonds)	7,783.01	7,373.26	5,237.50	5,057.50	4,877.50	4,697.50	4,700.00
Reserve Funds	1,912.04	15,835.00	15,000.00	16,071.67	15,000.00	15,000.00	15,000.00
TOTAL EXPENSES:	**$66,474.64**	**$69,808.69**	**$72,044.85**	**$84,521.63**	**$76,648.75**	**$77,760.51**	**$79,692.91**

Table 10-2. Current Water Rates for Metered Connections

	Meter Size (in inches)	Monthly Charge[a] ($)	Consumption Scale[a]		
			Tier 1	Tier 2	Tier 3
WITHIN TOWN LIMITS					
Residential	5/8	$23.28	<10 ccf	10 to 20 ccf	>20 ccf
Commercial	5/8	25.67	<10 ccf	10 to 20 ccf	>20 ccf
	3/4	36.30	<15 ccf	15 to 30 ccf	>30 ccf
	1.0	57.55	<25 ccf	25 to 50 ccf	>50 ccf
	1-1/2	110.69	<50 ccf	50 to 100 ccf	>100 ccf
	2.0	174.45	<80 ccf	80 to 160 ccf	>160 ccf
	3.0	344.48	<160 ccf	160 to 320 ccf	>320 ccf
	4.0	535.77	<250 ccf	250 to 500 ccf	>500 ccf
	6.0	1,067.12	<500 ccf	500 to 1,000 ccf	>1,000 ccf
	8.0	1,704.75	<800 ccf	800 to 1,600 ccf	>1,600 ccf
OUTSIDE THE TOWN LIMITS					
Base and Usage Rates are the same as above plus an additional 20 percent applied to the base rate.					

[a] CONSUMPTION CHARGES ($/CCF): Tier 1 = 1.95; Tier 2 = 2.20; Tier 3 = 2.45.

10.3 IMPROVEMENT PROGRAM FINANCING

The following sections detail potential sources of funding for the Town's capital improvement program. A variety of funding opportunities through loans, grants, and bonds will be pursued for each project depending on the Town's debt capacity and availability of funds as a result of any rate increases. Therefore, no single association has been made between any one funding program and a specific project. Exception: There is a strong potential for grant funding through the USDA for projects associated with arsenic treatment for small systems. As such, 75 percent grant funding has been assumed for project D3 – New Transmission Main and S6 – Increase Chlorine Contact Time, Well No. 1. Project S6 will serve the dual purpose of increasing chlorine contact time and also blending water with elevated arsenic concentrations from Well No. 1 with water of lower arsenic concentrations from Well No. 2. The results of blending will likely ensure the Town can meet stringent arsenic concentration limits. Project D3 will reduce breakage susceptibility to the Town's only transmission main and ensure water with the lowest levels of arsenic are available to blend water from Well No. 1 at all times.

10.3.1 Drinking Water State Revolving Fund (DWSRF)

http://www.doh.wa.gov/EHP/dw/our_main_pages/dwsrf.htm

The DWSRF program is a competitive, low-interest loan and technical assistance program for local governments and privately owned water systems with projects that improve drinking water infrastructure and increase public health protection. The DWSRF program is jointly managed by the Washington State Department of Health and Public Works Board, in partnership with the Department of Community, Trade, and Economic Development.

Eligible projects are projects that address existing water system problems that may cause a drinking water system to exceed health standards or that require replacement of aging infrastructure.

Funding for 2005-2007:	$47,722,000		
Loan Limit:	$3,000,000	Interest Rate:	1.5 percent
Applications Due:	Yearly in May		
Local Match:	None, but there is a 1 percent loan fee.		
Loan Term	Life of the project, or 20 years maximum.		
Contact:	Chris Gagnon, (360) 236-3095, chris.gagnon@doh.wa.us.		

10.3.2 Public Works Trust Fund

http://www.pwb.wa.gov/

The Public Works Trust Fund program is a competitive low-interest loan and technical assistance program for public works projects. Eligible applicants include counties, cities, and special purpose districts.

Eligible projects include activities to improve bridges, roads, sanitary sewer, domestic water, storm sewer, and solid waste/recycle. Loans are made available for emergency, planning (long-term capital facilities plans or comprehensive system plans), preconstruction (design, environmental studies, and right-of-way acquisition), and construction activities.

Funding for 2005-2007:	$288,000,000	
Loan Limit (Emergency):	$500,000	Interest Rate: 3 percent
Loan Limit (Planning):	$100,000	Interest Rate: 0 percent
Loan Limit (Preconstruction):	$1,000,000	Interest Rate: 0.5 to 2 percent linked to local match
Loan Limit (Construction):	$7,000,000	Interest Rate: 0.5 to 2 percent linked to local match

Applications Due:	Emergency, planning and preconstruction applications are accepted year-round pending availability of funds. Construction applications are accepted yearly in May.
Local Match (Emergency):	None.
Local Match (Planning):	None.
Local Match (Preconstruction):	5 to 15 percent linked to interest rate (minimum 5 percent).
Local Match (Construction):	5 to 15 percent linked to interest rate (minimum 5 percent).
Loan Term (Emergency):	Life of the project, or 20 years maximum.
Loan Term (Planning):	6 years.
Loan Term (Preconstruction):	5 years maximum, or 20 years with proof of construction financing.
Loan Term (Construction):	Life of the project, or 20 years maximum.
Contact:	Leslie Hafford, (360) 586-4128, Leslie.Hafford@pwb.wa.gov

10.3.3 Community and Economic Revitalization Board Program

http://www.cted.wa.gov

The Community and Economic Revitalization Board Program is a competitive loan and grant program for economic development infrastructure improvements to encourage new development and expansion in areas where growth is desired. Eligible applicants include counties, cities, towns, and many other municipal and quasi-municipal corporations with economic development purposes. Eligible public facilities include bridges, road, domestic and industrial water, sanitary sewer, and other utilities. In addition, pre-development and feasibility studies are opportunities in specific areas of the state. The 2005-2007 funding for this program is $20,448,657.

- Contact: Kate Rothschild, (360) 725-4058, KareR@cted.wa.gov.

10.3.4 Community Development Block Grant

http://cted.wa.gov/portal/alias__CTED/lang__en/tabID__304/DesktopDefault.aspx

Eligible applicants for the Community Development Block Grant are Washington State cities and towns with less than 50,000 in population or counties with less than 200,000 in population that are non-entitlement jurisdictions or are not participants in a HUD Urban County Entitlement Consortium.

Projects must principally benefit low- and moderate-income persons. Low- and moderate-income is defined as 51 percent of the population earning 80 percent of county median income. As shown below, South Prairie's median income may make it ineligible for this grant or loan opportunity, but verification at the time of application should be performed:

- South Prairie Median Household Income (2000 Census): $50,250
- Pierce County Median Household Income (2000 Census): $45,204

Follow-up phone conversations with Pierce County in July 2006 to verify income data indicated that it was unlikely that South Prairie would qualify for these funds, in spite of past eligibility. The County suggested that the Town consider a special income study to verify the median household income if they still wished to pursue this funding source.

10.3.5 USDA/Rural Development/Rural Utilities Service (RUS)

http://www.rurdev.usda.gov/wa/UTLwwdlg.htm

Loan and grant funds in the RUS program are available to public entities including incorporated towns and cities. All applicants with a population of 10,000 or less are eligible, with priority given to those with a population less than 5,500. Grants are considered only after a determination is made on the maximum amount of loan the community can afford and still have reasonable user rates. The EPA and RUS signed a memorandum of agreement in 2002 ensuring maximum possible assistance and priority was made available to small systems needing help in achieving compliance with the arsenic standard.

Eligible Projects:	Projects that improve, develop, or upgrade water, wastewater, solid waste disposal, and storm drain systems
Funding for 2006:	Unknown
Loan Limit:	75 percent of the project cost Interest Rate: Currently 4.5 percent
Grant Limit:	No specified maximum
Applications Due:	Accepted year-round on a fund-available basis
Local Match (Loan):	25 percent
Loan Term:	40 years
Contact:	Sandi Boughton, (360) 704-7737, sandi.boughton@wa.usda.gov

10.3.6 Financial Viability Test

The financial viability test (in accordance with the DOH Financial Viability Manual) is a way to demonstrate that the total cost of providing service has been considered and the water system meets all regulatory and prudent business practices. The financial viability test consists of four related tests, the first three determining whether the water utility has an adequate 6-Year Operating Budget, Operating Cash Reserve, and Emergency Reserve. The fourth test, the household income index, allows DOH to evaluate the local impact of utility operation and capital funding requirements. The results of this test are included in the following worksheets in Appendix P:

Worksheet 1	6-Year Operating Budget – WITH Rate Increase
Worksheet 2	Projection of Water Rate Revenues – WITH Rate Increase
Worksheet 3	Operating Cash Reserve Disclosure Form
Worksheet 4	Emergency Cash Reserve Disclosure Form
Worksheet 5	Washington State Small Water System Financial Viability Test Summary WITH Rate Increase

A summary of various assumptions and clarifications are discussed below as they were used to populate the fields in the financial viability test.

Population

In general, water utility revenues increase in proportion to the population served. Population projection methodology and results are discussed in Section 2.2, for Projected Population. The projected population growth is near zero for the next 6 years, after which growth may accelerate considerably to meet the population projection of 880 people in 2022 (the population as of 2004 is 435 people). See Worksheet 2, Projection of Water Rate Revenues – WITH Rate Increase to see how population information resulted in projected water rate revenues.

Projected Water Rates

Due to the fact that the Town of South Prairie's monthly base and usage rate fees are not currently scheduled to increase after 2006 (see Town Ordinance 401), and population is anticipated to remain fairly stagnant over the next 6-year budget period, the revenue as a result of residential usage is not anticipated to grow unless the Town modifies its utility rates.

Rate increases were applied at 6 percent yearly to the base rate and 8 percent yearly to the consumption charge so as an incentive for conservation. See Worksheet 2, Projection of Water Rate Revenues – WITH Rate Increase.

It is important to note that these rate increases are not specific recommendations to the Town, but could be considered an option for funding of the Town's capital improvement program. In some cases, increased rates may assist the Town in competing for future loan and grant programs as it indicates the Town's assertiveness in addressing infrastructure problems. For example, the Department of Health evaluates, or "benchmarks," rates as a percentage of the county's median income, usually 1.5 percent. With Pierce County's median income at $43,937 as of 2005, this would indicate a yearly water utility bill for the average residential customer of $809. South Prairie's average residential bill is closer to $460 per year (as of 2005) and indicates room for growth.

In addition to rate increases, connection and general facility charges should also be contemplated for increase based upon further study by an independent consulting service provider with expertise in the area of government utility rates and municipal finance. Comparison of South Prairie's existing rate structure against other cities as made available in the 2004 Tax and User Fee Survey[5], published by the Association of Washington Cities, indicate that there is room for potential increases to rates as shown below:

	South Prairie	Cle Elum	Roy	Milton
Base Rate	$25.67	$36.50	$19.50	NR
Rate per 1,000 cf	$19.50	$36.50	$19.50	NR
Connection Fee	$2,000	$2,000 – $3,000	None	$1,550
System Development Charge (also called General Facility Charge)	N/A	None	None	None

[5] Very limited numbers of towns/cities/water districts with similar populations within Pierce County responded to the survey from which this document was published. It appears that South Prairie's fees and rates were roughly average of the local and statewide figures, including larger municipalities with significantly higher water production capacities and demands. Many small towns, like South Prairie, appear to not implement system development charges. South Prairie should consider implementation of such charges, particularly since such charges are directed at new development and South Prairie anticipates heavy growth within the 20-year outlook.

Expenses

Expenses were typically projected to increase 5 percent per year, unless historical evidence indicated a consistent trend higher or lower. Detailed comments have been provided for each line item in Worksheet 1, 6-Year Operating Budget – WITH Rate Increase.

Annual Debt Payments

Where the Town's revenues could not fund the capital improvement program, grants, reserve withdrawals and loans were considered potential sources of funding. Grant funds in the amount of 80 percent of the project costs were applied only to those projects with strong potential for success, such as arsenic treatment related projects. Reserve withdrawals are required in certain years to offset future loan expenses. Loan repayment was assumed to begin the following year in which the debt was acquired, assuming a 2 percent average interest rate over a 20-year period.

Operating, Emergency, and Replacement Reserve Funding

In 2000, the Town increased its annual contribution to an operating, emergency, and replacement reserve account to a total of approximately $15,000 per year. These funds are commingled with reserve funds from other utilities operated by the Town. The Town individually tracks contributions and balances for each of the utilities in this single account.

The water utility reserve funds consist of operating, emergency, and replacement reserves. These different reserve funds are not separately tracked by the Town; therefore, any separate accounting of operating, emergency, or replacement reserves figures shown in Worksheet 1, 6-Year Operating Budget – WITH Rate Increase are for exercise purposes only and to illustrate sufficient savings required by the Department of Health.

Summary

The information presented in the financial viability test indicates that the South Prairie water fund revenues must be raised to meet anticipated expenditures. A study by an independent consulting service provider with expertise in the area of government utility rates and municipal finance can assist the Town by providing more detailed and defensible analysis. Provided that such a study occurs, South Prairie can demonstrate its financial viability for the next 6-year cycle. It is recommended that South Prairie re-evaluate the financial analysis on an annual basis (i.e., January of each year) to validate or modify the assumptions on which it is based and to update revenue and expenditure projections. An electronic copy of all spreadsheets created for the analysis have been copied to disk and included in a jacket to this document to facilitate future review.

11. MISCELLANEOUS DOCUMENTS

11.1 STATE ENVIRONMENTAL POLICY ACT (SEPA)

A SEPA checklist and a Determination of Non-Significance have been included in this Water System Plan in Appendix Q of this document. Signed copies will be included in the final publication of this document.

11.2 AGREEMENTS

Agreements have been referenced where appropriate throughout this document and are included in Appendix C of this document.

12. REFERENCES

American Water Works Association. 1995. Cross-connection control manual accepted procedure and practice, Pacific Northwest section.

Great Lakes-Upper Mississippi Board of State Public Health and Environmental Managers. 1997. Recommended standards for water works ("Ten-state standards").

Pierce County. 1994. Pierce County comprehensive plan.

Pierce County. 1996. Pierce County coordinated water system plan and regional supplement.

Pierce County. 1997. Pierce County planning and land services, Title 18A development regulations – zoning.

Puget Sound Air Pollution Control Agency. 1996. Regulation III, Article 4, asbestos control standard.

Puget Sound Regional Council. 1995. Population growth rates.

Washington State Department of Ecology and Washington State Department of Health. 1994. Guidelines and requirements for public water systems regarding water use reporting, demand forecasting methodology, and conservation programs.

Washington State Department of Health. 1994. Group A public water systems. Chapter 246-290 WAC.

Washington State Department of Social and Health Services. 1983. Sizing guidelines for public water supplies.

Washington State Department of Social and Health Services. 1985. Water system planning handbook, Appendix II, plan content checklist.

APPENDIX A

Referenced Town of South Prairie Ordinances

ORDINANCE NO. 333

AN ORDINANCE OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON ESTABLISHING A COMPREHENSIVE ORDINANCE FOR SEWER REGULATIONS AND RATES, THE ESTABLISHMENT OF EQUIVALENT RESIDENTIAL UNITS AS A METHOD FOR RATE DETERMINATION, ESTABLISHMENT OF HOOK UP FEES.

Whereas, prior regulations dealing with sewers were established in Resolutions #131, #142 and #146. Under Resolution #164 those resolutions are repealed to establish a comprehensive utility system dealing with a comprehensive set of ordinances on sewer and water, and

Whereas, it is for the convenience of its customers and for administration the Town desires to develop a comprehensive utility, sewer and water ordinances, and

Whereas, Ordinance #330 repealed prior ordinances dealing with water, Ordinance #331 established general regulations for sewer and water, and Ordinance #332 established an ordinance for water regulations and rates, and

Whereas, this ordinance establishes a comprehensive ordinance for sewer regulations and rates, and

Whereas, it desires to establish a rate system for sewer which is based upon equivalent residential units, and

Whereas, the development of a billing system based upon equivalent residential units is a fair and equitable method of

charging for the utility, and

Whereas, the establishment of a comprehensive sewer ordinance is in conformity with the Comprehensive Plan, and

Whereas, the establishment of a comprehensive water ordinance and sewer ordinance is in conformity with the Capital Facilities Plans, and

Whereas, the establishment of a comprehensive sewer ordinance in establishing a fair and equitable basic rate based upon equivalent residential units is in the best interest of public health, safety and welfare, and

Whereas, a public hearing was held on this ordinance and Resolution #164, Ordinances #330, #331, and #332, all at the same time and date and public testimony was taken.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do ordain as follows:

Section 1: *Sewer Connections:*

A. Single Family Residential Unit: Prior to hooking up the sewer system, each single family unit shall pay a hookup fee of $3,500.00 per single family unit.

B. Hookup Fee for Units other than Single Family Residential: Any use, other than a single family residential shall pay $3,500.00 per equivalent residential unit (ERU).

C. Rates and Charges for Sewer Use:

1. Each customer shall pay $29.00 per month per equivalent residential unit (ERU).

   One single family residential unit shall be one ERU.

2. Establishment of ERUs: The following are the number of ERUs established for each respective category:

A. Tavern: 6 ERUs

B. Espresso Stands: 1.5 ERUs.

C. Hillstroms Manufacturing: 4.0 ERUs.

D. Hillstroms Warehouse: 1.5 ERUs.

E. Arnold's Convenient Store: 1.5 ERUs.

F. Post Office: 1.5 ERUs.

G. Town Hall: 1.5 ERUs.

H. Church: 1.5 ERUs.

I. The Spot: 1.5 ERUs.

J. Paulson: 1.5 ERUs.

K. Auto Shop: 1.5 ERUs.

L. Fire Hall/Community Center: 1.5 ERUs.

M. Sewer Plant: 1.5 ERUs.

N. Ross: 1.5 ERUs.

O. RV Park: 93 ERUs.

P. Feed Store + 1 house + 1 apartment: 3.5 ERUs.

Section 2: ***Utility Tax on Sewer:*** An 8% utility tax shall be applied to the sewer utility gross receipts. Gross receipts consist of those monies received from charges as set forth above.

Section 3: ***Wastewater Discharge Restrictions:*** No person, firm or business shall discharge or cause to be discharged any storm water, surface water or ground water, including roof run off and foundation drainage to any sanitary sewer.

Section 4: *Connection Permit:* It is unlawful for any person to make any opening in any sewer, drain or connect any private sewer or drain thereto without complying with all the provisions of this chapter, and obtaining a permit from the Town to make such connection or opening. A sum shall be charged and collected by the Town for any connection permit as established by resolution.

Section 5: *Inspection of Work:* No trench shall be refilled or any connection connecting sewer constructed until the same has been inspected and approved by or under the direction of the Town at the point where the same connects with the pipe or other plumbing of the building or the premises being connected.

Section 6: *Right to Access:* A Town inspector or authorized representative shall have the right to enter upon any land, buildings or premises required to be connected by this chapter to the sanitary sewer or disconnect source or sources of stormwater, ground water, or surface water from the sanitary sewer, at all reasonable times to ascertain whether the provisions of this chapter have been complied with or are being complied with, and if they find that such lands, buildings or premises connections or disconnections do not conform to provisions of this chapter, notify the owner or occupant of his duty to alter, repair or reconstruct to make them in conformity with the provisions of this chapter within fifteen (15) days from receiving notice.

Section 7: *Penalties:* Any person who violates or fails to

comply with any provision of this chapter shall be guilty of a misdemeanor and punished by a term not to exceed one year and/or a fine of $5,000.00 or both.

Section 8: If any provision of this ordinance is determined to be invalid or unenforceable for any reason, the remaining provisions of this ordinance shall remain in force and affect.

Section 9: This ordinance shall take affect and be in force January 1, 1997.

Mayor Dale P. Stubbs
INTRODUCED: 12-17-96
PASSED: 12-17-96
APPROVED: 12-31-96
PUBLISHED: 12-26-96

Attested:

Maria Nevill
Acting Town Clerk/Treasurer

Approved as to Form:

Michael J. Reynolds
City Attorney

RESOLUTION NO. 234

A RESOLUTION OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON AUTHORIZING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT FOR FIRE AND EMERGENCY MEDICAL SERVICES AND USE OF THE FIRE ~~DEPARTMENT~~ station FACILITIES; AND AN INTERIM INTERLOCAL AGREEMENT FOR FIRE PROTECTION AND LEASE OF FIRE STATION WITH PIERCE COUNTY FIRE DISTRICT #20.

Whereas, Town of South Prairie and Pierce County Fire District #20 have been negotiating to arrive at an Interlocal agreement, and

Whereas, the parties have arrived at an agreement which was fair and equitable to both parties, and

Whereas, to protect public health, safety and welfare it is necessary to enter into an Interlocal agreement as set forth above as Exhibits "1" and "2", and

Whereas, Pierce County Fire District #20 requests both agreements be entered into.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do hereby resolve as follows:

Section 1: The Mayor is authorized to enter into the Interlocal Agreement for Fire and Emergency Medical Services and the Interim Interlocal Agreement For Fire Protection and Lease of Fire Station, which are attached as Exhibits "1" and "2", and incorporated by reference as if set out in full.

Section 2: If any provision of this resolution and/or the exhibits attached hereto are determined to be invalid or unenforceable for any reason, the remaining provisions of this resolution and Exhibits 1 and 2 shall remain in force and affect.

PASSED IN REGULAR AND OPEN SESSION this 4th day of November, 2003.

Layne Ross
Mayor Layne Ross
INTRODUCED 11-4-03
PASSED 11-4-03
APPROVED 11-4-03
PUBLISHED 11-12-03

Attested:

Marla Nevill
Marla Nevill
Town Clerk

Approved as to form:

Michael J. Reynolds
Town Attorney

TOWN OF SOUTH PRAIRIE CORPORATE SEAL 1909 STATE OF WASHINGTON

COPY

INTERLOCAL AGREEMENT FOR FIRE AND EMERGENCY MEDICAL SERVICES

AND USE OF FIRE STATION

1. Date and Parties:

This Agreement, for reference purposes only, is dated the 4 day of NOVEMBER, 2003 and is entered into by and between PIERCE COUNTY FIRE DISTRICT 20, a municipal corporation hereinafter referred to as the "DISTRICT", and the TOWN OF SOUTH PRAIRIE, a municipal corporation, hereinafter referred to as the "TOWN". The agreement shall be effective on January 1, 2004, upon condition that the resident electors (registered voters) approve the levy lid lift increase proposed by the Town in the November 2003 general election, and shall have a term of five (5) years.

2. Authority for Agreement:

This Agreement is entered into by and between the parties hereto pursuant to the authority granted to the Town under RCW 35A.11.040 and to the District under the authority of RCW 52.12.031 and in conformity with Chapter 39.34 RCW, commonly known as the Interlocal Cooperation Act.

3. Purpose of Agreement:

The District provides fire suppression and emergency service for a portion of Pierce County, and has historically provided such services within the Town, pursuant to contract. The parties desire to formalize their agreement for such services and recognize the consideration provided by the Town to the District, by the lease of the Fire Station and other consideration set forth below.

4. **Agreement Term:**

This Agreement shall become effective on January 1, 2004, and shall remain in effect for five (5) years, i.e. until December 31, 2008 unless earlier terminated pursuant to the provisions hereof. The Agreement shall be automatically renewed for another five-year term if not terminated or changed through mutual agreement of the parties. During the last six months of the term of the agreement, the parties should review the agreement and re-negotiate any renewal agreement. This Agreement may be terminated by either party, with or without cause, by providing notice to the other party, in writing, at least 365 days prior to the proposed termination date. Any earlier purported termination shall only be for good cause shown, and shall be subject to the alternative dispute resolution provision herein.

5. **Scope of District Services:**

The District will provide fire suppression, fire protection, and emergency medical services within the Town, at the same level of service as provided elsewhere in the District's service area. The District shall have no responsibility, however, for Uniform Fire Code inspection services. Nor shall the District take on the added responsibility of investigation of fires for "cause and origin" within the boundaries of the Town.

6. **Consideration from the Town:**

In consideration for the foregoing services, in addition to the lease of the Fire Station, the Town agrees to provide the following consideration. All EMS levy funds collected by the Town, or on its behalf, shall be paid over to the District in two equal semi-annual payments, on or before June 30th and on or before December 31st. The Town levies the exact same EMS tax levy rate as the

District, and should the District or the Town desire to place a levy rate change before the voters it shall inform the other with an adequate time to place the issue before the other's voters. The Town shall pay for fire suppression and fire protection services by paying over to the District, for services rendered, the amount below, derived from property taxes. The intent of the parties is that the levy rate for fire protection within the Town should be the same as the equivalent rate in the District. The District current rate is $1.30 per thousand of assessed valuation. The Town agrees to request a levy increase of $0.75 per thousand at the November 2003 election. If such request is not approved, this agreement shall be null and void. If such request is approved, the Town will pay over to the District such amounts when received. Such payments shall also be due and payable, in two equal semi-annual payments, on or before June 30th and on or before December 31st. The Town shall endeavor to match the District's suppression levy rate for 2004, to be collected in 2005, and continue to do so in subsequent years, during the term of this agreement.

7. **The Lease:**

The Town hereby agrees to Lease, in consideration of the foregoing, the Fire Station to the District for the same term. The District will be responsible for maintaining the interior of the fire station portion of the building and the fire station's exterior grounds. The Town will maintain the Community Center and its respective grounds and shall be responsible for major structural repairs. The District will pay two-thirds of the utilities costs, including but not limited to electrical, water, and sewer. The Town shall invoice the District for its two-thirds contribution immediately after paying such utilities invoices. The District agrees to pay such invoices at the

end of the month if received prior to the 10th of the month, and if received after the 10th of the month, invoices will be paid at the end of the following month. The District will pay the Town $12,000 rent annually in two equal installments on January 1st and July 1st.

8. **Notices:**

Any notice required to be given by either party to the other shall be deposited in the United States mail, postage prepaid, addressed to the District at:

Pierce County Fire District 20
18421 Old Buckley Hwy., Suite F
Bonney Lake, WA 98390

Or to the Town at:

Town of South Prairie
PO Box F
South Prairie, WA 98385

Any change in official mailing address of either party shall be transmitted to one by the other as deemed necessary.

9. **Severability:**

If any provisions of this Agreement or its application are held invalid, the remainder of the Agreement or the application of the remainder of the Agreement shall not be affected.

10. **Modification:**

This instrument constitutes the entire Agreement between the parties and shall supersede any and all prior Agreements, **provided** that this agreement does not modify or affect in any way the previous agreement between the parties relating to the addition to the building financed by the District, for which the Town will continue to reimburse the District as previously agreed. No

change, modification or amendment shall be valid unless evidenced in writing, properly agreed to and signed by both parties.

11. No Third Party Benefits:

This Agreement is entered into for the benefit of the parties to this Agreement only and shall confer no benefits, direct or implied, on any third persons.

13. Liability:

The District shall be responsible for the actions of all fire personnel while responding to emergency medical and/or fire suppression calls within the Town or District boundaries and shall indemnify and hold the Town harmless from any claims by the District's fire and emergency medical personnel, or any third parties, including any Town employee who may be responding as a firefighter or emergency medical technician. The Town shall be responsible for all actions of all Town personnel, except as above, and for the safe condition of the premises at the inception of the lease, and shall indemnify and hold the District harmless from any claims by the Town's personnel, or any third parties that are not involved in firefighting or emergency medical response.

14. Insurance:

a. The District shall provide comprehensive liability coverage for all District personnel and District equipment while responding to fire suppression and/or emergency medical service calls within the Town or District boundaries.

b. The District and the Town, respectively, shall provide insurance on all property in which title is retained.

c. The Town shall provide liability, casualty and property insurance on the fire station, naming the District as an Additional Insured with respect to the District's usage of the building.

15. **Alternative Dispute Resolution:**

The parties agree that litigation shall not be pursued until alternative dispute resolution has been exhausted. In the event of any dispute arising under the terms hereof, the parties agree to first engage in non-binding mediation to facilitate settlement. If that is unsuccessful, the parties agree to engage in binding arbitration. Both services shall be provided through a dispute resolution service acceptable to both parties. Each party shall bear its own costs and attorney fees in the event of mediation or arbitration.

16. **Successors and Assigns:**

If either party to this Agreement ceases to exist by reason of merger, dissolution, or any other such corporate change of form, and if there is a successor corporation or entity surviving the merger, dissolution, or otherwise to which the rights or duties of either contracting party are assignable, then the terms and provisions of this Interlocal Agreement are deemed to apply to that successor/assignee municipal corporation, so long as the applicable laws of the State of Washington allow such municipal corporation to assume those duties and responsibilities.

17. **Fire Station Addition:**

The District has completed an addition to the Fire Station at its expense. In the event the Town terminates the District's use of the Fire Station within twenty (20) years from January 1995, the Town shall repay the District the amortized rate at $4,400 per year.

TOWN OF SOUTH PRAIRIE

Mayor

TOWN OF SOUTH PRAIRIE CORPORATE SEAL 1909 STATE OF WASHINGTON

ATTEST:

By: _____
Town Clerk/Treasurer

APPROVED AS TO FORM:

By: _____
Michael Reynolds, WSBA # 5795
Town Attorney

PIERCE COUNTY FIRE DISTRICT #20

Chairman

Commissioner

Commissioner

APPROVED AS TO FORM:

By: _____
Joseph F. Quinn, WSBA # 6810
Attorney for District

COPY

INTERIM INTERLOCAL AGREEMENT FOR FIRE PROTECTION AND LEASE OF FIRE STATION

This Interim Interlocal Agreement is made by and between Town of South Prairie, hereinafter referred to as "Town", and Pierce County Fire Protection District No. 20, hereinafter referred to as "District", for the purpose of documenting the parties' interim agreement for fire protection and the lease of the fire station, for the period between January 1, 2003, and the effective date of the next Interlocal Agreement for fire protection, which is estimated to be January 1, 2004. In no event shall this interim agreement extend beyond December 31, 2003.

Whereas, the District has provided fire protection and EMS services to the Town's residents for many years, but the last Interlocal Agreement expired on December 31, 2002; and

Whereas, the parties have negotiated a new Interlocal Agreement, which shall take effect January 1, 2004, if the Town's voters approve a levy lid lift in the November 2003 election; and

Whereas, it is necessary for the parties to execute an interim agreement to provide essential terms of agreement for the period between January 1, 2003, and the effective date of any new agreement;

NOW THEREFORE, FOR GOOD AND VALUABLE CONSIDERATION AS SHOWN HEREIN, THE PARTIES AGREE AS FOLLOWS:

1. Rent: During the interim period, between agreements, District agrees to pay, and the Town agrees to accept, $500 per month for rent of the fire station.
2. Service: During the same period, the Town agrees to pay, and the District agrees to accept, $500 per call or response by the District as set forth in an itemized billing to include date, nature of response, and location of response.

3. **Utilities:** During the same period, the District agrees to pay, and the Town agrees to accept, a payment of one-half of the actual utilities expenses.

4. **Accounting:** Both parties agree to modify the current balances due, as shown on any accounting or invoices, to bring such balances into conformity with this agreement. The parties further agree, that the two sums due may be offset, one against the other, and that the party owing a net balance to the other may pay the balance due on a monthly payment plan, extending to the end of 2004, if necessary.

5. **Interim Period:** The "interim period" shall mean and include the time between January 1, 2003 and the effective date of any new Interlocal Agreement for fire protection, **provided** that in no circumstances shall the interim agreement extend beyond December 31, 2003.

TOWN OF SOUTH PRAIRIE

Mayor
Date: 11/4/03

TOWN OF SOUTH PRAIRIE CORPORATE SEAL 1909 STATE OF WASHINGTON

By:
Town Clerk/Treasurer

PIERCE COUNTY FIRE DISTRICT #20

Chairman
Date: 11-17-03

Commissioner

Commissioner

APPROVED AS TO FORM:

By:
Michael Reynolds, WSBA #5795
Town Attorney

APPROVED AS TO FORM:

By:
Joseph F. Quinn, WSBA #6810
Attorney for District

RESOLUTION NO. 242

A RESOLUTION OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON AUTHORIZING THE MAYOR TO EXECUTE ADDENDUM NO. 1 TO INTERLOCAL AGREEMENT FOR FIRE AND EMERGENCY MEDICAL SERVICES AND USE OF FIRE DEPARTMENT FACILITIES.

Whereas, the Town and Pierce County Fire District No. 20 had previously entered into an Interlocal Agreement for Fire and Emergency Medical Services and for the Use of Fire Department Facilities, and

Whereas, the Fire District had undertaken additional tenant improvements and has requested to extend the lease five more years due to the funds expended by the Fire District, and

Whereas, it is in the mutual benefit to both parties to have the Interlocal Agreement for the protection of public health, safety and welfare, and

Whereas, the Town's risk management had requested additional language with respect to the ownership of equipment.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do hereby resolve as follows:

Section 1: The Mayor is authorized to execute the Addendum No. 1 to Interlocal Agreement for Fire and Emergency Medical Services and Use of Fire Department Facilities, attached hereto and incorporated by reference as Exhibit 1 as if set out in full.

Section 2: If any provision of this resolution, the Interlocal Agreement being amended, or the Addendum, is determined to be invalid or unenforceable for any

reason, the remaining provisions of this resolution and/or the Interlocal Agreement being amended, and/or the Addendum shall remain in force and affect.

PASSED IN REGULAR AND OPEN SESSION this 6th day of April, 2004.

Layne Ross
Mayor Layne Ross
INTRODUCED 4-6-04
PASSED 4-6-04
APPROVED 4-6-04
PUBLISHED 4-14-04

Attested:

Marla Nevill
Marla Nevill
Town Clerk

Approved as to form:

Michael J. Reynolds
Town Attorney

TOWN OF SOUTH PRAIRIE CORPORATE SEAL 1909 STATE OF WASH

ADDENDUM NO. 1 TO

INTERLOCAL AGREEMENT FOR FIRE AND EMERGENCY MEDICAL SERVICES AND USE OF FIRE DEPARTMENT FACILITIES

Come now the Town of South Prairie (hereinafter "the Town") and Pierce County Fire District No. 20 (hereinafter "the District") and amend the Interlocal Agreement for Fire and Emergency Medical Services and Use of Fire Department Facilities, executed between the parties on November 4, 2003 and effective January 1, 2004, as follows:

1. Term. The term of the agreement is hereby extended five more years to a concluding date of December 31, 2013. The balance of paragraph 4 of the Interlocal Agreement ("Agreement Term") shall remain in full force and effect.
2. Status of Ownership of Equipment. The parties reaffirm that the Town owns and insures Engine 20-12. The parties agree that the District will maintain Engine 20-12 and all equipment and will operate the engine in a legal, ethical, and professional manner at all times. Only qualified drivers will operate the engine in accordance with WSDOT and Fire District regulations.

Dated this 6th day of April, 2004.

TOWN OF SOUTH PRAIRIE

Wayne Ross
Mayor

PIERCE COUNTY FIRE DISTRICT #20

Brenda Hartin
Chairman

Commissioner

PCFD #20/Add. To S.P. Ag.
JFQ/March 16, 2004

Commissioner

ATTEST:

Town Clerk/Treasurer

APPROVED AS TO FORM:

Michael Reynolds, WSBA #5795
Town Attorney

APPROVED AS TO FORM:

Joseph F. Quinn, WSBA #6810
Attorney for District

TOWN OF SOUTH PRAIRIE CORPORATE SEAL 1909 STATE OF WASHINGTON

ORDINANCE NO. 338

AN ORDINANCE OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON ESTABLISHING PROCEDURE FOR THE INSTALLATION AND MAINTENANCE OF BACKFLOW PREVENTING DEVICES.

Whereas, the Town Council of the Town of South Prairie has determined that in order for the Town to comply with State mandated Cross Connection Controls, pursuant to WAC 246-290; and to further protect the health of it's water users and the potability of the public water supply;

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do ordain as follows:

Section 1: Definitions:

(1) "Approved backflow prevention device" means a device to counteract back pressures or prevent back siphonage. This device must appear on the list of approved devices issued by the State of Washington Department of Health.

(2) "Auxiliary supply" means any water source or system other than the Town of South Prairie system, that may be available in the building or on the premises.

(3) "Backflow" means the flow in the direction opposite to the normal flow or the introduction of any foreign liquids, gases, or substances into the water system of the Town's water.

(4) "Contamination" means entry into or presence in a public water supply system of any substance which may be deleterious to health and/or quality of the water.

(5) "Cross Connection" means any physical arrangement where a public water system is connected, directly or indirectly, with any other non-drinkable water system or auxiliary system, sewer, drain conduit, swimming pool, storage reservoir plumbing fixture, swamp coolers, or any other device which contains, or may contain, contaminated water, sewage, or other liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water system as a result of backflow. Bypass arrangements, jumper connections,

removable sections, swivel or change over devices, or other temporary devices through which, or because of which, backflow may occur are considered to be Cross Connection.

(6) "Degree of Hazard" shall be derived from the evaluation of a health, system, plumbing or pollutional hazard.

(7) "Director" shall mean the Supervisor of Maintenance and Operations of the Town of South Prairie or authorized agent.

(8) "District" or "the District" means the Town of South Prairie, Pierce County, Washington.

(9) "Health Hazard" means an actual or potential threat of contamination of a physical or toxic nature to the public potable water system or the consumer's potable water system that would be a danger to health.

(10) "Plumbing hazard" means an internal or plumbing-type cross-connection in a consumer's potable water system than may be either a pollutional or contamination-type hazard. This includes, but is not limited to, cross-connection toilets, sinks, lavatories, washtrays, domestic washing machines and lawn sprinkler systems. Plumbing-type cross-connections can be located in many types of structures, including homes.

(11) "Pollutional hazard" means an actual or potential threat to the physical properties of the water system or the potability of the public or the consumer's potable water system but which could not constitute a health or system hazard, as defined. the maximum degree of intensity of pollution to which the potable water system could be degraded under this definition would cause a nuisance or be aesthetically objectionable or could cause minor damage to the system or its appurtenances.

(12) "System hazard" means an actual or potential threat of severe danger to the physical properties of the public or consumer's potable water system or of a pollution or contamination which would have a detrimental effect on the quality of the potable water in the system.

(13) "Potable water supply" means any system of water supply intended or used for human consumption or other domestic use.

(14) "Premises" means any piece of land to which water is provided including all improvements, mobile home(s) and structures located on it.

(15) "Reduced pressure principal device" shall mean an assembly containing two independently acting approved check valves together with a hydraulically-operated, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The device shall include properly located test cocks and tightly closing shut off valves at the end of the assembly. A check valve is approved if it appears on the list of approved devices issued by the State of Washington Department of Health.

Section 2: **Purpose:** The purpose of these regulations is to protect the water supply of the Town of South Prairie from contamination or pollution due to any existing or potential cross-connections.

Section 3: **Cross Connections Regulated:** No cross connections shall be created, installed, used or maintained within the territory served by the Town of South Prairie, except in accordance with these regulations.

Section 4: **Backflow Prevention Device Requirement:** Approved backflow prevention devices shall be installed at the expense of the user, either at the service connection or within the premises, as determined by a certified cross connection inspector employed by the Town of South Prairie, whenever

(1) The nature and extent of any activity of the premises, or the materials used in connection with any activity of the premises, or materials stored on the premises, could contaminate or pollute the drinking water supply.

(2) Premises having any one or more cross connections as that term is defined in Section 1, paragraph 5 are identified or are present.

(3) Internal cross connections that are not correctable, or intricate plumbing arrangements which make it impractical to ascertain whether or not cross connections are present.

(4) There is a repeated history of cross connections being established or re-established.

(5) There is unduly restricted entry so that inspectors for cross connections cannot be made with sufficient frequency or with sufficient notice to assure that cross connections do not exist.

(6) Materials of a toxic or hazardous nature are being used such that, if backflow should occur, a health hazard could result.

(7) Any mobile apparatus which uses District water or water from any premises within the Town's system.

(8) Installation of an approved backflow prevention device is deemed to be necessary to accomplish the purpose of these regulations in the judgment of a certified cross connection specialist employed by the Town.

(9) An appropriate cross connection report form has not been filed with the Town.

(10) A fire sprinkler system using non-potable piping material is connected to the Town's water system.

(11) All residential properties occupied by persons other than the property owner shall install an approved backflow prevention device, or the property owner shall assume all responsibility for any backflow that should occur.

Section 5: **Installation Requirements:** To ensure proper operation and accessibility of all backflow prevention devices, the following requirements shall apply to the installation of these devices.

(1) No part of the backflow prevention device shall be submerged in water or installed in a location subject to flooding. If installed in a vault or basement, adequate drainage shall be provided.

(2) Devices must be installed at the point of use and/or point of delivery of the water supply. Alternate locations must be approved in writing by the Town prior to installations.

(3) The device must be protected from freezing and other severe weather conditions.

(4) All backflow prevention device assemblies shall be of a type and model approved by the State of Washington Department of Health and the Town.

(5) The device shall be readily accessible with adequate room for maintenance and testing. Devices 2" and smaller shall have at least 6" clearance on all sides of the device. All devices larger than 2" shall have a minimum clearance of 12" on the back side, 24" ont he test cock side, 12" below the device and 36" above the device. "Y" pattern double check valve assemblies shall be installed so that the checks are horizontal and the test cocks face upward (see appendix A).

(6) The property owner assumes all responsibility for all maintenance and testing of the device, as determined and required by the Town.

(7) Town personnel or their representative must have access to all devices during regular working hours of 8:00 a.m. to 5:00 p.m. Monday through Saturday.

(8) If a device is installed inside of the premises and is 4" or larger and is installed 4' above the floor, it must be equipped with a rigidly and permanently installed scaffolding acceptable to the Town. This installation must also meet the requirements set out by U.S. Occupational Safety and Health Administration and the State of Washington Occupational Safety and Health Codes.

(9) RP devices may be installed in a vault only if relief valve discharge can be drained to daylight, through a "boresight" type drain. The drain shall be of adequate capacity to carry the full rated flow of the device and shall be screened on both ends.

(10) An approved air gap shall be located at the relief valve orifice. This air gap shall be at least twice the inside diameter of the incoming supply line as measured vertically above the top rim of the drain and in no case less than 1".

(11) Upon completion of installation, the Town shall be notified and all devices must be inspected and tested. All backflow devices must be registered with the Town. Registration shall consist of date of installation, make, model and serial number of the backflow device, and initial test report.

(12) Any water pressure drop caused by the installation of a backflow device is not the responsibility of the Town.

(13) All new construction shall install an approved backflow device at the service connection.

Section 6: Access to Premises: Authorized employees of the Town, with proper identification, shall have access during reasonable hours to all parts of a premise and within the building to which water is supplied. However, if any water user refuses access to premise or to the interior of a structure at reasonable times and on reasonable notice for inspection by a cross connection specialist appointed by the Town, a reduced pressure principle device will be required to be installed at the service connection to that premises.

Section 7: Annual Testing and Repairs: All backflow devices installed within the territory served by the Town shall be tested immediately upon installation and at least annually thereafter by a state certified tester. All such devices found not functioning properly shall be promptly repaired or replaced by the water user. If any such device is not promptly repaired or replaced, the Town may deny or discontinue water service to the premise. All testing and repairs are the financial responsibility of the water user.

Section 8: Variances: There will be no variances from these

requirements.

Section 9: **Costs of Compliance:** All costs associated with purchase, installation, inspections, testing, replacement, maintenance, parts, and repairs of the backflow device are the financial responsibility of the property owner.

Section 10: **Termination of Service:** Failure on the part of any customer to discontinue the use of all cross connections and to physically separate cross connections is sufficient cause for the immediate discontinuance of public water service to the premises. (WAC 246-290-490).

Section 11: **Effective Date:** These regulations and this ordinance shall be in effect five (5) days from and after its passage, approval and publication as required by law.

Section 12: If any provision of this ordinance is determined to be invalid or unenforceable for any reason, the remaining provisions shall remain in force and affect.

Dale P. Stubbs

Mayor Dale P. Stubbs
INTRODUCED: 3/4/97
PASSED: 4/1/97
APPROVED: 4/1/97
PUBLISHED: 5-7-97

Attested:

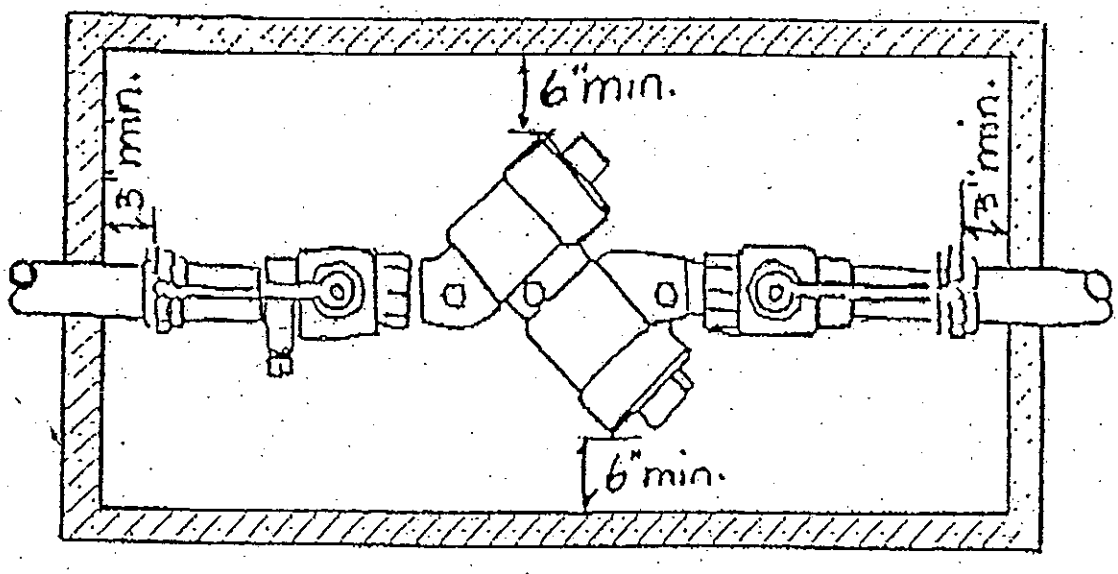
Marla Nevill

Marla Nevill
Acting Town Clerk/Treasurer

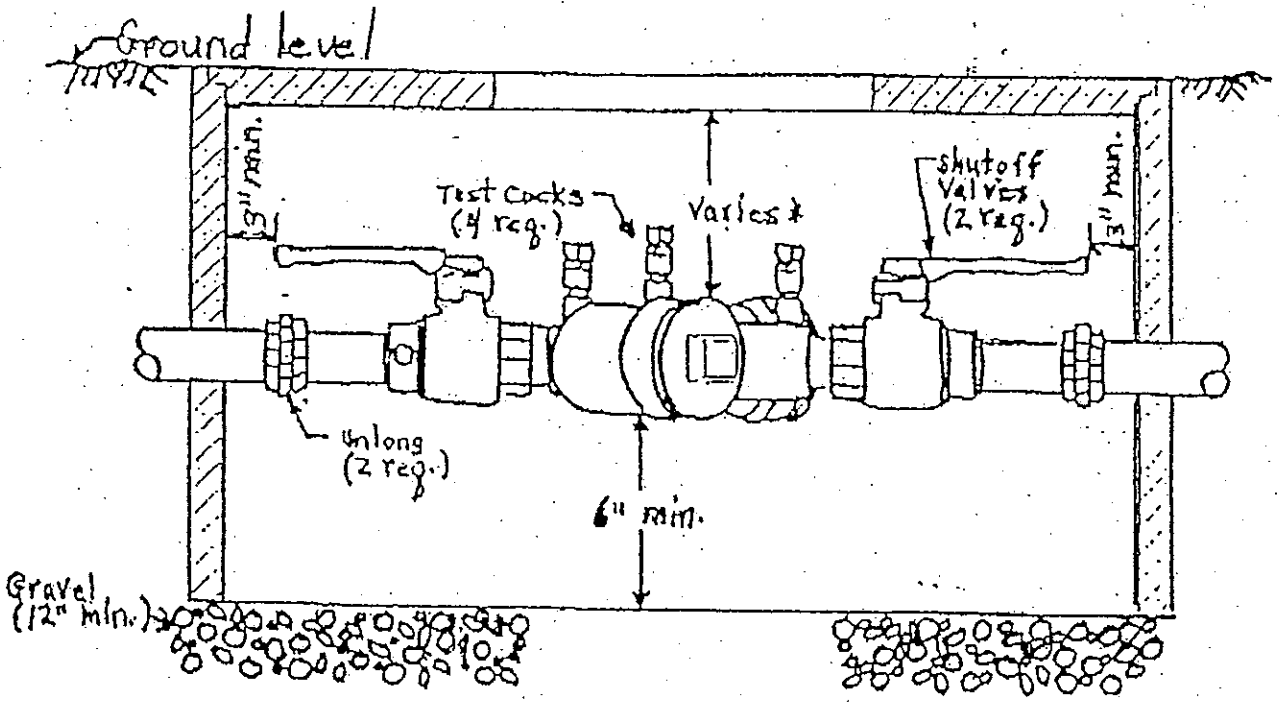
Approved as to Form:

Michael J. Reynolds
City Attorney

APPENDIX A



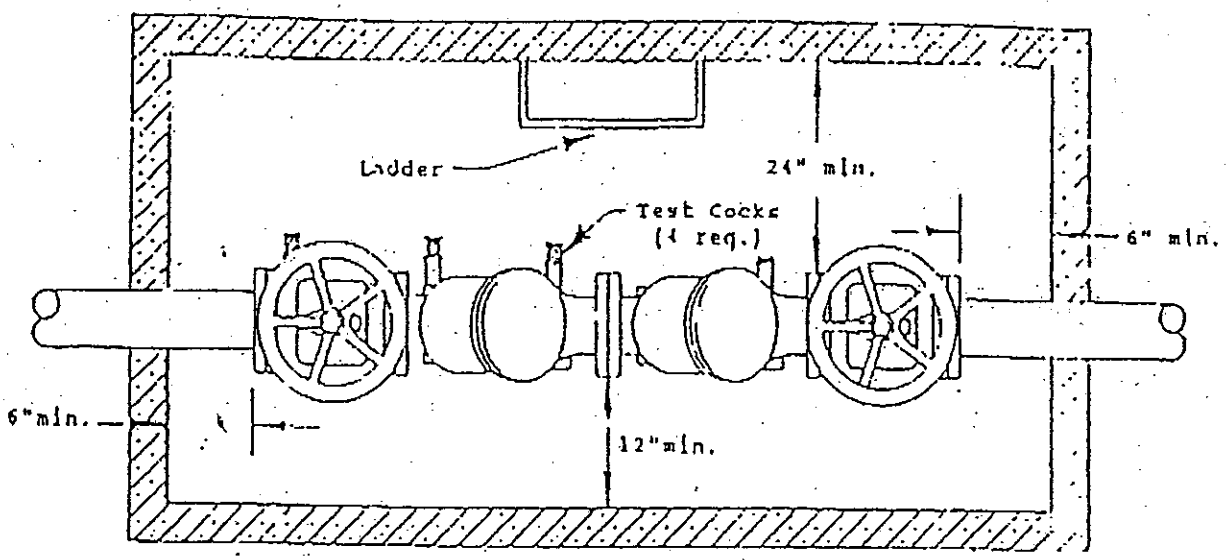
TOP VIEW



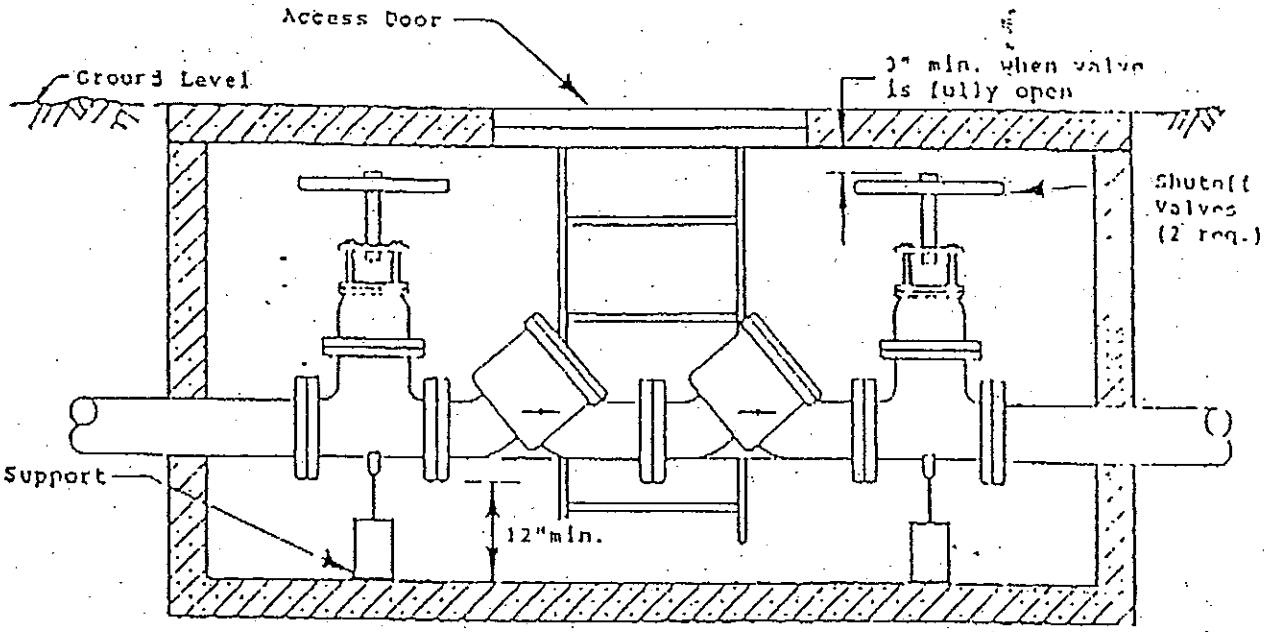
SIDE VIEW

Minimum Clearances For Small Size DCVA In Below-Ground Box

APPENDIX A



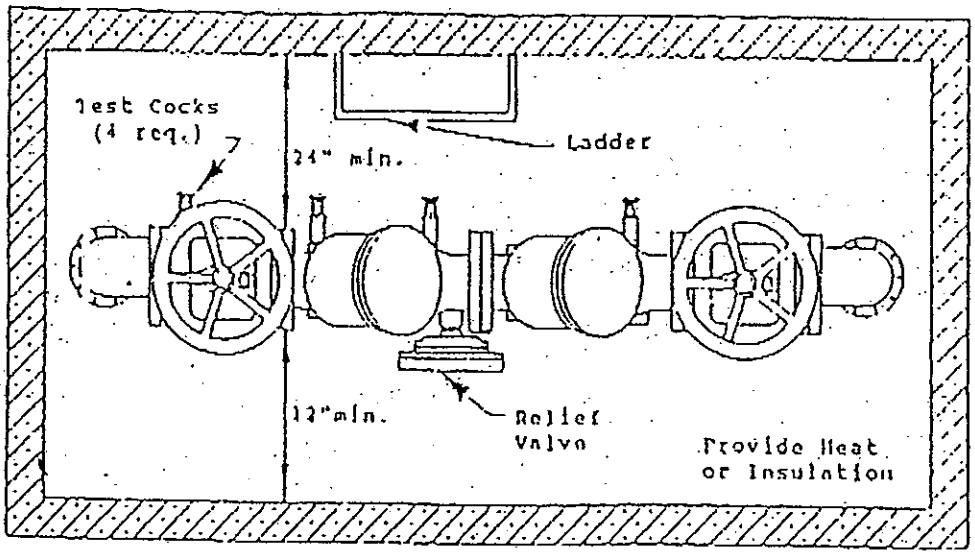
TOP VIEW



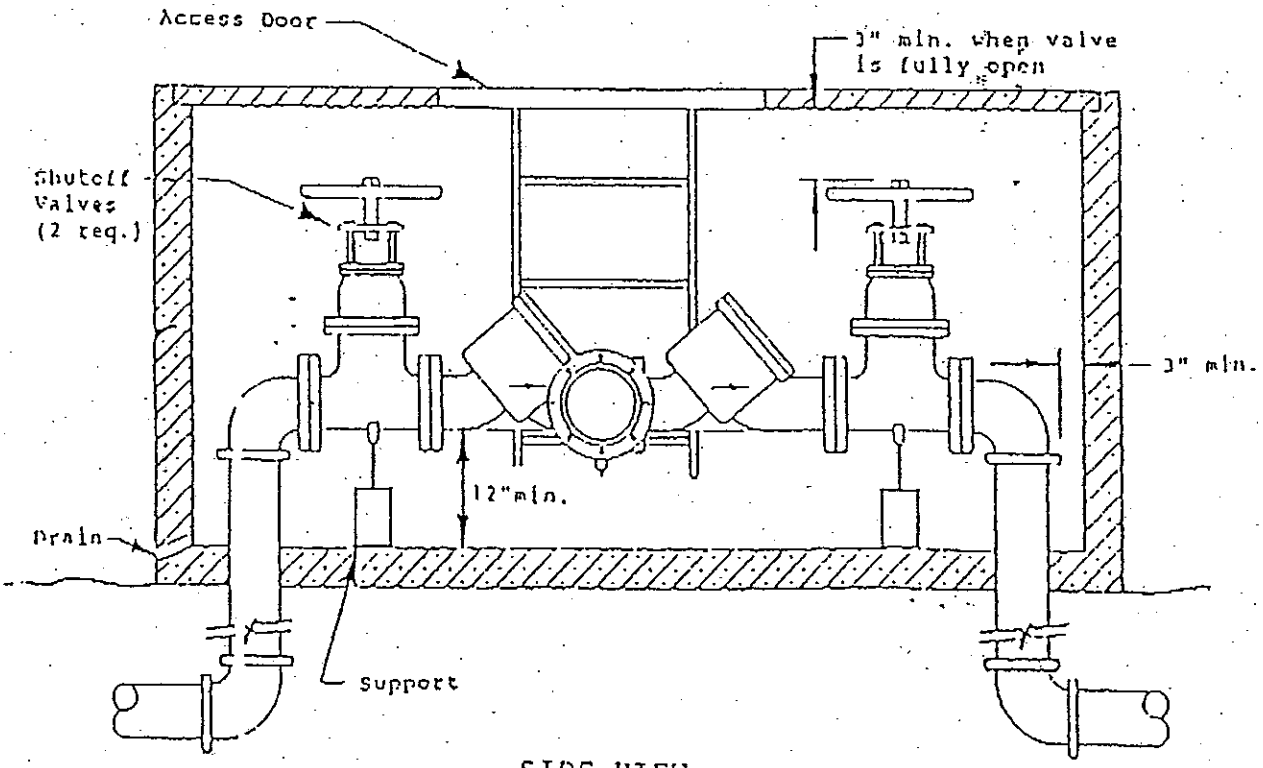
SIDE VIEW

Minimum Clearances For Large Size DCVA In Vault

APPENDIX A



TOP VIEW



SIDE VIEW

Minimum Clearances For RPBA Installation

ORDINANCE NO. 349

AN ORDINANCE OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON REPEALING ORDINANCE NO. 332 TO RE-ESTABLISH THE COMPREHENSIVE ORDINANCE FOR WATER REGULATIONS AND RATES, ESTABLISHING A TWO STAGE BILLING SYSTEM WITH A BASIC RATE PER MONTH DEPENDENT UPON THE SIZE OF METER TYPE PLUS A VOLUME CHARGE.

Whereas, for the convenience of its customers and for administration the Town desired to develop a Comprehensive Water Ordinance and did so under Ordinance #332 which was passed on December 17, 1996, and

Whereas, that ordinance was challenged in Pierce County Superior Court action entitled Dwight Partin v. Town of South Prairie, cause #97-2-06076-7 wherein a Complaint for Declaratory Judgment and Injunctive Relief was sought, and

Whereas, in order to facilitate a resolution of the above litigation the Town retained a water rate consultant, F.C.S. Group, Inc. to evaluate the Town rate structure and report back to the Town Council, and

Whereas, the Town desired to resolve the above captioned litigation and has kept the plaintiffs informed, along with other citizens of the Town during the process of the rate reviews, and

Whereas, the Town held public hearings on the rate structure, the last of which was February 2, 1998, whereupon the Town Council approved the rate structure set forth by F.C.S. Group, Inc. under their Scenario 2 for a $20,000.00 total capital funding whereupon the Town Council approved the water rates on February 2, 1998, and

Whereas, the plaintiffs, among other citizens of the Town, were participants in the public hearing process in establishing the new rates, and

Whereas, for the purposes of ease of administration the Town desires to repeal Ordinance #332 to re-establish many of the provisions identical as they appeared in Ordinance #332, with the modification of the rate structure, for the convenience of having all water provisions in the same ordinance, and

Whereas, in the preparation of Ordinance #332 a provision contained within Ordinance #100 and #123 was omitted, and the Council was desirous of reasserting in the Comprehensive Water Rate Ordinance, and

Whereas, due to the additional costs of providing the utility service to customers located outside of the Town limits, an additional charge of 20% was added to cover the additional costs of the service, and

Whereas, the Town has in existence Ordinance #333 establishing general regulations for utility which will remain in force and effect, and

Whereas, the Town desires to shift from an equivalent residential unit system of charging for the utility to a system which utilizes the diameter of the pipe at the meter for establishing a fixed charge per meter plus a volume charge which, after public hearing, was found to be the most acceptable at this time by the customer base, and

Whereas, the establishment of a Comprehensive Water Ordinance

is in conformity with the Comprehensive Plan and the Capital Facilities Plan, and

Whereas, after public hearing it was determined that the system set forth below is fair and equitable and is in the interest of public health, safety and welfare.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do ordain as follows:

Section 1: Ordinance #332 is hereby repealed.

Section 2: Water Connections:

A. All property hereinafter connected to the water system of the Town of South Prairie shall pay a connection charge of $2,000.00 plus labor and materials. All materials must be purchased from the Town of South Prairie and all labor must be performed by a licensed, bonded contractor who is registered with the Department of Labor & Industries, State of Washington. All connection charges and costs of material must be paid in full within thirty days of the billing date. If not paid in full by the said time, the water will be disconnected and a reconnection fee shall be assessed as established in resolution.

B. The water superintendent shall inspect all water connections. No connection shall be covered by any material which will inhibit inspection until the water superintendent has given his approval for the connection. If the connection has been covered over such that an inspection cannot be made, it shall be the responsibility of the person seeking the connection to take whatever steps are necessary to uncover the connection for inspection.

C. If any street, alley, or right of way is disturbed by making a connection to the Town water system, the street, alley, or road way, or right of way shall be restored to its original condition prior to the commencement of service. The water superintendent shall be the sole authority to determine if there has been compliance with this section.

Section 3: Shut Off Valve Required: Before water is turned on to any premises the service on the property owner's side must

have its own shut off valve.

Section 4: Check Valves or Backflow Prevention Devices: The water superintendent has the right to order the installation of check valves or backflow prevention devices on services where necessary to protect the Town's water supply from contamination. The number, location and type shall be determined by the water superintendent. The water superintendent shall disconnect water service if the installation has not been made within ten (10) days after written notice has been served.

Section 5: Meter Ownership: All meters inside the Town limits shall be supplied by the Town at the expense of the Town's water department and remain the property of the Town. It may be removed at the Town's option. Any meter that is over 3/4 inch diameter, the applicant may be required to pay the difference of the costs between the 3/4 inch meter and the meter desired.

Section 6: Rates and Charges for Water:

A. Effective April 2, 1998 rates and charges for water shall be based upon a system determined by the size of the pipe at the meter and a volume charge. For the purposes of rate determination, the term referred to below as residential shall be one structure on one tax lot, or one individual living unit, such as a mobile home, recreational vehicle and/or apartment unit.

Commercial shall be anything other than the above.

Section 7: Rates:

Customer:	Monthly Fixed Charge Per Meter:	Volume Charge (/ccf)
Residential:		
5/8"	$ 16.75	$ 1.42
1"	$ 36.32	$ 1.42
1 1/2"	$ 68.94	$ 1.42
2"	$ 108.09	$ 1.42

Customer:	Monthly Fixed Charge Per Meter:	Volume Charge (/ccf)
Residential (continued):		
3"	$ 212.49	$ 1.42
4"	$ 329.94	$ 1.42
6"	$ 656.18	$ 1.42
8"	$1,047.67	$ 1.42
Commercial:		
5/8"	$ 18.47	$ 1.42
1"	$ 40.64	$ 1.42
1 1/2	$ 77.59	$ 1.42
2"	$ 121.93	$ 1.42
3"	$ 240.16	$ 1.42
4"	$ 373.18	$ 1.42
6"	$ 742.66	$ 1.42
8"	$1,186.04	$ 1.42

Out of Town Surcharge: There shall be an additional Out of Town Surcharge applied to each account which shall be 20% above the above billed amount plus the above billed amount.

Section 7: **Utility Tax on Water:** A 3% utilities tax shall be applied to water utility and the gross receipts shall be applied to the general fund. Gross receipts consist of those monies received from the charges as set forth above.

Section 8: **Alteration of Use:** No person supplied with water from the Town shall be entitled to use it for any purpose other than that stated in the Application and Agreement Document, nor add any fixtures or supplies in anyway or for any purposes other than persons or families without first securing a permit for the same from the Water Superintendent.

Section 9: **Requirement of One Meter for Each Residential Unit:** Each residential unit, as defined above, must have its own meter, with the exception of a recreational vehicle (RV) park.

Section 10: If any provision of this ordinance is determined to be unenforceable or invalid for any reason, the remaining provisions of this ordinance shall remain in force and effect.

Section 11: The water rates shall be reviewed annually.

Section 12: This ordinance shall take effect and be in force April 2, 1998.

Mayor Layne Ross
INTRODUCED: 3-10-98
PASSED: 3-10-98
APPROVED: 3-10-98
PUBLISHED: 3-24-98

Attested:

Marla Nevill
Town Clerk/Treasurer

Approved as to Form:

Michael J. Reynolds
Town Attorney

AMENDED: SEE
ORDINANCE # 400

ORDINANCE NO. 374

AN ORDINANCE OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON AMENDING ORDINANCE NO. 349, DEALING WITH THE WATER UTILITY, TO INCREASE THE WATER RATES ANNUALLY, BEGINNING JANUARY 1, 2000 AND CONTINUING ANNUAL INCREASES THEREAFTER.

Whereas, Ordinance No. 349 established a comprehensive water ordinance, including but not limited to the rates and charges for water at Section 6, and

Whereas, the effective date for charges for water under Ordinance No. 349 was effective April 2, 1998, and

Whereas, the water utility is an enterprise fund and must have sufficient revenues to cover its expenses, and

Whereas, it is in the public health, safety and welfare to provide a balanced enterprise fund, and

Whereas, projected costs increase on an annual basis will be at least 3%, and

Whereas, for the purposes of accurately attempting to track expenses with revenues, an automatic adjustment may be the most sufficient method, unless, it is determined at a later date that the expenses or revenues are significantly greater or less than the annual projection, and

Whereas, a public hearing was held, and

Whereas, to give the customers adequate time to prepare for the adjusted rates the effective adjustment will take place on January 1, 2000 and be adjusted on the like date thereon unless amended by ordinance.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do ordain as follows:

Section 1: Ordinance No. 349, Section 6 **Rates and Charges for Water** be amended as follows:

> "**Rates and Charges for Water:** The rates and charges for water shall be based upon a system determined by the size of the pipe and the meter and a volume charge. For the purposes of rate determination, the term referred to below as residential shall be one structure on one tax lot, or one individual living in it, such as a mobile home, recreational vehicle and/or apartment unit.
>
> Commercial shall be anything other than the above.
>
> The rates as set forth in the "Water Utility Rate Schedule" attached hereto and incorporated herein by reference as if set out in full as Exhibit "1" will begin on January 1, 2000 and shall be adjusted to rate appearing below the year on January 1st of the respective year.
>
> The consumption charge as set forth in the attached Exhibit "1" is an additional charge above the base rate representing the actual consumption of water used for each 100 cubic feet (CCF).
>
> **Out of Town Surcharge:** There shall be additional out of town surcharge applied to each account which shall be 20% above the billed amount plus the above billed amount.

Section 2: All other provisions of Ordinance No. 349, except as specifically amended above, are hereby reaffirmed in all respects.

Section 3: If any provision of this ordinance, or Ordinance No. 349 is determined to be invalid or unenforceable for any reason, the remaining provisions of this ordinance, and/or Ordinance No. 349 shall remain in full force and affect.

Section 4: This Ordinance shall take effect and be in force January 1, 2000.

Layne Ross
Mayor Layne Ross
INTRODUCED 10-26-99
PASSED 10-26-99
APPROVED 10-26-99
PUBLISHED 11-3-99

Attested:

Marla Nevill
Marla Nevill
Town Clerk

Approved as to form:

Michael J. Reynolds
City Attorney

Water Utility Rate Schedule

Base Rate Without Consumption

	2000	2001	2002	2003	2004	2005	2006
Residential							
5/8-inch	$ 19.50	$ 20.09	$ 20.69	$ 21.31	$ 21.95	$ 22.61	$ 23.28
Commercial							
5/8-inch	$ 21.50	$ 22.15	$ 22.81	$ 23.49	$ 24.20	$ 24.92	$ 25.67
3/4-inch	$ 30.40	$ 31.31	$ 32.25	$ 33.22	$ 34.22	$ 35.24	$ 36.30
1-inch	$ 48.20	$ 49.65	$ 51.14	$ 52.67	$ 54.25	$ 55.88	$ 57.55
1.5-inch	$ 92.70	$ 95.48	$ 98.35	$ 101.30	$ 104.33	$ 107.46	$ 110.69
2-inch	$ 146.10	$ 150.48	$ 155.00	$ 159.65	$ 164.44	$ 169.37	$ 174.45
3-inch	$ 288.50	$ 297.16	$ 306.07	$ 315.25	$ 324.71	$ 334.45	$ 344.48
4-inch	$ 448.70	$ 462.16	$ 476.03	$ 490.31	$ 505.02	$ 520.17	$ 535.77
6-inch	$ 893.70	$ 920.51	$ 948.13	$ 976.57	$ 1,005.87	$ 1,036.04	$ 1,067.12
8-inch	$ 1,427.70	$ 1,470.53	$ 1,514.65	$ 1,560.09	$ 1,606.89	$ 1,655.10	$ 1,704.75

Consumption Charge

	2000	2001	2002	2003	2004	2005	2006
Tier 1	$ 1.65	$ 1.70	$ 1.75	$ 1.80	$ 1.85	$ 1.90	$ 1.95
Tier 2	$ 1.90	$ 1.95	$ 2.00	$ 2.05	$ 2.10	$ 2.15	$ 2.20
Tier 3	$ 2.15	$ 2.20	$ 2.25	$ 2.30	$ 2.35	$ 2.40	$ 2.45

Consumption Tier Ranges

	5/8-inch	3/4-inch	1-inch	1.5-inch	2-inch
	< 10 ccf	< 15 ccf	< 25 ccf	< 50 ccf	< 80 ccf
	10 to 20 ccf	15 to 30 ccf	25 to 50 ccf	50 to 100 ccf	80 to 160 ccf
	> 20 ccf	> 30 ccf	> 50 ccf	> 100 ccf	> 160 ccf

	3-inch	4-inch	6-inch	8-inch
Tier 1	< 160 ccf	< 250 ccf	< 500 ccf	< 800 ccf
Tier 2	160 to 320 ccf	250 to 500 ccf	500 to 1,000 ccf	800 to 1,600 ccf
Tier 3	> 320 ccf	> 500 ccf	> 1,000 ccf	> 1,600 ccf

EXHIBIT "1"

ORDINANCE NO. 400

AN ORDINANCE OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON ~~PIERCE COUNTY, WASHINGTON~~, REAFFIRMING ORDINANCE NO. 374 THAT AMENDED ORDINANCE NO. 349 DEALING WITH THE WATER UTILITY TO INCREASE WATER RATES ANNUALLY BEGINNING JANUARY 1, 2000 AND CONTINUING ANNUAL INCREASES THERAFTER.

Whereas, Ordinance No. 374 was passed on October 26, 1999, and

Whereas, Ordinance No. 374 amended Ordinance No. 349 dealing with the water utility to increase the water rates annually beginning January 1, 2000 and continuing annual increases thereafter, and

Whereas, the increases are necessary to balance the water utility, which is an enterprise fund, and

Whereas, state initiatives and court rulings on state initiatives necessitate the reaffirmation of the action previously taken by the Town Council, and

Whereas, if the water utility does not receive the rate increases the expenses would exceed the revenues resulting in an insolvency in the enterprise fund.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do ordain as follows:

Section 1: Ordinance No. 374, amending Ordinance No. 349, Section 6, Rates and Charges for Waters, is hereby reaffirmed in its entirety.

Section 2: If any provision of this Ordinance, or Ordinance No. 349 and/or Ordinance No. 374, is determined to be invalid or unenforceable for any reason, the

remaining provisions of this Ordinance, and Ordinance No. 349 and/or Ordinance No. 374, shall remain in force and affect.

Section 3: This Ordinance shall take effect and be in force five (5) days from and after its passage, approval and publication as required by law.

Layne Ross
Mayor Layne Ross
INTRODUCED 12-5-2000
PASSED 12-5-2000
APPROVED 12-5-2000
PUBLISHED 12-13-2000

Attested:

Marla Nevill
Marla Nevill
Town Clerk

Approved as to form:

Michael J. Reynolds
Town Attorney

TOWN OF SOUTH PRAIRIE CORPORATE SEAL 1909 STATE OF WASHINGTON

ORDINANCE NO. 448

AN ORDINANCE OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON ADOPTING THE 2003 EDITION OF THE UNIFORM PLUMBING CODE, REPEALING ORDINANCES INCONSISTENT WITH THE 2003 EDITION OF THE UNIFORM PLUMBING CODE, ADOPTING THE WASHINGTON STATE AMENDMENTS TO THE 2003 UNIFORM PLUMBING CODE AND LATER AMENDMENTS TO THE WASHINGTON STATE AMENDMENTS.

Whereas, the International Association of Plumbing and Mechanical Officials have promulgated a revised Uniform Plumbing Code entitled the 2003 edition of the Uniform Plumbing Code, and

Whereas, for uniformity throughout jurisdictions and for the protection of public health, safety and welfare the Town adopts the latest versions of the Uniform Plumbing Code and amendments thereto, and the Washington State amendments and their amendments, and

Whereas, the 2003 edition of the Uniform Plumbing Code is consistent with the Comprehensive Plan and has no adverse environmental affect, and

Whereas, a copy of the 2003 edition of the Uniform Plumbing Code is available for public inspection as required by law.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do ordain as follows:

Section 1: The 2003 edition of the Uniform Plumbing Code is hereby adopted and incorporated by reference as if set out in full, and amendments noted in the attached "Exhibit A".

Section 2: Any previous ordinances and/or sections thereof, inconsistent with the 2003 edition of the Uniform Plumbing Code are hereby repealed.

(See *Exhibit "A" attached to Ordinance No. 446)*

Section 3: If any provision of this ordinance, the 2003 edition of the Uniform Plumbing Code, Washington State amendments, or amendments thereto, are determined to be invalid or unenforceable for any reason, the remaining provisions of this ordinance and/or the 2003 edition of the Uniform Plumbing Code and/or Washington State amendments and/or any amendments thereto shall remain in force and affect.

Section 4: This ordinance shall take effect and be in force five (5) days from and after its passage, approval and publication as required by law.

Mayor Layne Ross
INTRODUCED: 6-7-04
PASSED: 7-6-04
APPROVED:____ 7-6-04
PUBLISHED: 7-6-04

Attested:

Marla Nevill
Town Clerk

Approved as to form:

Michael J. Reynolds
Town Attorney

ORDINANCE NO. 451

AN ORDINANCE OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON ADOPTING THE 2003 INTERNATIONAL FIRE CODE, THE WASHINGTON STATE AMENDMENTS, FUTURE AMENDMENTS TO THE INTERNATIONAL FIRE CODE, FUTURE WASHINGTON STATE AMENDMENTS, AND REPEALING PRIOR CODES OR SECTIONS INCONSISTENT WITH THE CODES ADOPTED HEREIN OR AMENDMENTS.

Whereas, the international code council has promulgated the 2003 edition of the International Fire Code, and

Whereas, the Town desires to adopt the most recent editions of the codes for the protection of public health, safety and welfare, and

Whereas, the 2003 edition of the International Fire Code provides for regulating and governing the safeguarding of life and property from fire and explosion hazards arising from the storage, handling and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises as herein providing; providing for the issuance of permits and collection of fees; and for each and all of the regulations, provisions, penalties, conditions and terms of said Fire Code on file, and

Whereas, the 2003 edition of the International Fire Code is consistent with the Comprehensive Plan and has no adverse environmental affect, and

Whereas, copies of the code are available as set forth by law for public inspection.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do ordain as follows:

Section 1: Hereby adopts and incorporates by reference as if set out in full the 2003 edition of the International Fire Code, Washington State amendments, future amendments to the 2003 International Fire Code and Washington State amendments.

Section 2: Any ordinances that are inconsistent with the 2003 edition of the International Fire Code, or provisions therein are hereby repealed.

Section 3: Adopts or modifies the following sections to the 2003 edition of the International Fire Code:

Section 101.1: Town of South Prairie

Section 109.3: Misdemeanor - $1,000 / 90 days.

Section 111.4: Double permit costs - $5,000.

Section 4: If any provision of this ordinance, the 2003 edition of the International Fire Code, Washington State amendments, or later amendments thereto, are determined to be invalid or unenforceable for any reason, the remaining provisions of this ordinance, the 2003 edition of the International Fire Code, Washington State amendments, and future amendments shall remain in force and affect.

Section 5: This ordinance shall take effect and be in force five (5) days from and after its passage, approval and publication as required by law.

Mayor Layne Ross
INTRODUCED: 7-6-04
PASSED: 7-6-04
APPROVED: 7-6-04
PUBLISHED: 7-14-04

ORDINANCE NO. 400

AN ORDINANCE OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON ORDINANCE NO. 374 THAT AMENDED ORDINANCE NO. 349 DEALING WITH THE WATER UTILITY TO INCREASE WATER RATES ANNUALLY BEGINNING JANUARY 1, 2000 AND CONTINUING ANNUAL INCREASES THEREAFTER.

Whereas, Ordinance No. 374 was passed on October 26, 1999, and

Whereas, Ordinance No. 374 amended Ordinance No. 349 dealing with the water utility to increase the water rates annually beginning January 1, 2000 and continuing annual increases thereafter, and

Whereas, the increases are necessary to balance the water utility, which is an enterprise fund, and

Whereas, state initiatives and court rulings on state initiatives necessitate the reaffirmation of the action previously taken by the Town Council, and

Whereas, if the water utility does not receive the rate increases the expenses would exceed the revenues resulting in an insolvency in the enterprise fund.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do ordain as follows:

Section 1: Ordinance No. 374, amending Ordinance No. 349, Section 6, Rates and Charges for Waters, is **hereby reaffirmed in its entirety.**

Section 2: If any provision of this Ordinance, or Ordinance No. 349 and/or Ordinance No. 374, is determined to be invalid or unenforceable for any reason, the

remaining provisions of this Ordinance, and Ordinance No. 349 and/or Ordinance No. 374, shall remain in force and affect.

Section 3: This Ordinance shall take effect and be in force five (5) days from and after its passage, approval and publication as required by law.

Mayor Layne Ross
INTRODUCED 12-5-2000
PASSED 12-5-2000
APPROVED 12-5-2000
PUBLISHED 12-13-2000

Attested:

Marla Nevill

Town Clerk

Approved as to Form:

Michael J. Reynolds
Town Attorney

ORDINANCE NO. 401

AN ORDINANCE OF THE TOWN OF SOUTH PRAIRIE, PIERCE COUNTY, WASHINGTON AMENDING ORDINANCE NO. 349, DEALING WITH THE WATER UTILITY, TO INCREASE THE WATER RATES ANNUALLY AND CONTINUING ANNUAL INCREASES THEREAFTER.

Whereas, Ordinance No. 374 amended Ordinance No. 349 to authorize increases in water rates in the water utility annually beginning January 1, 2000, and

Whereas, there have been state initiatives and litigation concerning state initiatives on increasing rates and/or fees and/or taxes, and

Whereas, the effectiveness of such initiatives are unknown, and

Whereas, an increase in water rates is necessary to cover the expenses of the water utility, an enterprise fund, and

Whereas, the legal affect of Ordinance No. 374 is uncertain, and

Whereas, if Ordinance No. 374 is determined for any reason to be invalid the increase in the rates of the water utility is necessary, and

Whereas, it is projected the cost increase on an annual basis will be at least 3%, and

Whereas, it is in the public interest and for the benefit of public health, safety and welfare to have expenses covered by revenues in an enterprise account.

Now, therefore, the Town Council of the Town of South Prairie, Pierce County, Washington do ordain as follows:

Section 1: Ordinance No. 349, Section 6, Rates and Charges for Water, be amended as follows:

"Rates and Charges for Water: The rates and charges for water shall be based upon a system determined by the size of the pipe and the meter and a volume charge. For purposes of rate determination, the term referred to below as residential shall be one structure on one tax lot, or one individual living in it, such as a mobile home, recreational vehicle and/or apartment unit.

Commercial shall be anything other than the above.

The rates set forth in the "Water Utility Rate Schedule" attached hereto and incorporated by reference as if set out in full, as Exhibit "1", will begin on January 1, 2001 and shall be adjusted to the rate appearing below on January 1 of each following respective year.

The consumption charges set forth in the attached Exhibit "1" are an additional charge above the base rate representing the actual consumption of water use for each 100 cubic feet (CCF).

Out of Town Surcharge: There shall be an additional out of town surcharge applied to each account which shall be 20% above the billed amount, plus the above billed amount."

Section 2: All other provisions of Ordinance No. 349, except as specifically amended above, are hereby reaffirmed in all respects.

Section 3: If any provision of this ordinance, or Ordinance No. 349, is determined to be invalid or unenforceable for any reason, the remaining provisions of this ordinance, and/or Ordinance No. 349, shall remain in force and affect.

Section 3: This ordinance shall take effect and be in force on January 1, 2001.

Mayor Layne Ross

INTRODUCED 12-5-2000
PASSED*12-5-2000*
APPROVED 12-5-2000
PUBLISHED 12-13-2000

Attested:

Marla Nevill Town Clerk

Approved as to Form:

Michael J. Reynolds Town Attorney

Water Utility Rate Schedule

Base Rate Without Consumption

	2000	2001	2002	2003	2004	2005	2006
Residential 518-inch	$ 19.50	$ 20.09	$ 20.69	$ 21.31	21.95	$ 22.61	$ 23.28
Commercial 518-inch	$ 21.50	$ 22.15	$ 22.81	$ 23.49	24.20	$ 24.92	$ 25.67
3/4-inch	$ 30.40	$ 31.31	$ 32.25	$ 33.22	34.22	$ 35.24	$ 36.30
1-inch	$ 48.20	$ 49.65	$ 51.14	$ 52.67	54.25	$ 55.88	$ 57.55
1.5-inch	$ 92.70	$ 95.48	$ 98.35	$ 101.30	104.33	$ 107.46	$ 110.69
2-inch	$ 146.10	$ 150.48	$ 155.00	$ 159.65	164.44	$ 169.37	$ 174.45
3-inch	$ 288.50	$ 297.16	$ 306.07	$ 315.25	324.71	$ 334.45	$ 344.48
4-inch	$ 448.70	$ 462.16	$ 476.03	$ 490.31	505.02	$ 520.17	$ 535.77
6-inch	$ 893.70	$ 920.51	$ 948.13	$ 976.57	1,005.87	$ 1,036.04	$ 1,067.12
8-inch	$ 1,427.70	$ 1,470.53	$ 1,514.65	$ 1,560.09	1,606.89	$ 1,655.10	$ 1,704.75

Consumption Charge

	2000	2001	2002	2003	2004	2005	2006
Tier 1	$ 1.65	$ 1.70	$ 1.75	$ 1.80	1.85	$ 1.90	$ 1.95
Tier 2	$ 1.90	$ 1.95	$ 2.00	$ 2.05	2.10	$ 2.15	$ 2.20
Tier 3	$ 2.15	$ 2.20	$ 2.25	$ 2.30	2.35	$ 2.40	$ 2.45

Consumption Tier Ranges

	5/8-inch	314-inch	1-inch	1.5-inch	2-inch
Tier 1	< 10 ccf	< 15 ccf	< 25 ccf	< 50 ccf	< 80 ccf
Tier 2	10 to 20 ccf	15 to 30 ccf	25 to 50 ccf	50 to 100 ccf	80 to 160 ccf
Tier 3	> 20 ccf	> 30 ccf	> 50 ccf	> 100 ccf	> 160 ccf

	3-inch	4-inch	6-inch	8-inch
Tier 1	< 160 ccf	< 250 ccf	< 500 ccf	< 800 ccf
Tier 2	160 to 320 ccf	250 to 500 ccf	500 to 1,000 ccf	800 to 1,600 ccf
Tier 3	> 320 ccf	> 500 ccf	> 1,000 ccf	> 1,600 ccf

Part 5

DEVELOPMENT STANDARDS

Chapters:

15.74 Streets
15.76 Utilities
15.78 Drainage, Erosion Control, and Stormwater Management
15.84 Building and Construction
15.86 Fire Code

Chapter 15.74

STREETS

Sections:

15.74.010 Purpose
15.74.020 Construction Standards and Specifications
15.74.030 Approval of Construction Drawings Required before Installation
15.74.040 Inspection of Public Improvements Required before Final Permits are Issued
15.74.050 Street Classification
15.74.060 Street in Existing Plat used as Driveway
15.74.070 Dedications
15.74.080 General Layout of Streets, Blocks, Lots and Driveways
15.74.090 Coordination with Surrounding Streets
15.74.100 Relationship of Streets to Topography
15.74.110 Cul-de-sacs and Turnarounds
15.74.120 Entrances to Streets (Driveways)
15.74.130 Street Intersections
15.74.140 Public Streets and Private Roads
15.74.150 Right-of-way Improvements and Dedication to Precede Development or Building
15.74.160 Attention to Disabled Persons in Street and Sidewalk Construction
15.74.170 Street Names and House Numbers
15.74.180 Bridges
15.74.190 Utilities
15.74.200 Right-of-way Permit Required

15.74.010 Purpose:

The purpose of this Chapter is to define the requirements for street planning and construction to be followed in the development, review, and approval of site plans, subdivisions, short subdivisions, and new development in existing plats.

15.74.020 Construction Standards and Specifications:

A. Construction and design standards and specifications for streets are contained in the most recent edition of the document entitled "Pierce County Road Standards," and all streets must be completed in accordance with these standards.

B. Curbs, gutters, and sidewalks are required in the Town's commercial zones. When required, curbs, gutters, and sidewalks must be constructed according to construction and design standards and specifications for curbs, gutters, and sidewalks contained in the most recent edition of the document entitled Pierce County Road Standards.

C. If a development accesses an existing street or is proposed at the end of an existing street that is not designed to accommodate the expected increase in traffic caused by the new development, then the developer must improve the existing street leading to the development up to the standards required for the expected increase in traffic (see Subsection 15.74.050 B). Residential developments of up to four units are exempt from this requirement.

15.74.030 Approval of Construction Drawings Required before Installation:

A. The Town Engineer must approve construction plans before any right-of-way improvements may be installed.

B. A licensed engineer must prepare the right-of-way improvement plans on twenty-four inch by thirty-six inch (24" x 36") size Mylar reproducible sheet for approval by the Town Engineer before starting construction.

C. The Town Engineer may require a survey before construction begins. If a survey is required, a copy of the survey must be given to the Town.

15.74.040 Inspection of Public Improvements before Final Permits are Issued:

The Town Engineer or his representative must inspect all public improvement work before any final land use permit or building permit is issued.

15.74.050 Street Classification:

A. If a street is dedicated to public use, the street must be classified as provided in Subsection B below. Classification will be based on the following considerations:

1. The projected volume of traffic to be carried by the street, stated in terms of the number of trips per day,
2. The number of dwelling units to be served by the street may be used as an indicator of the number of trips but is not conclusive,
3. Whenever a subdivision street continues an existing street that used to end outside the subdivision, the classification of the street will be based upon the street in its entirety, both within and outside of the subdivision.

B. The classification of streets must comply with the most current edition of the Pierce County Roads Standards. The following are road or right-of-way classifications based on the anticipated Average Daily Traffic (ADT) ten years hence:

1. Major Collector (ADT 2000+);
2. Minor Collector (ADT 400-2000);
3. Access Collector (ADT 0-400);
4. Cul-de-sac;
5. Private Road.

15.74.060 Street in Existing Plat used as Driveway:

A. In some existing plats in the Town, a street is being used as a driveway because all of the lots created at the time that the area was platted have not yet been built upon.

B. In these situations in existing plats, if a street is used as a driveway, the property owner

using the street as a driveway must improve it to Town street standards and the Town will maintain it.

15.74.070 Dedications:

A. Required minimum street right-of-way width is according to construction standards in the Pierce County Road Standards.

B. Easements must be provided for all public facilities and utilities as required by the Town.

C. Additional right-of-way may be required to be dedicated as a condition of development approval. In order to conform to minimum standards where developments abut an existing public road or private right-of-way, dedications may be required for extension of the existing public streets or new streets in order to provide continuity with the circulation system.

15.74.080 General Layout of Streets, Blocks, Lots, and Driveways:

A. All streets must be straight, whenever practicable, to the extent necessary to preserve and continue a grid system.

B. All subdivisions and site plans must provide direct access to at least one existing improved and publicly dedicated street.

C. Proposed streets should extend to the boundary lines of the proposed subdivision in order to provide for the future development of adjacent tracts, unless prevented by natural or man-made conditions, or unless an extension is determined to be unnecessary or undesirable by the decision-making body.

D. Street patterns should be designed to expedite traffic movement to be able to move heavy emergency vehicles without obstruction.

E. Blocks must have sufficient width to provide for a maximum of two tiers of lots of appropriate depths (according to zoning standards), unless existing conditions make this requirement impractical in the judgment of the decision-making body.

F. The maximum length of residential blocks should be six hundred (600) feet, and minimum length should be three hundred (300 feet), unless existing conditions make this requirement impractical in the judgment of the decision-making body.

G. Streets must be laid out so that the lengths, widths, and shapes of blocks adequately address the following:

1. Provision of adequate building sites suitable to the type of use contemplated,
2. The zoning requirements can be met on future building permits,
3. The limitations and opportunities of the topography;
4. The needs for convenient access, circulation, control and safety of vehicular and pedestrian traffic are considered.

H. Lots to be created must comply with the following requirements:

1. Every lot must have access to allow emergency vehicles to enter and exit, as well as for all those likely to need or desire access to the property in its intended use,
2. Lot lines must be at right angles to street lines or radial to curvilinear streets, unless a variation will result in a better street or lot plan in the opinion of the decision-making body;
3. Dimensions of corner lots must be large enough to allow for front yard setbacks off both streets; and
4. Corner lots must be graded to provide sufficient sight clearance at intersections.

I. If a driveway connects to a Town street, the property owner shall maintain the driveway to where it connects with the Town street pavement. All driveways to be constructed connecting to the Town street must obtain a permit, must be designed and constructed to Town standards. The Town Engineer will inspect all driveway construction connecting to the Town street.

15.74.090 Coordination with Surrounding Streets:

A. The street system of a new subdivision or in an existing plat where new development is proposed must be coordinated with existing, proposed, and anticipated streets outside the subdivision or existing plat (hereafter referred to as "surrounding streets").

B. Minor collector streets must intersect with surrounding major collector streets at safe and convenient locations.

C. Access collector streets must connect with surrounding streets where necessary:

1. To permit the convenient movement of traffic between residential neighborhoods;
2. To facilitate access to neighborhoods by emergency service vehicles; or
3. For other sufficient reasons, but connections will not be permitted where the effect would be to encourage the use of such streets by substantial through traffic.

D. This Section covers requirements for connections to anticipated or proposed surrounding streets:

1. The street right-of-way must be extended; and
2. The street must be developed to the property line of the subdivided property or existing plat at the point where the connection to the anticipated or proposed street is expected.

E. In addition, the permit-issuing authority may require temporary turnarounds to be constructed at the end of the streets described in Subsection D above, pending their extension when such turnarounds appear necessary to facilitate the flow of traffic or accommodate emergency vehicles.

F. No temporary dead end streets in excess of six hundred (600) feet may be created unless no other practicable alternative is available.

15.74.100 Relationship of Streets to Topography:

A. Streets must be designed to facilitate drainage and stormwater runoff, and street grades must conform as closely as practicable to the original topography.

B. The maximum grade at any point on a street must not exceed fifteen percent (15%) unless no other practicable alternative is available. However, in no case may streets be constructed with grades that create a substantial danger to the public safety in the professional opinion of the Town Engineer.

15.74.110 Cul-de-sacs and Turn-arounds:

Cul-de-sacs and turnarounds on both public and private streets must conform to the construction standards listed in the Pierce County Road Standards.

15.74.120 Entrances to Streets (Driveways):

Driveway standards in new subdivisions and new development in existing plats must conform to the construction standards listed in the Pierce County Road Standards

15.74.130 Street Intersections:

In addition to the intersection standards outlined in the construction standards listed in the Pierce County Road Standards, the following standards apply to new subdivisions and new development in existing plats:

A. Streets must intersect as nearly as possible at right angles, and no two streets may intersect at less than sixty degrees (60).

B. Not more than two streets may intersect at any one point, unless the Town Engineer certifies to the permit-issuing authority that such an intersection can be constructed with no extraordinary danger to public safety.

C. Whenever possible, proposed intersections along one side of a street must coincide with existing or proposed intersections on the opposite side of such street. In any event, where a centerline offset (jog) must occur at an intersection, the distance between centerlines of the intersecting streets must be evaluated and designed according to accepted traffic safety standards.

15.74.140 Public Streets and Private Roads:

For purposes of this subsection, the term "Public Street" includes a pre-existing public street as well as a street created by a subdivider that meets the public street standards of this Chapter and is dedicated for public use. The recording of a plat must dedicate the street.

15.74.145 Private Streets:

A. While community street requirements are usually best served by public streets, owned and maintained by the Town, private streets may be appropriates in some instances.

B. Private streets and roads shall be approved only when they are:

1. Permanently established by right-of-way, tract or easement providing legal access to each affected lot, dwelling unit, or business and sufficient to accommodate required improvements, to include provisions for future use by adjacent property owners when applicable; and

2. Serving properties and development that is zoned R-3; and

3. Maintained by a capable and legally responsible owner or homeowner's association or the legal entity made up of all benefited property owners, under provisions of Section 15.74.145D of this ordinance; and

4. Designed and built to Pierce County Road Standards. Pavement width of all private streets shall be 22 feet or more; radius of horizontal curves and vertical grade of private streets shall be based upon the topography of the site; any vertical grade in excess of fifteen (15) percent shall be approved by the Town Engineer; design and construction of private streets shall be subject to the same Town engineering inspection and approval as for public streets; modifications to these standards may be granted by the Town Engineer if adequate consideration of the following factors is made during the plat review:

(1) Provision of off-street parking;
(2) Restriction of On-street parking;
(3) Provision of adequate clearance for emergency vehicles;
(4) Provision of clear vision at intersections;
(5) Provision of alternative bicycle and/or pedestrian paths;
(6) Provision of adequate utility easements outside of street;
(7) Future street revision or extension is not planned; and

5. Provision is made for private streets to be open at all times for emergency and public service vehicles; an easement or other right of access shall be recorded which runs in favor of the Town of South Prairie; said right of access shall provide the right of ingress and egress for the Town and its employees to carry out any lawful Town purpose, including but not limited to fire, police, water, and sewer services; said easements shall also provide access to all other urban service providers such as refuse haulers, television cable operators, electric utility providers, emergency medical services and others; and

6. Private streets shall not obstruct public street circulation; and

7. At least one of the following conditions exist:

(1) Existing abutting development precludes the construction of a public street, or

(2) Topographic, geological or soil conditions make development of a public street undesirable, or

(3) The streets are within a private community with a corporate or a functional identity, or

(4) Neighborhood traffic circulation and lot access can be met more logically by private streets than by public streets, or

(5) Streets are a part of a planned unit development (PUD), or

(6) Streets serve commercial facilities where no circulation continuity is necessary, or

(7) The Town Engineer and Fire Department determine that no other access is available and the private street is adequate.

C. Notice: The following statement is required on the face of any plat short plat, site plan, or binding site plan containing a private street:

"Town of South Prairie has no responsibility to improve or maintain private streets contained within or private streets providing access to the property described in this plat. Any private street shall remain a private street unless it is upgraded to public street standards including standards meeting ADA (Americans with Disabilities Act) requirements at the expense of the subdivider or adjoining lot owners to include hard surface paving and is accepted by the Town for public ownership and maintenance."

D. Maintenance agreement: The Town will not maintain roadways, signs, or drainage improvements on private streets. A private maintenance covenant recorded with the Town Clerk will be required for any private street. The covenant will set out the terms and conditions of responsibility for maintenance, maintenance methods, standards, distribution of expenses, remedies, for non-compliance with the terms of the agreement, right of use easements, and other considerations. The covenant shall be submitted to the Town Engineer or his designee for approval prior to recording.

Property owners shall maintain and keep in good repair, at all times, those private streets adjacent to their property. In order to insure the continued good repair, a declaration or covenant requiring maintenance of the private street shall be recorded with the Pierce County Auditor's office concurrent with recording of the subdivision plat.

The covenants shall include the following terms:

1. The Covenant shall establish minimum annual assessments in amount adequate to defray costs of ordinary maintenance and procedures for approval of additional needed assessments.
2. The Covenant shall include a periodic maintenance schedule.
3. The covenants for maintenance shall be enforceable by any property owner served by the street.
4. The means shall be established for assessing maintenance and repair costs equitably to property owners served by the private street.
5. The covenants shall run with the land.
6. "Maintenance" shall include, but not limited to street surfacing, shoulders, gates, signs, pavement markings, street lighting, storm drainage facilities, and vegetation control.
7. The Town shall have the right to inspect the condition of private streets and if in the opinion of a licensed professional engineer, the condition of private streets has deteriorated to the level where improvements are needed, the Town has the right to order that this work be done. If the property owners associated or the developer do not carry out said improvements in a timely manner, the Town has the right to order the improvements.

E. Street signs: Private street signs with street designations shall be provided by the developer at the intersection of private street with private and public streets. Such signs shall meet the specifications of Pierce County Road Standards and, in the case of intersections with public streets, shall be located within the public right-of -way or within a separate maintenance easement. Road signs shall be included in the maintenance agreement.

F. Inspection: Private streets will be subject to the same inspection schedule as pubic streets.

G. Developer maintenance obligation: The developer of a residential plat shall be responsible to insure the maintenance of the private street for a period of two (2) years from the date of recording of the plat or short plat. Thereafter, the developer's maintenance responsibility will depend upon the number of lots under the developer's continuing ownership, as stated in the recorded maintenance agreement.

15.74.150 Right-of-way Improvements and Dedication to Precede Development or Building:

A. Except as noted under Subsection C below, the Town will not issue a land use or building permit unless or until the public rights-of-way upon which the subject property abuts are:

1. Considered fully improved (see Subsection B below) to the standards of the right-of-way classification (as specified in Section 15.74.070 of this ordinance); and

2. Offered for dedication to the public.

B. The Town Engineer will consider Subsection A above fulfilled if the circumstances listed below are met. It will be at the discretion of the Town Engineer, based on knowledge of upcoming projects in the vicinity, safety issues, or sound engineering judgment, as to which method will be allowed or not allowed. Improvements will be considered fully installed:

1. Where the rights-of-way are already improved to their classification standards and dedicated to the Town,

2. Where the Town chooses to purchase rights-of-way and install the improvements. However, under no circumstances is the Town obligated to do this,

3. Where the applicant installs the improvements himself at his own cost and offers the rights-of-way to the public,

4. Where the applicant has dedicated the rights-of-way to the public and posted a completion security with the Town Engineer in accordance with Section 15.02.1130 of this ordinance. The completion security will guarantee the completion of road and/or drainage improvements that are required,

5. If Subsections B (1-4) above are declared unfeasible by the Town Engineer, then improvements will be considered fully installed if the applicant has dedicated the rights-of-way to the public and elected to pay to the Town an amount equal to the cost of installing the improvements. In such circumstances, the funds would be maintained in an account to be used specifically for improvements on that right-of-way within the general vicinity of the project.

6. A maintenance security may be required if work is not complete at the time of the first sale of property out of the developer's possession.

C. This section does not apply to:

1. Building permits for additions, alterations, or repairs within any twelve month period which does not increase the gross floor space of an existing building or facility by more than fifty percent (50%); or

2. Building permits for residential garages, carports, or accessory structures not intended as a dwelling unit.

15.74.160 Attention to Disabled Persons in Street and Sidewalk Construction:

A. Whenever curb and gutter construction is used on public streets (see Subsection 15.74.020 B) wheelchair ramps for disabled persons must be provided at intersections and other major points of pedestrian flow.

B. Wheelchair ramps and depressed curbs must be constructed in accordance with published standards of the Washington State Building Code addressing accessibility.

15.74.170 Street Names and House Numbers:

A. The developer will assign the "Public Street" name subject to the approval of the permit-issuing authority.

B. The Town will assign the building numbers.

C. The Town Council may by resolution name or re-name streets.

15.74.180 Bridges:

Bridges, whether on public roads or private roads, must be designed and constructed to meet minimum requirements set forth in the AASHTO Bridge Specifications and in accordance with the Pierce County Road Standards.

15.74.190 Utilities:

Utilities to be located within the street right-of-way must be constructed in accordance with current franchise and permit procedures and in compliance with the Pierce County Roads Standards.

15.74.200 Vacation of Public Rights-of-Way:

Applications for vacations of public rights-of-way will be processed in accordance with Chapter 35.79 RCW and Chapter 15.94 of this ordinance.

15.74.210 Right-of-way Permit Required:

Before performing any work within a right-of-way, the person performing the work must obtain a right-of-way permit from the Town Engineer. The Town Engineer may condition the permit as necessary to protect the public health, safety, and welfare.

Chapter 15.76

UTILITIES

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15.76.020 Right-of-way Permit Required
15.76.030 Plan Approval Required
15.76.040 As-built Drawings Required
15.76.050 Utilities to be Consistent with Internal and External Development

SEWER

15.76.060 Construction Standards and Specifications
15.76.070 Serving Lots with Sewage Disposal Systems
15.76.080 Sewage Disposal Facilities Required before Construction is Complete
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OTHER UTILITIES

15.76.260 Construction Standards and Specifications
15.76.270 Lighting Requirements
15.76.280 Electric Power

15.76.290 Telephone Services
15.76.300 Underground Utilities
15.76.310 Sites for and Screening of Dumpsters

GENERAL

15.76.010 Utility Ownership and Easement Rights:

When a developer installs or causes the installation of water, sewer, electrical power, telephone, cable television, or other types of utility facilities and intends that the facilities will be owned, operated, or maintained by a public utility or other entity, the developer must transfer to the utility or other entity the necessary ownership or easement rights to enable the utility or entity to operate and maintain the facilities.

15.76.020 Right-of-way Permit Required:

A. Before performing any work within a right-of-way, the person performing the work must obtain a right-of-way permit from the Town Engineer,

B. The Town Engineer may condition the permit as necessary to protect the public health, safety, and welfare.

15.76.030 Plan Approval Required:

A. Before any new sewer system or water system pipes are installed, a developer must provide plans to the Town Engineer for review.

B. A licensed engineer must prepare the plans provided to the Town Engineer for review.

15.76.040 As-built Drawings Required:

A. Whenever a developer installs or causes to be installed any utility line within the Town, or connects to existing facilities within the Town, the developer must furnish the Town with four (4) Mylar copies of a drawing that shows the exact location of such utility lines as soon as practicable after installation is complete, and before acceptance of any utility line.

B. The Town Engineer must verify the accuracy of the drawings.

C. Compliance with this requirement is a condition of the continued validity of the permit authorizing the development.

15.76.050 Utilities to be Consistent with Internal and External Development:

A. Whenever it can reasonably be anticipated that utility facilities constructed in one development will be extended to serve other adjacent or nearby developments, the utility facilities (e.g., water or sewer lines) must be located and constructed so that extensions can be made conveniently and without undue burden or expense or unnecessary duplication of service. In all cases, utility lines must extend to the common property line(s) of the subject property and the property where future development is anticipated.

B. All utility facilities must be constructed in a way that will

1. Minimize interference with pedestrian or vehicular traffic; and
2. Facilitate maintenance without undue damage to improvements or facilities located within the development.

SEWER

15.76.060 Construction Standards and Specifications:

A. All sewage disposal lines must be constructed in accordance with the latest edition of the American Public Water Association (APWA) Standard Specifications.

B. Sewage disposal lines and water lines must be separated by at least ten (10) feet.

15.76.070 Serving Lots with Sewage Disposal Systems:

If a lot is to have a use on it, which requires sewage disposal, then the property owner or developer must install a connecting line to the Town sewer line.

15.76.080 Sewage Disposal Facilities Required before Construction is Complete:

A building or structure requiring sewage disposal must be connected to a Town sewer line before the completion of the construction of a building or structure.

15.76.090 Compliance with Standards:

A. All proposed developments:

1. Must comply with standards and specifications of the Town; and
2. Must meet the intent of the most recent edition of the Town's General Sewer Plan.

B. The Town Engineer must certify to the Town that the proposed system meets the Town's requirements and will be accepted by the Town.

C. The state Department of Ecology will also have to approve connections to the Town's sewer system.

15.76.100 Conveyance of Facilities to the Town:

A. The following criteria must be met, unless otherwise waived by the Town Engineer, before sewer facilities are conveyed to the Town:

1. A public utility easement of adequate dimensions must be concurrently granted to the Town.
2. The facilities must be inspected for conformance with the standards specified in the latest addition of the APWA Standard Specifications for public sewer facilities. The Town Engineer may require any test to demonstrate conformance. Tests may include, but are not limited to, infiltration, ex-filtration, air tests, or a combination of tests. The applicant must notify the Town Engineer when the sewer facility is ready for inspection.
3. The applicant must pay all required fees.
4. The Town Engineer may require the developer to post a maintenance bond (in accordance with Section B below) to cover the cost of replacing or repairing any of the facilities for a period of two years.

B. If a maintenance security is required by the Town Engineer, the applicant must deposit with the Town a maintenance bond or other acceptable surety to cover the cost of replacing or repairing any or all required improvements and to warrant against defects in labor and material, and against any damage or defects caused by construction activity on the site, for a period of two (2) years from acceptance of improvements by the Town. The maintenance security must be one of the following:

1. A surety bond executed by a surety company authorized to transact business in the state of Washington in a form approved by the Town Attorney;
2. A personal bond approved by the Town Attorney co-signed by at least one additional person together with evidence of financial responsibility and resources of those signing the bond sufficient to provide reasonable assurance of ability to proceed in accordance with the agreement;
3. Cash,
4. A letter of credit approved by the Town Attorney from a financial institution stating that the money is held for the purposes of development of the stated project.

C. The bond or other approved surety will be for twenty percent (20%) of the estimated value of all the required improvements as determined by the Town Engineer

D. Before the warranty period ends, and upon restoration of the improvements to successful

operation and the repair of any defects or damage in the improvements, the Mayor will authorize the release of the maintenance bond.

E. The Mayor may withhold release of the bond or surety up to one year from the date of any restoration or repairs to ensure that the restoration or repairs were adequate.

F. The Mayor and the applicant must sign a notarized security agreement, approved in form by the Town Attorney, in accordance with Section 15.02.130 of this ordinance.

G. When the Town accepts the sewer facilities, the developer must provide the Town Engineer with as-built drawings of the sewer facilities, signed, stamped, and acknowledged by a licensed engineer.

15.76.110 Side Sewer Permits Required:

A. A developer must obtain a side sewer permit for any connection to the Town sewer system.

B. A permit which includes side sewer work in a public area or the connection with or opening into any public sewer other than through the normal connection point of a "Y", "T", or stub, will only be issued to a registered side sewer contractor or qualified Town employee.

C. A permit, which includes side sewer work on private property, will only be issued to:

1. The owner of the property (but such permit does not allow the owner to connect the side sewer to a public sewer except through the normal opening of a "Y", "T", or stub under the supervision of the Town Engineer or his representative);
2. A registered sewer contractor; or
3. A qualified Town employee.

D. Side sewer permits are not transferable. No authorized person, including any sewer contractor or qualified Town employee, may lay any pipe pursuant to any other person's permit.

E. No permit will be issued for side sewer connection before the Town accepts the main sewer.

15.76.120 Costs of Side Sewer and STEP System Borne by Owner:

A. The property owner must pay all costs and expenses related to the installation and connection of the side sewer.

B. The owner must indemnify the Town from any loss or damage that may directly or indirectly be caused by the installation of the side sewer.

15.76.130 Side Sewer Permitting Process:

A. The Town Engineer will issue permits for the side sewer.

B. The applicant for a side sewer permit must supply the Town Engineer with the following information, on a form provided by the Town:

1. Owner's name;
2. Address of property to be served;
3. Owner's mailing address;
4. Name and address to which bills must be sent;
5. Registered side sewer contractor's or qualified Town employee's name and proof of qualification,
6. Legal description of the property to be served;
7. All outside dimensions of building to be served;
8. Location of buildings on property to be served;
9. Purpose of building; and
10. Alignment of the proposed side sewer.

C. All required fees must be paid before any side sewer permit is issued. Such fees may include, but are not limited to: permit fees, stub fees, general facilities connection charges, in-lieu-of-assessment charges, reconnection charges, and/or any other charges (outstanding or otherwise) associated with the permit or the property.

D. The permit card must be posted on the job before starting the work and must be readily accessible to the Town Engineer.

E. The installer of the side sewer must meet with the inspector on the job whenever so directed.

F. No side sewer may be backfilled before approval of the Town Engineer.

15.76.140 Side Sewer Contractor Registration Required:

A. To assure safe and quality construction of side sewers, and safe and quality connection of side sewers to the public sewers of the Town, no person, other than the owner of the property involved,

may construct, install, repair, reconstruct, excavate, or connect to the public sewers of the Town any side sewer, unless he is:

1. A side sewer contractor holding a valid, unsuspended current certificate of registration issued by the Department of Licenses of the State of Washington (pursuant to Chapter 18.27 RCW); or

2. A qualified employee of the Town.

B. All such registered side sewer contractors and/or qualified Town employee:

1. Must adhere at all times to the then-current requirements of the Town relating to side sewers, connections to public sewers, and side sewer contractors, including reasonable requirements of the Town Engineer relating to construction, installation, reconstruction and repair of side sewers; and

2. Will be liable for all damage to the public sewers and sewage treatment plant of the Town.

15.76.150 Each Side Sewer to have Individual Side Sewer Connection, unless Exception Granted:

A. Not more than one primary structure may be connected to the sewer system by a single connection unless the Town Engineer grants an exception before the construction of such connection.

B. If more than one primary structure is connected to the public sewer system by a single connection, a mutually beneficial easement must be granted to the respective properties over the shared portions of the connection, thus assuring that all properties involved will have perpetual use of the side sewer. Provisions must also be made for maintenance and access for repair. The property owner must:

1. Record the easement(s) with the County Auditor; and

2. Give a copy to the Town.

15.76.160 Protection of Excavations – Restoration of Public Property:

A. All excavations for side sewer installations must be adequately guarded with barricades and lights so as to protect the public from hazard.

B. Streets, sidewalks, parkways, and other public property disturbed in the course of the work must be restored in a manner satisfactory to the Town.

C. Upon notification by the Town, the property owner must repair any trench settlement within public rights-of-way. If the property owner fails to repair the trench, the Town will make repairs and bill the property owner for the cost of the repairs.

WATER

15.76.170 Construction Standards and Specifications:

A. All water distribution lines must be constructed in accordance with the most current edition of the APWA Standard Specifications; and

B. Sewage disposal lines and water lines must be separated by at least ten (10) feet.

15.76.180 Water System Required:

Every principal use and every lot within a subdivision or in any existing plat must be served by a water supply system that:

A. Is adequate to accommodate the reasonable needs of the use or subdivision lot; and

B. Complies with all laws of the Washington State Department of Health and all Town ordinances.

15.76.190 Compliance with Standards:

A. All proposed developments must comply with standards and specifications of the Town and must meet the intent of the most recent edition of the Town's Comprehensive Water Plan. The

Town Engineer must certify to the Town that the proposed water system meets the Town's requirements and will be accepted by the Town.

B. In order to obtain a building permit for certain uses applicants must supply evidence of adequate water supply, as required by RCW 19.27.097.

15.76.200 Conveyance of Facilities to the Town:

A. The following criteria must be met, unless otherwise waived by the Town Engineer, before water facilities are conveyed to the Town:

1. A public utility easement of adequate dimensions must be concurrently granted to the Town.

2. The facilities must be inspected for conformance with the standards specified in the most current edition of the APWA Standard Specifications for public water facilities. The Town Engineer may require any test to demonstrate conformance. The applicant must notify the Town Engineer when the water lines are ready for inspection.

3. The applicant must pay all required fees.

4. The Town Engineer may require the applicant to post a maintenance bond (in accordance with Section B below) to cover the cost of replacing or repairing any of the facilities.

B. If a maintenance security is required by the Town Engineer, the applicant must deposit with the Town a maintenance bond or other acceptable surety to cover the cost of replacing or repairing any or all required improvements and to warrant against defects in labor and material, and against any damage or defects caused by construction activity on the site, for a period of two years from acceptance of improvements by the Town. The maintenance security must be one of the following:

1. A surety bond executed by a surety company authorized to transact business in the state of Washington in a form approved by the Town Attorney;

2. A personal bond approved by the Town Attorney co-signed by at least one additional person together with evidence of financial responsibility and resources of those signing the bond sufficient to provide reasonable assurance of ability to proceed in accordance with the agreement;

3. Cash,

4. A letter of credit approved by the Town Attorney from a financial institution stating that the money is held for the purposes of development of the stated project.

C. The bond or other approved surety will be for twenty percent (20%) of the estimated value of all the required improvements as determined by the Town Engineer.

D. When the warranty period ends, and upon restoration of the improvements to successful operation and the repair of any defects or damage in the improvements, the Town Engineer will authorize the release of the maintenance bond.

E. The Town Engineer may withhold release of the bond or surety up to one year from the date of any restoration or repairs to insure that the restoration or repairs were adequate.

F. The Mayor and the applicant must sign a notarized security agreement, approved in form by the Town Attorney, in accordance with Section 15.02.130 of this ordinance.

G. When the Town accepts water facilities, the developer must provide the Town Engineer with as-built drawings of the water facilities, signed, stamped, and acknowledged by an engineer.

15.76.210 Licensed Contractor Required to make Connections:

A licensed contractor or Town employee must make all water line connections.

15.76.220 Costs Borne by Owner:

A. The property owner must pay all costs and expenses related to the installation and connection of the water lines.

B. The owner must indemnify the Town from any loss or damage that may directly or indirectly be caused by the installation of the water lines.

15.76.230 Make Application to Connect to Town Water System:

A. Before connecting to the Town water system, a property owner or developer must:

1. Make application; and
2. Pay the water connection fee.

B. The Town will supply a 5/8 x 3/4-inch water meter and the connection can be made once the fee has been paid.

C. No water line trenches may be backfilled before approval of the Town Engineer.

15.76.240 Each Lot to have Individual Water Connection, unless Exception Granted:

A. Not more than one primary structure may be connected to the water system by a single connection unless the Town Engineer grants an exception before the construction of such connection.

B. If more than one primary structure is connected to the public water system by a single connection, a mutually beneficial easement must be granted to the respective properties over the shared portions of the connection, thus assuring that all properties involved will have perpetual use of the water line. Provisions must also be made for maintenance and access for repair. The applicant must:

1. Record the easement(s) with the County Auditor; and
2. Give a copy to the Town.

15.76.250 Protection of Excavations – Restoration of Public Property:

A. All excavations for water line installations must be adequately guarded with barricades and lights so as to protect the public from hazard.

B. Streets, sidewalks, parkways, and other public property disturbed in the course of the work must be restored in a manner satisfactory to the Town.

C. Upon notification by the Town, the property owner will repair any trench settlement within public rights-of-way. If the property owner fails to repair the trench, the Town will make repairs and bill the property owner for the repairs.

OTHER UTILITIES

15.76.260 Construction Standards and Specifications:

Construction and design standards and specifications for the components of utilities other than sewer and water are to be constructed in accordance with current franchise and permit procedures and in compliance with the most recent edition of the Pierce County Road Standards.

15.76.270 Lighting Requirements:

A. Subject to Subsection B below, all public streets, sidewalks, and other common areas or facilities in subdivisions created after the effective date of this Chapter must be sufficiently illuminated to ensure the security of property and the safety of persons using such streets, sidewalks, and other common areas or facilities.

B. All entrances and exits in substantial buildings used for non-residential purposes and in multi-family residential developments must be adequately lighted to ensure the safety of persons and the security of the buildings.

C. All outdoor lights must be low sodium or similar lamp type and be down-shielded to prevent light pollution.

D. Lighting within any lot that unnecessarily illuminates any other lot or public right-of-way and substantially interferes with the use or enjoyment of such other lot or public right-of-way is prohibited.

E. Lighting for automated teller machines or night deposit facilities must be provided in accordance with RCW 19.174.050.

15.76.280 Electric Power:

Every principal use and every lot within a subdivision or existing plat must have available to it a source of electric power adequate to accommodate the reasonable needs of the use or lot.

15.76.290 Telephone Services:

Every principal use and every lot within a subdivision or existing plat must have available to it a telephone service cable adequate to accommodate the reasonable needs of the use or lot.

15.76.300 Underground Utilities:

A. Except as noted in Subsections D-F below, all new electric power lines (not to include transformers or enclosures containing electrical equipment including, but not limited to, switches, meters, or capacitors which may be pad mounted), telephone, cable television, and other communication lines installed must be placed underground in accordance with the specifications and policies of the respective utility service providers.

B. Utilities within the right-of-way on new roads must be installed in accordance with the most recent edition of the Pierce County Roads Standards. If the distribution line originates from a point opposite any public roadway from the new construction, the service lines must be placed under the roadway by means of boring or surface excavation across the roadway.

C. For new development in existing plats or for infill development, utilities may be installed above ground, with the approval of the Town Engineer and the respective utility service provider.

D. If the respective utility provider determines that an underground system cannot reasonably be installed according to accepted engineering practices, the requirements of this Section may be waived upon receipt of a written notice from the Town Engineer. The waiver must be noted in the permit or it will be considered as not being granted. If under-grounding is not determined to be feasible, the applicant must either sign a concomitant agreement or a no protest agreement of the formation of an LID for future under-grounding. Determination of which form of promissory will be used is at the discretion of the Town Engineer.

E. Nothing in this section or any other section in relation to underground utilities applies to power lines carrying a voltage of 15 kV or more.

F. Nothing in this section or any other section in relates to underground utilities prohibits the placement of mounted transformers, terminal pedestal, or other electrical and communications devices above ground, as determined by the appropriate service utility provider involved.

15.76.310 Sites for and Screening of Dumpsters:

A. Every development which is or will be required to provide one or more dumpsters for solid waste collection under the Town's solid waste collection policies must provide sites for such dumpsters that are:

1. Located so as to facilitate collection and minimize any negative impact on persons occupying the development site, neighboring properties, or public rights-of-way, and
2. Constructed according to specifications established by the Town Engineer to allow for collection without damage to the development site or the collection vehicle.

B. All dumpsters must be screened if and to the extent that, in the absence of screening, they would be clearly visible to:

1. Persons in any dwelling unit on residential property other than that where the dumpster is located; or,
2. Occupants or customers in any building on nonresidential property other than that where the dumpster is located, unless the other property is used primarily for purposes permitted exclusively in the Light Industrial district; or,
3. Persons traveling on any public street, sidewalk, or other public way.

Chapter 15.78

DRAINAGE, EROSION CONTROL, AND STORMWATER MANAGEMENT

Sections:

15.78.010 Natural Drainage System Utilized to extent Feasible
15.78.020 Developments must Drain Properly
15.78.030 Stormwater Management
15.78.040 Erosion Control and Sedimentation
15.78.050 Stormwater System Design
15.78.060 Illegal Discharge of Materials into the Stormwater System

15.78.010 Natural Drainage System Utilized to Extent feasible:

A. To the extent practicable, all development must conform to the natural contours of the land and natural and pre-existing human-made drainage ways must remain undisturbed.

B. To the extent practicable, lot boundaries must coincide with natural and pre-existing human-made drainage ways within subdivisions to avoid the creation of lots that can be built upon only by altering such drainage ways.

15.78.020 Developments must Drain Properly:

A. All developments must be provided with a drainage system that is adequate to prevent the undue detention or retention of surface water on the development site. Surface water will not be regarded as unduly detained or retained if:

1. The detention or retention results from a technique, practice or device deliberately installed as part of an approved sedimentation or stormwater runoff control plan; or

2. The detention or retention is not substantially different in location or degree than that experienced by the development site in its pre-development state, unless such detention or retention presents a danger to health or safety.

B. No surface water may be channeled or directed into a sewer line.

C. Whenever practicable, the drainage system of a development must coordinate with and connect to the drainage systems or drainage ways on surrounding properties or streets.

D. Construction specifications for drainage swales are contained in the most recent edition of the Pierce County Road Standards.

15.78.030 Stormwater Management:

All developments must be constructed and maintained so that adjacent properties are not unreasonably burdened with surface waters as a result of the developments. More specifically:

A. No development may be constructed or maintained so that the development unreasonably impedes the natural flow of water from higher adjacent properties across the development, resulting in substantial damage to the higher adjacent properties; and

B. No development may be constructed or maintained so that surface waters from the development are unreasonably collected and channeled onto lower adjacent properties, resulting in a volume and/or rate that is substantially greater than the pre-development volume and/or rate.

15.78.040 Erosion Control and Sedimentation:

A. Erosion control and water quality control facilities for projects that disturb over five (5) acres must apply to the state Department of Ecology for an NPDES permit.

B. Erosion control plans are required as a component of the site plan for all plats and all projects, which require site plan review. Erosion control plans may include practices such as using straw bales, hydro seeding, etc.

C. Development of the land may not begin (and no building permits may be issued) until the Town Engineer approves the erosion control plan.

D. For purposes of this Section, "disturb," means any use of the land by any person in any development, and/or road construction and maintenance that results in a change in the natural cover or topography that may cause or contribute to sedimentation. Sedimentation occurs whenever solid particulate matter, mineral or organic, is transported by water, air, gravity, or ice from the site of its origin.

15.78.050 Stormwater System Design:

A. Storm sewers constructed within the street will be sized by the developer's engineer and will consider all potential runoff requirements within the site and upstream of the site. Whenever practical, the stormwater system design shall conform to the Pierce County Stormwater Management and Site Development Manual.

1. The storm sewer will be sized for a 100-year design recurrence criteria for storm drainage facilities.
2. The minimum size of storm sewers is 8 inches in diameter.
3. Spacing of catch basins along the street must conform to engineering published recommendations, which consider profile of the street and street width.

B. On-site detention may be required for new development where downstream deficiencies exist or are anticipated to exist in the next five (5) years. Development that will be less than five thousand (5,000) square feet of impervious surface is exempt from detention requirements. The square footage considers the total development of the property including the future potential impervious surface. Recommended design recurrence criteria for a commercial or residential storm drainage detention facility is a ten (10) year interval.

15.78.060 Illegal Discharge of Materials into the Stormwater System:

The discharge of any material other than stormwater into the stormwater system is prohibited.

Chapter 15.84

BUILDINGS AND CONSTRUCTION

Sections:

15.84.010 Washington State Building Ordinances Adopted
15.84.020 Duties of the Building Inspector
15.84.030 Building Permits
15.84.040 Building Permit Fees
15.84.050 Side Sewer Permits
15.84.060 Only Construction in Compliance with Approved Plans Authorized
15.84.070 Accessory Buildings
15.84.080 Fences
15.84.090 Retaining Walls
15.84.100 Signs
15.84.110 Repairs and Maintenance
15.84.120 Inspection of Improvements

15.84.010 Washington State Building Ordinances Adopted:

The model codes listed below, as approved and adopted by the State Building Code Council (SBCC), together with any amendments or additions, are hereby adopted by this reference. These codes apply to all new construction, remodeling, or repairs. Copies of the codes are on file in the offices of the Town Clerk-Treasurer and the Building Inspector.

A. Uniform Building Code (UBC) & Standards;
B. Uniform Plumbing Code (UPC) & Standards;
C. Uniform Mechanical Code (UMC) & Standards;
D. Uniform Swimming Pool, Spa, & Hot Tub Code;
E. Uniform Code for the Abatement of Dangerous Buildings;
F. Washington State Barrier Fee Regulations;
G. Washington State Energy Code;
H. Washington State Ventilation & Indoor Air Quality Code;
I. Washington State Historic Building Code;
J. Uniform Building Code Appendix Chapter 15 (Re-roofing);
K. Uniform Building Code Appendix Chapter 33 (Excavation and Grading);
L. Uniform Building Code Appendix Chapter 34, Division 1 (Life Safety Requirements For Existing Buildings Other Than High-rise Buildings)

15.84.020 Duties of the Building Inspector:

The duties of the Building Inspector are described in the model codes listed above.

15.84.030 Building Permits:

A. No building or other structure may be erected, moved, added to, or structurally altered

without a permit issued by the Building Inspector. No building permit may be issued except in conformity with the provisions of this ordinance.

B. When required by the Building Inspector, all applications for building permits must be accompanied by plans in duplicate, drawn to scale, showing:

1. The actual dimensions and shape of the lot to be built upon;
2. The exact sizes and location of existing buildings on the lot, if any; and
3. The location and dimensions of the proposed building or alteration.

C. The application must include such other information as lawfully may be required by the Building Inspector, including:

1. Existing or proposed building or alteration;
2. Existing or proposed uses of the building and land;
3. The number of families, housekeeping units, or rental units the building is designed to accommodate;
4. Conditions existing on the lot; and
5. Other matters as may be necessary to determine conformance with, and provide for the enforcement, of this ordinance.

D. One copy of the plans will be returned to the applicant by the Building Inspector after marking the copy approved or disapproved and signing the copy. The Building Inspector will retain the second copy of the plans.

E. If work described in any building permit has not begun within 180 days from the date of issuance of the permit, the permit will expire, the Building Inspector will cancel the permit, and written notice that the permit has expired will be given to the applicant.

15.84.040 Building Permit Fees:

Building permit fees are set by resolution.

15.84.050 Side Sewer Permit:

No building permits for primary use structures will be issued without the applicant having first secured a side sewer permit per Section 15.76.110 of this ordinance.

15.84.060 Only Construction in Compliance with Approved Plans Authorized:

A. Building permits issued on the basis of plans and applications approved by the Building Inspector authorize only the construction set forth in such approved plans and application and no other construction.

B. Construction different than that authorized will be considered a violation of this ordinance and punishable as provided by Section 15.02.130 of this ordinance.

15.84.070 Accessory Buildings:

Accessory buildings may not be constructed before construction of the main building.

15.84.080 Fences:

A. Building permits are required for all fence construction six (6) feet and over in height.

B. No fence on a corner lot may interfere with a driver's ability to see at an intersection. Fences on corner lots may not be more than forty-two (42) inches above street grade.

15.84.090 Retaining Walls:

A. Building permits are required for all retaining walls over four (4) feet in height, measured from the bottom of the footing.

B. All retaining walls over eight (8) feet in height must be designed, stamped, and acknowledged by a professional engineer licensed by the State of Washington.

15.84.100 Signs:

Sign permits are required for sign installations and must comply with the regulations of Chapter 15.80 of this ordinance.

15.84.110 Repairs and Maintenance:

Nothing in this ordinance prevents the strengthening or restoring to a safe condition of any building or structure declared unsafe by any official charged with protecting public safety.

15.84.120 Inspection of Improvements:

A. Before signing off the final inspection, the Building Inspector will inspect all improvements installed as a requirement of this ordinance or as a condition of permit on or adjacent to the site.

B. Any improvements found to be damaged by the builder must be repaired before receiving final inspection sign-off.

Chapter 15.86

FIRE CODE

Sections:

15.86.010 Uniform Fire Code Adopted
15.86.020 Applicability
15.86.030 Fire Chief Approval Prior to Issuance of Permits
15.86.040 Hydrants to be Served by Town of South Prairie
15.86.050 Hydrant Standards
15.86.060 Piping and Flow Standards
15.86.070 Plan Approval Required
15.86.080 Plan Review
15.86.090 Waiver and Modification
15.86.100 Obstruction Prohibited

15.86.010 Uniform Fire Code Adopted:

The model codes listed below, as approved and adopted by the State Building Code Council (SBCC), together with any amendments or additions, are hereby adopted by this reference. The Uniform Fire Code applies to all new construction, remodeling, or repairs. Copies of the Uniform Fire Code are on file in the offices of the Town Clerk-Treasurer and the Building Inspector.

A. Uniform Fire Code (UFC) & Standards;

B. Uniform Fire Code Appendix Chapter 11-B (Protection of Flammable and Combustible Liquid Tanks in Locations Subject to Flooding); and

C. Uniform Fire Code Appendix Chapter 11-F (Protected Aboveground Tanks for Motor Vehicle Fuel-dispensing Stations Outside Buildings)

15.86.020 Applicability:

A. The provisions of this Chapter apply to all commercial buildings constructed or developed within the Town limits, when the buildings will be served by water mains and fire hydrants capable of delivering the required fire, unless specifically exempted by this Chapter, or unless waived or modified by the Fire Chief pursuant to Section 15.86.090 of this ordinance.

B. Decisions of the Fire Chief are considered to be made in the best interest, and with the concurrence, of an affected Fire District in the absence of any credible evidence to the contrary.

15.86.030 Fire Chief Approval Prior to Issuance of Permits:

No permit subject to this Chapter will receive final approval until the Fire Chief has verified that the provisions of this Chapter are satisfied.

15.86.040 Hydrants to be Served by Town of South Prairie:

All water mains and fire hydrants required by this Chapter must be served by the Town of South Prairie water system.

15.86.050 Hydrant Standards:

Every development must include a system of fire hydrants sufficient to provide adequate fire protection for the buildings located or intended to be located within the development. The following hydrant standards apply unless waived or modified pursuant to Section 15.86.090 of this Chapter:

A. Any new hydrant installations must comply with the most recent edition of the document entitled *["Conditions and Standards for Connecting to the Town's Water System."]*

B. Spacing:

1. Within areas exclusively developed for residential occupancy, maximum distance from a fire hydrant to an access point of any lot is two hundred fifty (250) feet along a roadway.
2. The maximum distance between hydrants in residential areas is no greater than five hundred (500) feet.
3. For all other occupancy types, the maximum distance from a fire hydrant to the access point of the lot is one hundred fifty (150) feet along a roadway.
4. When any portion of a commercial building is more than one hundred fifty (150) feet from the water supply on a public street and when required by the Fire Chief, on-site fire hydrants and mains capable of supplying the required fire flow must be provided. Water supply may consist of reservoirs, pressure tanks, elevator tanks, water mains, or other fixed systems capable of supplying the required fire flow as approved by the Fire Chief and Town.

C. Location:

1. Whenever possible, hydrants must be located at street intersections, provided that when such location results in spacing distances greater than allowed by this Chapter, additional hydrants may be required between intersections; provided further that when the required fire flow is greater than 1500 GPM, the number and location of hydrants will be determined by the Town and approved by the Fire Chief.
2. Fire apparatus access roads must be provided and maintained in accordance with the most recent edition of the Pierce County Roads Standards.
3. When the developer installs the fire protection facilities pursuant to Section 901.3 of the UFC, the facilities must be installed before any combustible construction is installed on-site.
4. Water mains and fire hydrants must be capable of delivering the required fire flow to the site and will remain the responsibility of the developer until accepted by the Town.
5. When alternate provisions are provided pursuant to Section 15.86.090 of this ordinance the above requirements may be waived or modified.
6. When locating hydrants, consideration will be given to: hazardous operations and the practicality of sound fire service practices (fences, roadways, barriers to operation, etc.); the recommended location preferred by the Town; and the required ten (10) foot vehicle clear zone on each side of each hydrant.

D. Additional location requirements for commercial buildings:

1. The minimum number of public and private hydrants required will be determined by dividing the required fire flow for the building by 1,500.

2. Hydrants may be located no closer than fifty feet (50) to and no more than two hundred fifty (250) feet from a building.

3. No hydrant may be located more than one hundred fifty (150) feet from a sprinkler or standpipe connection.

E. Installation:

1. Hydrants must stand plumb and be set to the finished grade.

2. The bottom of the lowest outlet of the hydrant must be no less than eighteen (18) inches above the grade.

3. There must be a thirty-six (36) inch radius of clear area about the hydrant for the operation of a hydrant wrench on the outlets and the control valve.

4. The pumper port must face the street or, where the street cannot be clearly identified, must face the most likely location of a fire truck while pumping, as determined by the Fire Chief.

5. Any hydrant must have a Fire Chief approved port fitting.

F. Fire hydrants must be protected from damage.

1. Internal maintenance of public fire hydrants is the responsibility of the Town.

2. Private hydrants must be protected and maintained in accordance with the Uniform Fire Code.

15.86.060 Piping and Flow Standards:

The following standards relating to water mains, hydrant branches, and fire flow apply to all new development in the Town unless waived or modified, pursuant to Section 15.86.090 of this ordinance:

A. Hydrant branches must not have a domestic supply outlet and must meet the design standards of the Town (see Chapter 15.76 of this ordinance).

B. New or replaced water mains serving fire hydrants must meet the design standards of the Town (see Chapter 15.76 of this ordinance).

C. Flow requirements:

1. Service mains supplying hydrants must be designed to provide not less than 750 GPM at twenty pounds per square inch (20 psi) residual pressure over and above the computed maximum daily domestic consumption for the period of time specified in the Washington Survey and Rating Bureau's Grading Schedule, Table 4.

2. In addition, service mains supplying hydrants must provide the fire flow required to each building covered at the number of gallons per minute specified in UFC Appendix IIIA, except as to single dwellings. The Fire Chief may require construction in compliance with design from a registered professional engineer in order to assure that the required fire flow will be achieved.

15.86.070 Plan Approval Required:

A. Before any new hydrants or mains serving hydrants are installed, the developer must provide plans, prepared by a licensed engineer, for review by the Town Engineer.

B. Upon completed installation and acceptance by the Town, the developer must give the Fire Chief two copies of the accurate and identifiable as-built drawings or plans showing the location of all mains, hydrant branches, valves, and fire hydrants installed.

15.86.080 Plan Review:

A. The Fire Chief must certify that the plans have been reviewed before a development permit for any new or substantially altered commercial building, plat development, or residential complex is issued.

B. If the plans are in compliance with this Chapter, a notice of approval for issuance of a

building permit will be forwarded to the Building Inspector. The approval will be based on the provisions of this Chapter being satisfied before the start of any construction.

15.86.090 Waiver and Modification:

A. Subject to acceptance by the Town, the Fire Chief may grant a waiver or modification to the standards contained in Sections 15.86.050 and 15.86.060 if:

1. Strict compliance with the standards would create a substantial hardship on the applicant; and
2. A waiver or modification does not result in inadequate fire protection.

B. Waivers or modifications must:

1. Be in writing,
2. State the reasons for the waiver or modification; and
3. Be provided to the fire district that has jurisdiction over the project.

15.86.100 Obstruction Prohibited:

A. Obstructing the view of a fire hydrant by any means for a distance of fifty feet (50) from any direction of vehicular approach is prohibited.

B. Any violation of this Section is declared a public nuisance, subject to immediate abatement and subject to Section 15.02.140 of this ordinance.

APPENDIX B

Referenced Pierce County Ordinances and Maps

Pierce County Zoning
March 29, 2007

Pierce County
Geographic Information Services

Legend

Zoning

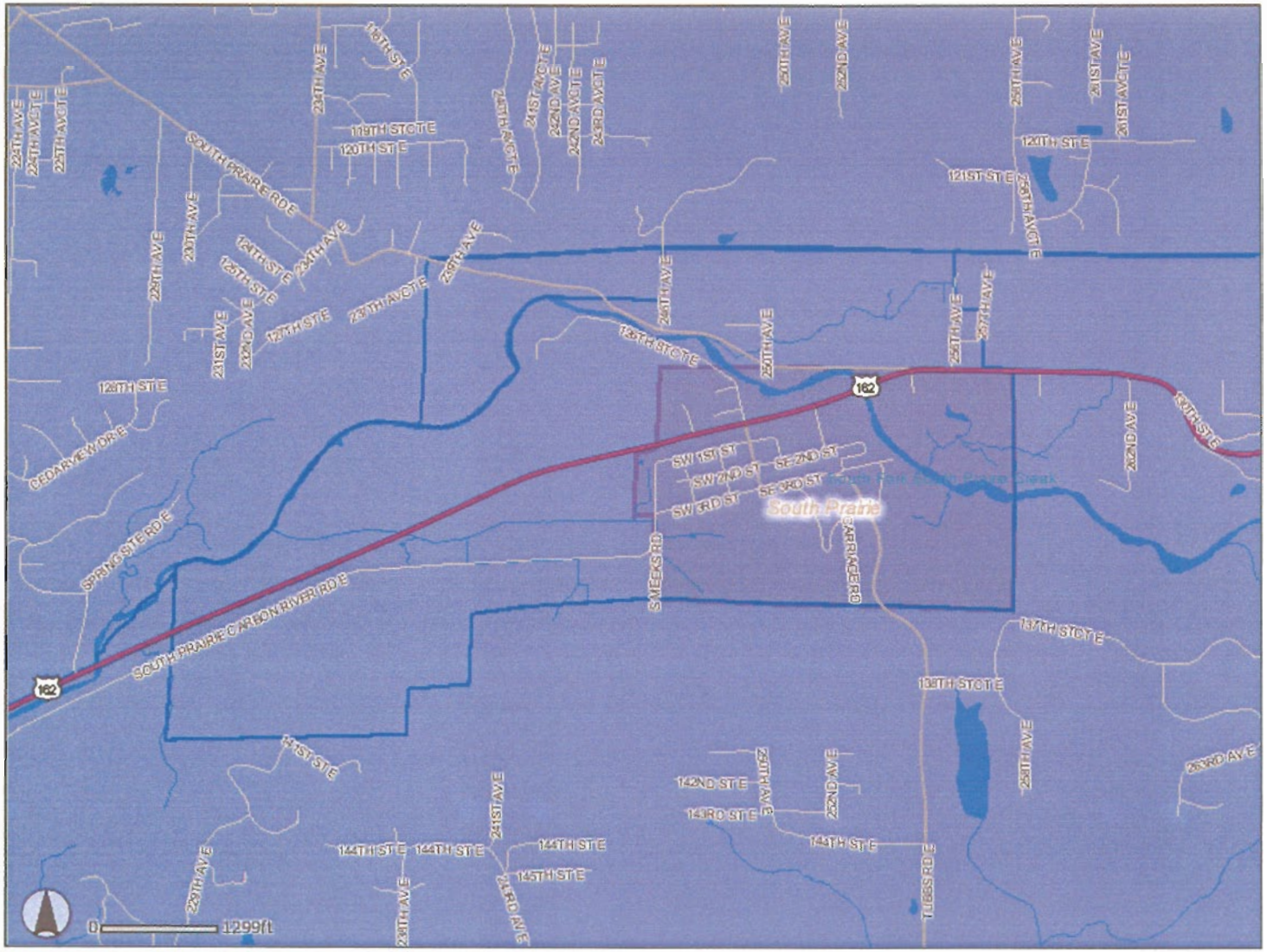
- Employment Center (EC)
- Community Employment (CE)
- Employment Services (ES)
- Public Institutional (PI)
- Urban Military Lands (UML)
- Major Urban Centers (MUC)
- Activity Centers (AC)
- Community Centers (CC)
- Urban Village (UV)
- Neighborhood Centers (NC)
- Mixed Use Districts (MUD)
- Commercial Mixed Use Districts (CMUD)
- Office-Residential Mixed Use Districts (OMUD)
- Residential/Office-Civic (ROC)
- Research Office (RO)
- High Density Residential (HRD)
- Moderate-High Density Residential (MHR)
- High Density Single-Family (HSF)
- Moderate Density Single-Family (MSF)
- Single-Family (SF)
- Residential Resource (RR)
- Master Planned Communities (MPC)
- Emp. Based Planned Communities (EBPC)
- Rural Military Land (RML)
- Rural Activity Center (RAC)

Disclaimer: The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. The County assumes no liability for variations ascertained by actual survey. **ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'**. The County makes no warranty of fitness for a particular purpose.

South Prairie Water Service Area (per Pierce County Records)

March 29, 2007

Pierce County
Geographic Information Services



Disclaimer: The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. The County assumes no liability for variations ascertained by actual survey. **ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'**. The County makes no warranty of fitness for a particular purpose.

FILE NO. 81 PROPOSAL NO. 89-148

ORDINANCE NO. 89-148

Sponsored By: Councilmember C. F. Gorden

Requested BY: EXECUTIVE (Public Works)

AN ORDINANCE OF THE PIERCE COUNTY COUNCIL GRANTING A FRANCHISE TO THE TOWN OF SOUTH PRAIRIE, A MUNICIPAL CORPORATION, FOR LOCATION OF WATER LINES ON CERTAIN RIGHTS-OF-WAYS

WHEREAS, the TOWN OF SOUTH PRAIRIE, a municipal corporation, of Pierce County, Washington, has applied for a nonexclusive franchise to construct, operate and maintain a water line system in, across, over, upon, along and under certain County roads, highways and other County property in Pierce County, Washington, as hereinafter set forth; and

WHEREAS, said application came on regularly for hearing before the Pierce County Council on the date set forth below under the provisions of Chapter 36.55, State Session Laws of 1937; and

WHEREAS, it appears to the Council that notice of said hearing has been duly given to the public and those interested in providing the same service applied for by the applicant as required by law and that it is in the public interest to grant the franchise; NOW, THEREFORE,

BE IT ORDAINED by the Council of Pierce County;

Section 1. The franchise, a copy of which is attached hereto and identified as Exhibit "A", is hereby given and granted to the TOWN OF SOUTH PRAIRIE, a municipal corporation, of Pierce County, Washington, its successors and assigns, hereinafter referred to as the Grantee, for a period of twenty-five (25) years, from and after the date of entry of this Ordinance to construct, operate and maintain a water line system for the transmission and disposition of water in, across, under, upon, along and over those certain County roads, highways and County property in Pierce County, Washington, described on said franchise.

Section 2. Said franchise is granted for the period of twenty-five (25) years.

Section 3. Said franchise is conditioned upon approval by DSHS pursuant to WAC 248-54-095 of construction plans and specifications for water systems facilities constructed on County right-of-way under the provisions of this franchise.

FILE NO. 81

In the Matter of the Application of)
THE TOWN OF SOUTH PRAIRIE, a municipal)
corporation of Pierce County, Washington,)
for a Franchise to construct, operate)
and maintain water pipe lines for a Water)
System over, in, along, across,)
under and upon certain Public Roads)
and Highways in Pierce County, Washington)

EXHIBIT "A"
to Ordinance No. 89-148
F R A N C H I S E

Application of the TOWN OF SOUTH PRAIRIE, a municipal corporation of Pierce County, Washington, for a Franchise to construct and maintain water pipe lines for a Water System in, across, under, upon, along and over certain public roads and highways in Pierce County, Washington, as hereinafter set forth, having come on regularly for hearing before the County Council of Pierce County, Washington, under the provisions of Chapter 36.55, Revised Code of Washington, and it appearing to the Council that notice of said Hearing has been duly given as required by law, and that it is in the public interest to grant the Franchise herein granted;

NOW, THEREFORE, IT IS ORDERED that a Franchise be, and the same is hereby given and granted to the TOWN OF SOUTH PRAIRIE, a municipal corporation of Pierce County, Washington, hereinafter called the "Grantee" and to its approved successors, and assigns, for a term of twenty-five (25) years from and after the date of the entry of this Order the right, privilege, and authority to construct, maintain, and operate for the said period of time, a water pipe line for a Water System, in, across, under, upon, along, and over the public roads and highways in Pierce County, Washington, to-wit:

Sections 12, 13, and ~~24~~, Township 19 North, Range 5 East, W.M.
All Pierce County roads in the said Sections.

Sections 7, ~~8~~, ~~17~~ through ~~20~~ 18, Township 19 North, Range 6 East, W.M.
All Pierce County roads in the said Section.

III

That all work done under this franchise shall be done in a thorough and workmanlike manner, that in the laying of water pipes and conduits and the digging of ditches therefor, the Grantee herein, its successors and assigns, shall leave such ditches in such a way as to interfere as little as possible with public travel and shall take all due and necessary precautions to guard the same that damage or injury, shall not occur or arise by reason of such work; and that where any of such ditches or trenches are left open at night, the Grantee shall place at all crossings suitable lights in such a position to guard against danger, and that the Grantee, its successors and assigns, shall be liable for all damage which may be caused by reason of any injury sustained through its carelessness or neglect, or by reason of any person, animal or property being injured herein through any failing or neglect of the Grantee, herein, its successors and assigns, or by reason of any damage caused through the neglect to properly guard any ditches or trenches dug or maintained by the Grantee herein, its successors and assigns.

IV

That the County of Pierce, in the granting of this franchise does not waive any rights which it now holds or may hereafter acquire and this order shall not be construed so as to deprive the County of Pierce of any powers, rights, or privileges which it now has or may hereafter acquire, including the right of eminent domain, to regulate the use and control of the County roads and highways covered by this franchise, or to go upon any and all County roads and highways for the purpose of constructing and improving the same in such a manner as the County of Pierce, or its representatives may elect; and that the

of Public Works. There shall be an endorsement to the policy to the effect that Pierce County has no obligation to report losses or to pay premiums, and the insurer must agree to give Pierce County thirty (30) days written notice of termination prior to terminating the policy. In the event of the Grantee's failure to fully defend, indemnify and hold harmless Pierce County, its appointed and elected officers and employees, as undertaken herein, Pierce County may terminate this franchise without notice, and shall have a lien upon all equipment and materials erected or placed under this franchise, which lien may be enforced to reimburse Pierce County for any reasonable expenses and payments incurred in defending and/or satisfying any claims brought or judgments entered against Pierce County as a result of conditions created under this franchise or acts or omissions of the Grantee's agents while performing or attempting to perform any operations allowed by this franchise.

VI

If, at any time, the County of Pierce shall vacate any public street, road or alley which is subject to rights granted by this franchise, the Pierce County Council may, at their option, and by giving thirty (30) days written notice to the Grantee, its successors and assigns, terminate this franchise with reference to such County road, street, or alley so acquired and the County of Pierce shall not be liable for any damages or loss to the Grantee by reason of such termination.

VII

If, at any time, the said County of Pierce shall change its graded right of way along the said County roads and highways, or shall change the grade of any said County roads or highways, or shall construct sewer or drainage

them by the County of Pierce with full power to make the necessary repairs, changes and alterations in the same and like manner as though this franchise had never been granted.

Pierce County reserves for itself the right at any time upon ninety (90) days written notice to the grantee, to so change, amend, modify or amplify this franchise to conform to any state statute, order of the Washington Utilities and Transportation Commission or county regulation, ordinance or right-of-way regulation, as may hereafter be enacted, adopted or promulgated and this franchise may be terminated at any time if the grantee fails to comply with such change, amendment, modification or amplification.

Grantee agrees to and shall provide available financial information to the County upon reasonable request. Grantee agrees to and shall during regular business hours and at its office located in Pierce County, Washington, allow agents of Pierce County access for inspection and reproduction of all of Grantee's business records, gross revenue reports, or rules and regulations relevant to a determination of the gross revenues received by Grantee from the area served by the facilities permitted by this franchise.

X

In the event that the territory covered by this franchise shall at any time during the franchise period be included within the limits of any incorporated city or town, the authorities of said city or town shall have the right, to be exercised at their discretion, to acquire by purchase or condemnation, any part of such pipes, conduits and water system other than transmission lines at a price to be based upon the reasonable value of the

EXHIBIT "A" to Ordinance No. 89-148

Pursuant to RCW 36.55.080, a copy of this franchise shall be recorded in the Office of the Pierce County Auditor.

DATED at Tacoma, Washington, this 27th day of October, 1989.

JOE STORTINI
Pierce County Executive

EXHIBIT "A" to Ordinance No. 89-148

TOWN OF SOUTH PRAIRIE accepts and agrees to comply with all the terms and conditions of this franchise.

Patricia R. Gallagher

Name

MAYOR-PATRICIA R. GALLAGHER

Title

TOWN OF SOUTH PRAIRIE

Company, Corporate Name, or Individual

NOVEMBER 14, 1989

Date

Chapter 17C.60

INTERNATIONAL FIRE CODE

Sections:

17C.60.010 Adoption of International Fire Code.
17C.60.020 Conflicts with Other Codes.
17C.60.030 Definitions.
17C.60.040 Change of Use or Occupancy.
17C.60.041 Application of Building Code.
17C.60.042 Historic Buildings.
17C.60.050 General.
17C.60.051 Appointment.
17C.60.060 Fire Records.
17C.60.070 Investigations.
17C.60.080 Permits Required.
17C.60.085 Permit Fees.
17C.60.090 Commercial Inspection Program (CIP) Inspection Fees.
17C.60.100 Building and Fire Codes Board of Appeals.
17C.60.110 Compliance with Tags.
17C.60.120 Violations and Penalties.
17C.60.121 Failure to Comply.
17C.60.130 Discontinuance of Burning.
17C.60.140 Open Flame.
17C.60.141 Approval of Fire Safety Plans.
17C.60.142 Fire Safety and Evacuation Plans.
17C.60.143 Emergency Evacuation Drills.
17C.60.150 Emergency Vehicle Access.
17C.60.160 Fire Flow Requirements for Buildings.
17C.60.165 Minimum Standards for Fire Flows, Water Mains and Fire Hydrants.
17C.60.170 Records.
17C.60.180 Automatic Sprinkler Systems for Group R Occupancies.
17C.60.181 Automatic Sprinkler Systems – State Amendment not Adopted.
17C.60.182 Automatic Sprinkler Systems – LC Occupancies.
17C.60.190 Standpipe System.
17C.60.200 Portable Fire Extinguishers.
17C.60.210 Fire Alarm Systems – Group R-2 Occupancies.
17C.60.215 Smoke Alarms in Existing Buildings.
17C.60.220 Outside Storage of Tires.
17C.60.230 Fireworks.
17C.60.240 Public Display.
17C.60.250 Severability.

17C.60.010 Adoption of International Fire Code.

There is adopted for the purpose of prescribing regulations governing conditions hazardous to life and property from fire and explosion in all of the unincorporated areas of Pierce County, and in the incorporated towns and cities of the County where requested and agreed to by contract, the edition of the International Fire Code currently or hereafter, adopted and amended by the State Building Code Council and included in Chapters 51-54 Washington Administrative Code. The effective date of subsequent editions of the International Fire Code in Pierce County shall coincide with the effective date of their adoption and amendment by the State Building Code Council. (Ord. 2004-30s § 4 (part), 2004)

17C.60.020 Conflicts With Other Codes.

In case of conflict among the Codes enumerated in Section 17C.10.010, the first named Code shall govern over those following. (Ord. 2004-30s § 4 (part), 2004)

17C.60.030 Definitions.

A. **Approved hydrant.** "Approved hydrant" means a hydrant which provides the required fire flow or portion thereof, but not less than 500 gpm and meets the requirements of these standards.

B. **A.W.W.A.** "A.W.W.A" shall mean the American Water Works Association.

C. **Continuous Supply.** "Continuous supply" shall mean the providing of water at or above the minimum flow levels at all times.

D. **Deadend Main.** "Deadend main" shall mean a water main over 50 feet long and not being fed from both directions at the time of installation.

E. **Emergency Vehicle Access.** "Emergency vehicle access" means a drivable surface constructed and maintained in accordance with this Chapter, that provides emergency access between a public or private road or shared access facility and 150 feet of all portions of an exterior wall of the first story of any structure requiring EV Access, as measured in an approved route around the exterior of the building.

F. **Fire Area.** "Fire area", for the purpose of fire flow, is the total floor area in square feet for all floor levels within the exterior walls, or under the horizontal projection of the roof of the building. Each portion of a building separated by one or more four-hour fire walls with no openings and provided with a 30-inch parapet constructed in accordance with the Building Code may be considered as separate fire areas for the purpose of determining the required fire flow. Multiple buildings will be considered to be in a single fire area unless separated in accordance with International Building Code Table 602 and Section 704. Fire area is not used in determining fire flow for one- and two-family dwellings (R-3).

G. **Fire Code Official.** Wherever the words "fire code official" appears in the International Fire Code or this Chapter, they shall mean Fire Marshal of the Office of Fire Prevention and Arson Control (also known as the Fire Prevention Bureau) and his duly authorized representatives.

H. **Fire Flow.** "Fire flow" is the quantity of water in gallons per minute (GPM) needed to control an anticipated fire in a building or group of buildings or at a facility. Water mains supplying fire flow shall maintain a minimum residual pressure of not less than 20 pounds per square inch (PSI).

I. **Fire Hydrant.** "Fire Hydrant" shall mean a mechanical device which is self-draining and frost free, and is constructed to provide the required fire flow, or portion thereof, for the area serviced.

J. **Fire Marshal.** "Fire Marshal" shall mean the Director of the Pierce County Office of Fire Prevention and Arson Control (Fire Prevention Bureau) and his duly authorized representatives.

K. **Flush-type Hydrant.** "Flush-type Hydrant" shall mean a hydrant that is installed entirely below grade.

L. **G.P.M.** "G.P.M." shall mean gallons per minute.

M. **Jurisdiction.** Wherever the word "jurisdiction" is used in the International Fire Code, it shall mean unincorporated Pierce County.

N. **Limited Supply Sprinkler System.** "Limited supply sprinkler system" means a wet pipe sprinkler system with quick response sprinkler heads designed and installed in accordance with NFPA 13 "Standard for the Installation of Sprinkler Systems", but provided with a water supply capable of supplying 3 to 6 sprinkler heads for a duration of 30 minutes. The number of sprinklers utilized is dependant upon the hazard of the occupancy.

O. **New Additions to Existing Water Systems.** "New Additions to Existing Water Systems" shall mean all additions to existing water systems except the addition of one hydrant that will meet the flow requirement, with no line extension. New additions shall include, but not be limited to, water main extensions, additional storage facilities, and replacement of existing water mains.

P. **Off Site Water.** "Off site water" means the ability of the fire district, under normal circumstances, to deliver a constant 250 GPM for 8 minutes.

Q. **P.S.I.** P.S.I." shall mean pounds per square inch.

R. **Permit, Construction.** "Permit, Construction" means a permit required by Section 105.7 of the International Fire Code for installation, modification or removal of systems and equipment.

S. **Permit, Prescribed.** "Permit, Prescribed" means a permit required by Section 105.6 of the International Fire Code allowing an activity, operation, practice or function within specified beginning and ending dates not to exceed one year in duration.

T. **Permit, Renewable.** "Permit, Renewable" means a permit required by Section 105.6 of the International Fire Code allowing a continual activity, operation, practice or function.

U. **Police Department.** Wherever the term "The Police Department" or "Police Officers" is used in the International Fire Code, it shall mean the Pierce County Sheriff's Department and its Officers.

V. **Public Hydrant.** "Public Hydrant" shall mean a fire hydrant on a water purveyor system so situated and maintained as to provide water for fire fighting purposes without restrictions as to use for the purpose. The location is such that it is accessible for immediate use of the fire department at all times.

W. **Public Water.** "Public Water" shall mean any system or water supply intended or used for human consumption or other domestic uses, including sources, treatment, storage, transmission and distribution facilities where water is furnished to any community, collection or number of individuals, or is made available to the public for human consumption or domestic use, excluding water systems serving a single family residence.

X. **Purveyor.** "Purveyor" shall mean the federal agency, state agency, county agency, city, town, municipal corporation, firm, company, mutual, cooperative, association, corporation, partnership, district, institution, person or persons owning or operating a public water system or his authorized agent.

Y. **Residential Driveway Approach.** Residential Driveway Approach means an approach that is used to serve up to two single family residences or one duplex unit.

Z. **Rural Area.** "Rural area" means those areas not designated as urban by the Pierce County Comprehensive Plan.

AA. **Service Connection.** "Service Connection" shall mean a physical connection to a public water system through which water may be delivered to a customer for discretionary use.

AB. **Shared Access Facility.** Shared Access Facility means a privately owned drivable surface which serves four lots in the rural area or two lots in the urban area for access to single family and two family dwelling units.

AC. **Substantial Alteration.** "Substantial alteration" for one- and two-family dwellings (R-3) or private garages (U) shall mean an addition in gross floor area of 40 percent; for all other occupancies "substantial alteration" shall mean any alteration, remodeling or structural change to a building, the permit valuation for which exceeds 40 percent of the current permit valuation of the existing building. Current permit valuation shall be determined by the Building Official using the cost per square foot values in effect at the time of permit application. Substantial alteration shall be accumulative from November 16, 1992.

AD. **Transient Accommodation.** "Transient accommodation" means any facility such as a hotel, motel, resort, condominium, rooming house or other place offering three or more lodging units to travelers and transient guests for periods of less than one month.

AE. **Transmission Main.** "Transmission Main" shall mean a main used to transport water from a source to storage, source to source, source or storage to distribution.

AF. **Urban Area.** "Urban area" means those areas so designated as urban on the "Generalized Proposed Land Use Map" of the Pierce County Comprehensive Plan.

AG. **Water Main.** "Water Main" shall mean the piping used or which may be used in the future to deliver domestic water and/or fire flows intended for fire protection in amounts prescribed in this Chapter and excludes storage facilities, hydrants, and service connections.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.040 Change of Use or Occupancy.

Section 102.3 of the International Fire Code is amended as follows:

Section 102.3 Change of use or occupancy. The provisions of the International Building Code shall apply to all buildings undergoing a change of occupancy.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.041 Application of Building Code.

Section 102.4 of the International Fire Code is amended as follows:

Section 102.4 Application of building code. The design and construction of new structures shall comply with the International Building Code. Repairs, alterations and additions to existing structures shall comply with the International Building Code.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.042 Historic Buildings.
Section 102.5 of the International Fire Code is deleted in its entirety. (Ord. 2004-30s § 4 (part), 2004)

17C.60.050 General.
Section 103.1 of the International Fire Code is deleted in its entirety and replaced as follows:

Section 103.1 General. The Division of Fire Prevention and Arson Control (Fire Prevention Bureau) is hereby created and the official in charge thereof shall be known as the Fire Marshal. The provisions of the International Fire Code listed in Chapter 17C.60 shall be administered by the Fire Marshal.
(Ord. 2004-30s § 4 (part), 2004)

17C.60.051 Appointment.
Section 103.2 of the International Fire Code is deleted in its entirety and replaced as follows:

Section 103.3 Appointment. The Fire Marshal shall be appointed by the Pierce County Executive.
(Ord. 2004-30s § 4 (part), 2004)

17C.60.060 Fire Records.
Section 104.6.3 of the International Fire Code is deleted in its entirety and replaced as follows:

104.6.3 Fire records. The Office of Fire Prevention and Arson Control (Fire Prevention Bureau) shall keep a record of all fires that it investigates and of facts concerning the same, including statistics as to the extent of such fires and the damage caused thereby, together with other information as required by the Fire Marshal.
(Ord. 2004-30s § 4 (part), 2004)

17C.60.070 Investigations.
Section 104.10 of the International Fire Code is hereby deleted in its entirety and replaced with the following:

A. The Fire Prevention Bureau shall investigate the origin, cause and circumstances of fires occurring within unincorporated Pierce County and Contract Cities and Towns as required by RCW 48.48.060. The Fire Marshal shall establish protocols and/or policies with respect to fire investigation responsibilities.

Any Fire Protection District that investigates a fire, and finds that the fire involves personal injury or loss of life, or destruction to or damage of property, or is of undetermined origin, or of a suspicious nature, or a recognized arson, shall immediately contact the Fire Prevention Bureau in accordance with established protocols and/or policies. If the Fire Prevention Bureau has reasonable cause to believe that arson or criminal activity is connected with the fire, then the Fire Prevention Bureau will report its findings to the Pierce County Sheriff's Department or appropriate local law

enforcement agency. The Pierce County Sheriff's Department or appropriate local law enforcement agency shall take primary responsibility for any suspicious or known arson fire investigation, may take immediate possession and charge of all physical evidence relating to the fire, and shall investigate the fire.

The Fire Protection District and the Fire Prevention Bureau shall assist the Sheriff's Department or appropriate local law enforcement agency throughout the investigation.

B. All investigations declined by the Pierce County Sheriff's Department for insufficient evidence shall be returned to the Fire Prevention Bureau for further investigation as may be required.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.080 Permits Required.

Section 105.6 of the International Fire Code is amended as follows:

A. **105.6.16.** Fire hydrants and water-control valves is deleted.

B. **105.6.36.** Private fire hydrants is deleted.

C. **105.6.43** is amended to read as follows:
Tire storage. To use an open area or portion thereof to store more than 200 tires. See Section 17C.60.220 and IFC Chapter 25.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.085 Permit Fees.

Section 105.8 of the International Fire Code is added to read as follows:

A. **105.8 Permit Fees.** A fee as specified in Table 17C.60-1 shall be charged for each required permit. Construction permit fees for fire protection systems shall be in accordance with Table 17C.10.1-F.

Table 17C.60-1 Permit Types and Fees

Permit	Type	Fee*
Aerosol Products	Renewable	Included
Amusement Buildings	Renewable	Included
Commercial (Haunted House, etc.)	Prescribed	$130.00
School (Haunted House, etc.)	Prescribed	$30.00
Battery Systems	Renewable	Included
Candles or Open Flame in Assembly Area	Prescribed	$35.00
	Renewable	Included
Carnivals and Fairs, etc. - Outdoors:		
Carnival – Commercial	Prescribed	$165.00
Fair, Bazaars, Flea-Marts:		
Booths or Displays: 0 – 10	Prescribed	$70.00
11 – 25	Prescribed	$85.00
26 – 50	Prescribed	$120.00
50 +	Prescribed	$130.00
Special Event – Outdoors	Prescribed	$95.00
Cellulose Nitrate Film	Renewable	Included
Combustible Dust Producing Operations	Renewable	Included
Combustible Fibers	Renewable	Included
Combustible Material Storage	Renewable	Included
Compressed Gases	Renewable	Included
	Prescribed	$110.00
	Construction	$110.00
Covered Mall Buildings:		
Kiosks/Concession/Booths/etc.	Renewable	Included
Use Open Flame, etc.	Prescribed	$40.00
Display Liquid or Gas Filled Equipment	Prescribed	$40.00
Cryogenic Fluids	Renewable	Included
	Prescribed	$110.00
Cutting and Welding	Renewable	Included
	Prescribed	$35.00
Dry Cleaning Plants	Renewable	Included
Exhibits and Trade Shows		
Booths or Displays: 0 – 25	Prescribed	$70.00
26 – 50	Prescribed	$95.00
51 +	Prescribed	$125.00
Explosives	Renewable	Included
	Prescribed	$130.00
Fireworks Discharge (1.4G)	Prescribed	$35.00
Fireworks Display (1.3G)	Prescribed	$165.00
Fireworks Stand	Prescribed	$110.00
Flammable/Combustible Liquids - Pipeline, Operate	Renewable	Included
Flammable/Combustible Liquids - Store, Handle, Use	Renewable	Included
	Prescribed	$70.00

Table 17C.60-1 Permit Types and Fees

Permit	Type	Fee*
Flammable/Combustible Liquids – Remove or Abandon Tank (Residential Heating Oil)	Construction Construction	$175.00 (First Tank, $65 ea addt'l) ($95.00)
Flammable/Combustible Liquids - Tank, Piping Equipment, etc./Construct, Install, Alter, etc.	Construction	$275.00 (First Tank, etc- $65 ea addt'l)
Flammable/Combustible Liquids - Tank Vehicles	Prescribed	$65.00
Flammable/Combustible Liquids - Change Contents	Prescribed	$130.00
Floor Finishing	Prescribed	$95.00
Fruit and Crop Ripening	Renewable	Included
Fumigation and Thermal Insecticidal Fogging	Renewable	Included
Hazardous Material - Store, Handle, Use	Renewable Prescribed	Included $65.00
Hazardous Material - Remove, Abandon, Tank	Construction	$175.00 (First Tank, $65 ea addt'l)
Hazardous Material - Tank, Piping, Equipment, etc./Install, alter, etc.	Construction	$275.00 (First Tank, etc- $65 ea addt'l)
Hazardous Material - Change Contents	Prescribed	$130.00
High Piled Combustible Storage	Renewable	Included
Hot-work Operations	Renewable Prescribed	Included $35.00
Industrial Ovens	Renewable Construction	Included $160.00
Liquefied Petroleum Gases - Tank-Install: 0 - 500 Gallons 501 - 10,000 10,001 +	 Construction Construction Construction	 $70.00 $130.00 $250.00
Liquefied Petroleum Gases - Tank-Maintain	Renewable	Included
Liquefied Petroleum Gases - Tank Vehicle	Prescribed	$75.00
Liquid or Gas Fueled Vehicles/Equipment in Assembly Buildings	Prescribed	$70.00
Lumber Yards and Woodworking Plants	Renewable	Included
Magnesium Working	Renewable	Included
Motor Vehicle Fuel - Dispensing	Renewable	Included
Open Burning	Prescribed	$35.00
Organic Coatings	Renewable	Included
Place of Assembly	Renewable	Included
Place of Assembly - School Carnival or Fair Other Special Event:	 Prescribed Prescribed	 $35.00 $95.00
Pyrotechnical Special Effects Material	Prescribed	$65.00
Pyroxylin Plastics	Renewable	Included

Table 17C.60-1 Permit Types and Fees

Permit	Type	Fee*
Refrigeration Equipment	Renewable	Included
Repair Garages	Renewable	Included
Rooftop Heliports	Renewable	Included
Spraying or Dipping	Renewable	Included
Temporary Membrane Structures, Tents and Canopies: 2,000 square feet or less 2,001 square feet or more	 Prescribed and Construction Prescribed and Construction	 $85.00 $115.00
Tire-rebuilding Plants	Renewable	Included
Tire Storage: 201 to 2,499 tires 2,500 or more tires	 Prescribed Prescribed	 $125.00 $200.00
Waste Handling	Renewable	Included
Wood Products	Renewable	Included

* The word "Included" in the fee column indicates that the fees for renewable permits are included as a part of Commercial Inspection Program fees.

B. **Additional Plan Review Fees.** A fee will be charged for additional plan review for each resubmittal, beyond the first, to correct errors or omissions noted during a previous review or when additional plan review is required due to changes, additions or revisions of previously approved plans. The fee shall be 50 percent of the plan review fee on Table 17C.10-1-F or 25 percent of the fee on Table 17C.60-1, but in no case less than $50.00.

C. **Reinspection Fees.** Reinspection fees in accordance with Section 17C.10.090 shall be charged when such portion of work for which inspection is called is not complete or when corrections called for are not made.

D. **After-Hours Inspection Fee.** After-hours inspection means an inspection authorized or required pursuant to the International Fire Code for which it is necessary for the convenience of the permittee to have an inspection conducted outside of normal business hours. The Fire Prevention Bureau shall charge an additional fee (in addition to other permit fees) of $60.00 per hour, with one-hour minimum, with additional time to be computed in quarter hour increments, and to include travel time, PROVIDED, school sponsored events at public and private elementary and middle schools shall be exempt from the After Hours Inspection Fee.

(Ord. 2004-116 § 1, 2004; Ord. 2004-30s § 4 (part), 2004)

17C.60.090 Commercial Inspection Program (CIP) Inspection Fees.

Section 106.1 of the International Fire Code is hereby amended by addition of the following subsections:

A. **Inspection Fees.** There is hereby imposed an inspection fee for the Commercial Inspection Program (CIP), as shown in Table 17C.60-2, for all fire and life safety inspections performed pursuant to the provisions of the International Fire Code, as now enacted or hereafter amended.

The inspection fee shall include the original inspection, and two reinspections (for the purpose of ensuring the correction of any deficiencies noted during the original inspection). If additional reinspections are necessary (to ensure correction of any deficiency or defect) the Fire Prevention Bureau shall charge a fee of $60.00 per hour with a one-hour minimum and, with additional time to be computed in quarter hour increments, and to include travel time.

B. **International Fire Code Permits.** Fees for renewable International Fire Code permits associated with fire and life safety inspections as described in Section 106.1 shall be included as a part of the inspection fee charged under this Section.

C. **After-Hours Inspection Fee.** After-hours inspection means an inspection authorized or required pursuant to the International Fire Code for which it is necessary for the convenience of the permittee to have an inspection conducted outside of normal business hours.

The Fire Prevention Bureau shall charge an additional fee (in addition to other permit fees) of $100.00 per hour, with a one-hour minimum, with additional time to be computed in quarter hour increments, and to include travel time.

TABLE 17C.60-2

Square Footage	Fee
Under 500	$50.00
500 to 999	$55.00
1,000 to 1,999	$60.00
2,000 to 2,999	$63.00
3,000 to 3,999	$65.00
4,000 to 4,999	$67.00
5,000 to 5,999	$73.00
6,000 to 6,999	$75.00
7,000 to 7,999	$77.00
8,000 to 8,999	$80.00
9,000 to 9,999	$82.00
10,000 to 14,999	$89.00
15,000 to 19,999	$101.00
20,000 to 24,999	$113.00
25,000 to 29,999	$127.00
30,000 to 34,999	$140.00
35,000 to 39,999	$152.00
40,000 to 49,999	$164.00
50,000 to 74,999	$190.00
75,000 to 99,999	$250.00
100,000 to 149,999	$320.00
150,000 to 199,999	$440.00
200,000 and up	$550.00

(Ord. 2004-116 § 2, 2004; Ord. 2004-30s § 4 (part), 2004)

17C.60.100 Building and Fire Codes Board of Appeals.

Section 108 of the International Fire Code is deleted in its entirety and replaced by 17C.10.060. (Ord. 2004-30s § 4 (part), 2004)

17C.60.110 Compliance with Tags.

Section 109.2.2.1 is added to the International Fire Code to read as follows:

109.2.2.1 Compliance with tags. A building, premises, equipment, fixture or device shall not be used when in violation of this code as noted on a tag affixed in accordance with this section.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.120 Violations and Penalties.

Section 109.3 of the International Fire Code is deleted in its entirety and replaced as follows:

A. Any person who shall violate any of the provisions of the International Fire Code or this Chapter, or fail to comply therewith, or who shall violate or fail to comply with any order made thereunder, or who shall build in violation of any detailed specifications or plans submitted and approved thereunder, or any permit issued thereunder, and from which no appeal has been taken, or who shall fail to comply with such an order, shall be guilty of a misdemeanor punishable by a fine of not more than $1,000.00 or by imprisonment for not more than 90 days, or by both such fine and imprisonment. The imposition of one penalty for any violation shall not excuse the violation or permit it to continue; and all such persons shall be required to correct or remedy such violations or defects within a reasonable time as specified by the Fire Marshal; and when not otherwise specified, each day that prohibited conditions are maintained shall constitute a separate offense.

B. The application of the above penalty shall not be held to prevent the enforced removal of prohibited conditions.

C. **Citation System.** The International Fire Code is amended by the addition of the following Citation System, designed to implement effective enforcement of the International Fire Code:

Fire Prevention Bureau employees, designated in writing by the Fire Marshal, may, whenever the employee has reasonable cause to believe that a person has committed a misdemeanor under this Chapter, issue a notice to appear in Court (citation) for a hearing on the charge. Inspectors shall be instructed to deposit executed citations or notices with the Clerk of the District Court, after review for legal sufficiency. The bail schedule shall be as follows:

I.F.C. Section	Offense	Bail
109.2.2	Noncompliance with Order or Notice	$1,000.00
109.2.2.1	Unlawful Use with Tag Affixed	1,000.00
109.2.4	Unlawful Removal and Destruction of Signs and Tags	1,000.00
All other violations are:		150.00
Court costs may also be assessed as directed by the Court.		

Section 109.3.1 is retained.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.121 Failure to Comply.

Section 111.4 of the International Fire Code is amended to read as follows:

111.4 Failure to comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to penalties listed in PCC 17C.60.120.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.130 Discontinuance of Burning.

Section 307.5 is added to the International Fire Code to read as follows:

307.5 Discontinuance. The Fire Marshal is authorized to require that any open burning be immediately discontinued if the Fire Marshal determines that smoke emissions are offensive to occupants of surrounding property or if the open burning constitutes a hazardous condition. The Fire Marshal may, at any time, impose a county wide burn ban for reasons of fire safety or public health.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.140 Open Flame.

Section 308.3.7 of the International Fire Code is amended as follows:

308.3.7 Group A occupancies. Open-flame devices shall not be used in a Group A occupancy.

Exceptions:

1. Open-flame devices are allowed to be used in the following situations, provided approved precautions are taken to prevent ignition of a combustible material or injury to occupants.
   - 1.1 Where necessary for ceremonial or religious purposes in accordance with Section 308.3.5.
   - 1.2 On stages and platforms as a necessary part of a performance in accordance with Section 308.3.6.
   - 1.3 Where candles on tables are securely supported on substantial noncombustible bases and the candle flames are protected.
   - 1.4 Where approved by the fire code official.
2. Heat-producing equipment complying with Chapter 6 and the International Mechanical Code.
3. Gas lights are allowed to be used provided adequate precautions satisfactory to the fire code official are taken to prevent ignition of combustible materials.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.141 Approval of Fire Safety Plans.

Section 401.2 of the International Fire Code is deleted. (Ord. 2004-30s § 4 (part), 2004)

17C.60.142 Fire Safety and Evacuation Plans.

Section 404.2 of the International Fire Code is amended to read as follows:

404.2 Where required. A fire safety and evacuation plan shall be prepared and maintained for the following occupancies and buildings.

(Balance of the Section to remain unchanged)

(Ord. 2004-30s § 4 (part), 2004)

17C.60.143 Emergency Evacuation Drills.

Section 405.1 of the International Fire Code is amended to read as follows:

405.1 General. Emergency evacuation drills, complying with the provisions of this section, shall be conducted in the occupancies listed in Section 404.2 or when required by the fire code official.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.150 Emergency Vehicle Access.

Section 503.1 through 503.4 of the International Fire Code are deleted and replaced as follows:

A. **Introduction.** Emergency vehicle access shall be provided, when required, from a public or private road or shared access facility, for any parcel(s) of land that has a structure(s) or facility on it. This access is exempt from any normal setbacks established for public or private roads or shared access facility. Emergency vehicle access shall be provided and maintained in accordance with the provisions of these Standards.
   1. Abbreviated Designation. Emergency vehicle access will be cited routinely in the text as "EV Access."
   2. Applicability. EV Access shall be required for every building, portion of a building or facility hereafter constructed or installed when any portion of an exterior wall of the first story is located more than 150 feet from the edge of the driving surface of the private or public road or shared access facility providing access to the parcel(s) of land on which that building is located, as measured in an approved route around the exterior of the building.
   3. Modifications:
      a. When buildings are protected with an approved automatic fire sprinkler system, the provisions of this section may be modified by the Fire Marshal after conferring with the local fire chief.
      b. When an EV Access cannot be installed in conformance with these Standards due to topography, waterways, non-negotiable grades, or other similar conditions, the Fire Marshal, after conferring with the local fire chief, may allow a modification to these Standards by requiring additional fire protection as specified in Section 901.4.3 of the most current edition of the International Fire Code as adopted by the County.
   4. Exemptions:
      a. Residential accessory buildings similar to Group U occupancies (private garages, carports, sheds, some agricultural buildings, tanks, towers and fences over 6 feet tall) as defined by the most current edition of the International Building Code as adopted by the County.
      b. One-time expansion, remodel, or alteration of existing uses or structures if the proposed change does not exceed 25 percent of the floor area of the existing use or structure.

5. Environmental Considerations. When an environmental checklist is required pursuant to S.E.P.A. it shall be submitted to the County Environmental Official for the work shown on the EV Access construction plans. Before the project plans are given final approval by the County, a declaration of non-significance or a final environmental impact statement must be issued, and all appeal periods must have expired.

B. **Administration.**

1. Submittal Procedure. A site plan shall be submitted to Pierce County in accordance with the site plan submittal standards for the proposed building permit. Site plan details shall include, but not be limited to, location and size of the EV Access, location of structures, 2 foot elevation contours on the EV Access and parcel or lot configuration.
2. Inspections. The County reserves the right to enter onto the property during construction and after completion of the EV Access to inspect it for compliance with the conditions of the permit.
3. Enforcement. The Applicant must have the EV Access constructed in compliance with the conditions of the permit before the project will receive final inspection approval.

   Prior to issuance of the occupancy permit on commercial structures, a letter of compliance shall be submitted to the County verifying that the EV Access has been completed to the standards in this document.

   Failure to construct and/or maintain the EV Access as approved shall result in the imposition of penalties under this chapter.

C. **EV Access Requirements.**

1. Length. If an EV Access is required, it shall extend from the public or private road or shared access facility to within 150 feet of all portions of an exterior wall of the first story of any structure requiring said EV Access, as measured in an approved route around the exterior of the building.
2. Width. EV Access serving one dwelling unit shall not be less than 15 feet. EV Access for all other projects shall not be less than 24 feet.
3. Vertical Clearance. EV Access shall have an unobstructed vertical clearance of not less than 13 feet 6 inches. The Fire Marshal, after conferring with the local fire chief, may allow a reduction in the vertical clearance, provided such reduction does not impair access by emergency vehicles, and approved signs are installed and maintained indicating the established vertical clearance.
4. Construction Guidelines. EV Access shall be designed and maintained to support he imposed loads of fire apparatus and shall be provided with a surface so as to provide all-weather driving capabilities. Individual single family EV Access surface treatment shall be a minimum of 2" of gravel. Multi-family and higher uses shall be paved.

   Exemption:
   When conditions are such that a paved EV Access is impractical or not appropriate, an approved equivalent alternative surface may be approved by the Fire Marshal.
5. Turning Radii. A minimum outside turning radius of 45 feet shall be provided for all EV Access.

6. Turnarounds. A dead end EV Access in excess of 150 feet in length shall be provided with a turnaround with geometric capabilities comparable with the cul-de-sac designs contained in the standards adopted in PCC 17B.10.060 A. A turnaround shall be provided within 150 feet of the end of the EV Access.
   Exception: Hammerhead type turnarounds may be provided when serving buildings protected with automatic fire sprinkler systems or one- and two-family dwellings (Group R-3).
7. Bridges and Structures. All bridges and structures, including drainage structures, on an EV Access shall be capable of carrying a minimum design load of HS-20 per AASHTO "Standards Specified for Highway Bridges". The design and as-builts for all bridges shall be certified by a licensed structural engineer.
8. Gates (If Applicable). A building permit issued by the County is required when gates are installed over EV Access. The County shall provide notice to the appropriate Fire District of the existence of the new gate. In order for the County to issue the building permit, the following requirements must be met:
   a. Locked gates shall have rapid entry capabilities compatible with the local fire district requirements.
   b. Gates serving ten or more dwelling units shall have an Opticom activation system or an equivalent and compatible system approved by the Fire Marshal.
   c. All electrically-activated gates shall have default capabilities to the unlocked position.
   d. The minimum clear width of a gate shall be compatible with the required width of the EV Access. Gate posts, keypads and other gate appurtenances shall be located in such a manner that they will not obstruct or restrict ingress and egress of emergency vehicles.
   e. Gates that might be obstructed by the accumulation of snow shall not be installed.
   f. A vehicular turn-around sufficient to allow a car to maneuver must be provided in front of the gate.
      Exception: Residential Driveway Approaches.
9. Number of Accesses. More than one EV Access may be required for commercial developments when it is determined by the County that access by a single road may be impaired by vehicle congestion, condition of terrain, climatic conditions, or other factors that could limit access, unless mitigation acceptable to the County is provided.
10. Grade. The maximum road grade (vertical profile grade) of an EV Access shall be 15 percent. All sections of EV Access with grades of over 12 percent shall be paved with 0.17 feet, compacted depth, of asphalt concrete.
11. Obstruction. The required width of an EV Access shall not be obstructed in any manner, including parked vehicles. Minimum required widths and clearances established under these standards shall be maintained at all times.

L. **Signs.** When required by the County, approved signs or other approved notices shall be provided and maintained for EV Access to identify such roads and prohibit the obstruction thereof, or both.

M. **Approval of EV Access Location.** Plans for all EV Access shall be approved by the County before a building permit is issued. All construction for the EV Access must be completed prior to County approval of the final building inspection.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.160 Fire Flow Requirements for Buildings.

Section 508.3 and 508.5.1 of the International Fire Code are deleted in their entirety and replaced with the following:

A. **Scope.** This Section is the procedure for determining fire flow requirements for all buildings or portions of buildings, and substantial alterations to all buildings, hereafter constructed. Fire flow requirements are site and building specific. The requirements of this Section shall supersede any conditions, notes, or requirements on any plat which do not meet the requirements of this Section.

Nothing in this Section shall be deemed to reduce, replace or waive any water system requirements in Chapters 17C.60.165, 19D.120, 19D.130.70 and 19D.140 PCC, including, but not limited to, minimum fire flow and hydrant spacing, nor shall a reduction or exception to fire flow and hydrant spacing requirements in Chapter 17C.60.165, 19D.120, 19D.130, and 19D.140 reduce or exempt fire flow requirements of this Section.

B. **Fire Flow Requirements for Buildings.** Prior to the issuance of a building permit for any building, portion of a building, or substantial alteration thereto, fire flow shall be provided in the amount required by this Section. Fire flow shall be automatically available and supplied at a residual pressure of not less than 20 psi.

1. The fire flow requirements for one- and two-family dwellings (Group R-3) shall be 750 GPM for 45 minutes; except that fire flow for buildings of 3,600 square feet or more in floor area including attached garages, covered porches and under upper story decks shall be 1,000 GPM for 1 hour. For buildings of 3,600 square feet or more, the duration of fire flow may be reduced to not less than 30 minutes when using fire-protection credits as described in Table 17C.60-5.
2. The fire flow requirements for private garages (Group U) shall be 750 GPM for 45 minutes; however, fire flow is not required for a private garage meeting all of the following criteria:
   a. It does not exceed 2,500 square feet;
   b. It is accessory to a one- or two-family dwelling (Group R-3) that has fire flow or 100 percent of fire-protection credits as described in Table 17C.60-5; and
   c. It has setbacks from side and rear lot lines of at least 20 feet, and at least 10 feet from other buildings on the same lot.
3. The fire flow requirements for agricultural buildings (Group U) shall be 750 GPM for 45 minutes; except that, fire flow is not required for an agricultural building meeting all of the following criteria:
   a. It has setbacks from the side and rear lot lines of at least 30 feet and is at least 30 feet from other buildings on the same lot,
   b. It is provided with a 20 foot wide access lane to within 50 feet of the building with open yards on two adjoining sides, and
   c. Not more than four employees are working in the building.
4. The fire flow and duration requirements for buildings other than one- and two-family dwellings (Group R-3) and private garages or agricultural buildings (Group U) shall be not less than that specified in Table 17C.60-3. In rural areas, water systems designed to provide 500 GPM shall serve one single property only. Water systems serving multiple properties shall provide a minimum of 750 GPM. The fire flow requirement shall be rounded to the nearest 250 GPM increment.

C. **Exceptions to Fire Flow.** The following exceptions apply to fire flow requirements for specific buildings, portions of buildings, or substantial alterations thereto:

1. Fire protection credits as described in Table 17C.60-5 may be used in lieu of providing fire flow for one- and two-family dwellings (Group R-3) or private garages and agricultural buildings (Group U) on lots which are one gross acre or more in area.
2. Fire protection credits as described in Table 17C.60-5 may be used in lieu of providing fire flow for one- and two-family dwellings (Group R-3) or private garages and agricultural buildings (Group U) if a water main capable of providing at least 500 GPM of fire flow is not available to the building, portion of a building, or substantial alteration thereto. If the above fire flow can be provided by the addition of a hydrant, the hydrant shall be installed.
3. When at least 500 GPM is available from an approved fire hydrant, it shall be credited toward the required fire flow for one- and two-family dwellings (Group R-3) or private garages and agricultural buildings (Group U). The additional fire flow requirement may be provided by using fire-protection credits as described in Table 17C.60-5 in lieu of providing additional fire flow.
4. Urban and Rural Area Fire Protection Features:
   a. Urban Area. Fire protection features consisting of approved monitored automatic sprinkler systems, or fire resistive building construction as specified in Table 17C.60-3, may be used to reduce the fire flow required by Table 17C.60-3 for all buildings other than one- and two-family dwellings (Group R-3) or private garages and agricultural buildings (Group U). The reduction of required fire flow for approved monitored sprinkler systems may be up to 75 percent, as approved by the Fire Marshal. However, the minimum amount of fire flow required shall at no time be less than 1500 GPM except as noted in number 5 below. Duration of fire flow shall be the duration of the actual fire flow required after reductions for fire protection features described above.
   b. Rural Area. Fire protection features consisting of approved monitored automatic sprinkler systems, or fire resistive building construction as specified in Table 17C.60-3, may be used to reduce the fire flow required by Table 17C.60-3 for all buildings other than one- and two-family dwellings (Group R-3) or private garages and agricultural buildings (Group U). The reduction of required fire flow for approved monitored sprinkler systems may be up to 75 percent, as approved by the Fire Marshal, provided that the minimum amount of fire flow required shall at no time be less than 500 GPM.

      Further, fire protection credits as described in Table 17C.60-6 may be used to reduce the required fire flow for all buildings other than one- and two-family dwellings (Group R-3) or private garages and agricultural buildings (Group U) when the required fire flow from Table 17C.60-3 is 1250 GPM or less and provided further that the approved NFPA monitored fire alarm credit shall be a mandatory element for all fire flow reductions using Table 17C.60-6.

      Duration of fire flow shall be the duration of the actual fire flow required after reductions for fire protection features described above. Non-combustible fueling station canopies shall be exempt from all fire flow provisions.

5. Urban and Rural Area Credits:
   a. Urban Area. When at least 750 GPM is available from an existing approved water main, it shall be credited toward the required fire flow for all buildings other than one- and two-family dwellings (Group R-3) or private garages and agricultural buildings (Group U). The fire flow requirement may be reduced to that available by using fire-protection features such as approved monitored automatic sprinkler systems or fire resistive building construction as specified in Table 17C.60-3 in lieu of additional fire flow. Duration of fire flow shall be the duration of the actual fire flow required after reductions for fire protection features described above.
   b. Rural Area. When at least 750 GPM is available from an existing approved water main, it shall be credited toward the required fire flow for all buildings other than one- and two-family dwellings (Group R-3) or private garages and agricultural buildings (Group U). The fire flow requirement may be reduced to that available by using fire-protection features such as approved monitored automatic sprinkler systems or fire resistive building construction as specified in Table 17C.60-3 or fire protection credits as described in Table 17C.60-6 [and applied as prescribed in 4(B) above] in lieu of additional fire flow. Duration of fire flow shall be the duration of the actual fire flow required after reductions for fire protection features described above.

D. **Hydrants.** This standard shall apply to all new hydrant installations and when existing hydrants are replaced. When fire flow is required, hydrants shall be provided for the protection of all buildings or portions of buildings hereafter constructed. The location of hydrants shall be determined by the Fire Marshal, guided by the following:
   1. The average spacing between fire hydrants for other than one- or two-family dwellings (Group R Division 3) or private garages and agricultural buildings (Group U) shall not exceed that listed on Table 17C.60-4. Regardless of the average hydrant spacing, no portion of a building shall be farther from a hydrant than that distance listed in the last (far right) column of Table 17C.60-4. Distances shall be measured along approved EV Accesses and adjacent public and private roads and shared access facilities.
   2. For one- or two-family dwellings (Group R Division 3) or private garages and agricultural buildings (Group U), the distance from the center point of lot frontage to a hydrant shall not exceed 350 feet, except as provided for in item 3 below.
   3. Hydrants are not required on dead-end streets or shared access facilities not exceeding 600 feet in length and serving only one-or two -family dwellings (Group R Division 3) or private garages and agricultural buildings (Group U) if there is an approved hydrant at the intersection.
   4. Hydrants shall be provided along approved EV Accesses and adjacent public and private roads and shared access facilities. When practical, hydrants shall be located at street intersections. The minimum number of hydrants available to a building shall be not less than that listed in Table 17C.60-4.
   5. All new and existing approved public hydrants shall be considered available if accessible to the fire department by public or private roads, or shared access facilities, or approved EV Accesses.

E. **Exceptions to Hydrant Requirements.** When hydrants cannot be installed in conformance with these standards due to topography, non-negotiable grades, or other similar conditions, the Fire Marshal may confer with the local Fire Chief, and may allow exceptions to these standards by requiring additional fire protection as specified in the most current edition of the International Fire Code adopted by the County.

F. **Hydrant Valve Openings.** Standard hydrants shall have not less than 5 inch main valve openings (MVO) with two 2½ inch National Hose (N.H.) outlet ports and one 4½ inch N.H. outlet port. All 4½ inch outlet ports shall have 5 inch storz fittings. Hydrants shall meet current A.W.W.A. Standards.

G. **System Design for Automatic Operation.** Water distribution systems supplying water for fire flow to fire hydrants shall be designed to maintain the designed and/or required water volume automatically.

H. **Certification of Fire Flow.** Prior to the issuance of a building permit for any building requiring fire flow, the water purveyor shall certify that fire flow and hydrants, as required by this Section, are provided at that location.

TABLE 17C.60-3
Required Fire Flow for Buildings Other than One- and Two-Family Dwellings (Group R Division 3) and Private Garages and Agricultural Buildings (Group U)

Urban Area Only		Construction Type (1)					Rural Area Only	
DURATION (HOURS)	REQUIRED FIRE FLOW (GPM)	IA and IB	IIA and IIIA	IV-H.T. VA	IIB IIIB	VB	REQUIRED FIRE FLOW (GPM)	DURATION (HOURS)
		WHEN TOTAL FIRE AREA IN SQUARE FEET (3) IS EQUAL TO OR LESS THAN THESE VALUES						
NOT APPLICABLE		500	500	500	500	500	0 (4)	
		5,500	3,700	2,600	2,100	1,600	500	¾
		11,100	6,800	4,700	3,500	2,400	750	¾
		15,900	9,300	6,200	4,500	2,900	1,000	1
1	1,500	22,700	12,700	8,200	5,900	3,600	1,250	1
1½	1,750	30,200	17,000	10,900	7,900	4,800	1,500	1
1½	2,000	38,700	21,800	12,900	9,800	6,200	1,750	1½
2	2,250	48,300	24,200	17,400	12,600	7,700	2,000	1½
2	2,500	59,000	33,200	21,300	15,400	9,400	2,250	2
2	2,750	70,900	39,700	25,500	18,400	11,300	2,500	2
2	3,000	83,700	47,100	30,100	21,800	13,400	2,750	2
3	3,250	97,700	54,900	35,200	25,900	15,600	3,000	2
3	3,500	112,700	63,400	40,600	29,300	18,000	3,250	3
3	3,750	128,700	72,400	46,400	33,500	20,600	3,500	3
4	4,000	145,900	82,100	52,500	37,900	23,300	3,750	3
4	4,250	164,200	92,400	59,100	42,700	26,300	4,000	4
4	4,500	184,400	103,100	66,000	47,700	29,300	4,250	4
4	4,750	203,700	114,600	73,300	53,000	32,600	4,500	4
4	5,000	225,200	126,700	81,100	58,600	36,000	4,750	4
4	5,250	247,700	139,400	89,200	65,400	39,600	5,000	4
4	5,500	271,200	152,600	97,700	70,600	43,400	5,250	4
4	5,750	295,900	166,500	106,500	77,000	47,400	5,500	4
4	6,000	GREATER	GREATER	115,800	83,700	51,500	5,750	4
4	6,250			125,500	90,600	55,700	6,000	4
4	6,500			135,500	97,900	60,200	6,250	4
4	6,750			145,800	106,800	64,800	6,500	4
4	7,000			156,700	113,200	69,600	6,750	4
4	7,250			167,900	121,300	74,600	7,000	4
4	7,500			179,400	129,600	79,800	7,250	4
4	7,750			191,400	138,300	85,100	7,500	4
4	8,000			GREATER	GREATER	GREATER	7,750	4

(1) Types of construction are based upon IBC.
(2) In Types IA and IB construction, only the three largest successive floor areas shall be used.
(3) Each portion of a building shall be considered as a separate fire area when separated by one or more four-hour fire walls with no openings and a 30-inch parapet, constructed in accordance with the Building Code.
(4) Shall not apply to IBC "H" occupancy classifications.

TABLE 17C.60-4
Number and Distribution of Hydrants

Minimum Fire Flow Requirement (GPM)	Minimum # Of Hydrants	Average Spacing Between Hydrants (in ft (1)(2))	Maximum Distance From Hydrant to Any Portion of Building (FT (3))
500 - 1250	1	700	350
1500 -1750	2	500	250
2000 - 2250	2	450	225
2500 - 2750	3	450	225
3000 - 3250	3	400	225
3500 - 4250	4	350	210
4500 - 5250	5	300	180
5500 - 5750	6	300	180
6000 - 6250	6	250	150
6500 - 7250	7	250	150
7500 or more	8 or more (4)	200	120

(1) Reduce by 100 feet for dead-end streets or roadways.
(2) Where streets are provided with median dividers which can be crossed by fire fighters pulling hose lines, or where streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire flow requirement of 7000 GPM and 400 feet for higher fire flow requirements. Where streets are provided with median dividers which cannot be crossed, hydrant spacing shall comply with Table 17C.60-4 on both sides of the street.
(3) Reduce by 50 feet for dead-end streets or roadways.
(4) One hydrant for each 1000 GPM or fraction thereof.

TABLE 17C.60-5
Fire Protection Credits

Options to Reduce Fire Flow (1)	% of Reduction Group R-3/U
OFF SITE WATER (2)	
Building less than 3,600 sq. ft.	-35%
Building 3,600 sq. ft. to 4,800 sq. ft.	-25%
Building over 4,800 sq. ft.	0%
NFPA* 13 D extended coverage sprinkler system (4)	-65%
NFPA* 13 D sprinkler system	-50%
Kitchen sprinkler head (off domestic system)	-10%
Building less than 2,000 sq. ft.	-35%
30' Min setback all P.L.**	-25%
Monitored fire alarm	-25%
1-Hr Construction (3)	-15%
Class A or B roof	-15%
60 percent brick/stone exterior	-15%

(1) Credits used for or with substantial alterations shall be applied to the entire structure.
(2) May be taken if the responding Fire Department has the capability to provide area-wide (not site-specific) off site water.
(3) Consists of a minimum of 1/2" type X drywall throughout interior for Group R-3 and U occupancies. Other occupancy groups shall meet the requirements for one-hour construction in the building code.
(4) Consists of a 13D sprinkler system with sprinkler coverage extended into the garage, attic, small bathrooms and closets, and covered porch overhangs.
* National Fire Protection Association
** Property lines

TABLE 17C.60-6
Fire Protection Credit for Rural Fire Flow - Commercial

Options to Reduce Fire Flow (1)	Reduction
NFPA* Monitored Fire Alarm	250 GPM (Mandatory) (2)
Off Site Water	250 GPM
30' Minimum Setbacks (3)	250 GPM
Limited Supply A.S.S. (4)	750 GPM

(1) Credit used for or with substantial alterations shall be applied to the entire structure.
(2) Mandatory - Must be used in **all** fire flow reduction calculations between 500 GPM and 1250 GPM.
(3) Setbacks apply to all property lines and buildings on same property.
(4) Limited supply automatic sprinkler system. Not allowed where sprinkler system is required by IFC or IBC. System shall be wet pipe with quick response heads.
* National Fire Protection Association

(Ord. 2004-30s § 4 (part), 2004)

17C.60.165 Minimum Standards for Fire Flows, Water Mains and Fire Hydrants.

A. The purpose of this Section is to establish minimum fire flow requirements for land development and for all new and expanding public water systems in Pierce County. These fire flow requirements shall better protect the residents, inhabitants, commercial developments, and industrial developments in Pierce County against the dangers of fire due to the inadequacy of water and the inadequacy of water pressure.

Nothing in this Chapter shall be deemed to reduce, replace, or waive any requirement set forth in Section 17C.60.160 PCC.

B. **General Applicability.** The following shall be subject to the requirements of this Chapter:
1. Proposed subdivisions;
2. Proposed mobile home parks;
3. New water systems or new additions to existing systems;
4. Planned development districts;
5. Binding site plans;
6. Short subdivisions;
7. Large lot divisions.

C. **Fire Flow and Water System Requirements.**

1. The following activities and systems are exempt from the fire flow and water system requirements set forth in subsection 2. below.
   a. Activities identified in Section D. shall be subject to the requirements of D. only.
   b. New water systems or new additions to existing systems when all lots to be served by such new system or new addition are one gross acre or more in size and uses are limited to single family residential.
2. Except as provided in subsection 1. above, the following fire flow and water system requirements apply to those activities identified in Section B.1.-6.
   a. Minimum fire flow and hydrant spacing requirements. Tables 17C.60-7 and 17C.60-8 set forth minimum fire flow and hydrant spacing requirements. Actual fire flow and hydrant spacing requirements shall be determined in accordance with Section 17C.60.160 when application is made for a building permit.

TABLE 17C.60-7
Minimum Fire Flow Requirements

Type of Development	Location/Area	Fire Flow Required (G.P.M.)	Minimum Duration (minutes)
One- and Two- Family	Urban and Rural	750	45
Multi-family	Urban	1,500	60
Multi-family	Rural	750	45
Commercial	Urban	1,500	60
Commercial	Rural	750	45
Industrial	Urban and Rural	2,000	120

TABLE 17C.60-8
Maximum Hydrant Spacing Based on Minimum Fire Flow Requirements

Minimum Fire Flow Requirement (G.P.M.)	Average Spacing Between Hydrants (1, 2, 3, 4) (FT.)
750	700
1,500	500
2,000	450

(1) Hydrants shall be provided along adjacent public and private roads. When practical, hydrants shall be located at street intersections.
(2) On dead-end streets and roadways not exceeding 600 feet in length and serving property designated to be used for one- or two-family dwellings (Group R-3), there need not be hydrants located on said dead-end street or roadway if there is an approved hydrant at the intersection.
(3) Reduce by 100 feet for dead-end streets or roadways except for property designated to be used for one- or two-family dwellings (Group R-3).

(4) Where streets are provided with median dividers which can be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis. Where streets are provided with median dividers which cannot be crossed, hydrant spacing shall comply with Table 17C.60-8 on both sides of the street.

b. **Mains.** New or replaced water mains shall be a minimum of 8 inches in diameter for deadends, and 6 inches for circulating mains, provided that for deadend cul-de-sacs, an 8-inch main need only extend to the last required fire hydrant and domestic mains may be installed thereafter to the remaining residences. Hydrant leads less than 50 feet may be 6 inches in diameter. A deadend main which extends across a street only for the purpose of serving a hydrant shall be of a size capable of providing the required fire flow, but it shall not be less than 6 inches in diameter. All mains shall have hydrants and/or tees and valves installed to conform with this regulation, except that no hydrants, tees or valves shall be required along transmission mains. Any service connection made to a transmission main shall require that a hydrant be installed. Any extension that is more than 350 feet shall require an 8-inch main or a 6-inch loop.

When existing water mains are replaced, new water mains shall be sized in compliance with this regulation, but there shall be no requirement to replace the entire system to meet minimum fire flow requirements.

c. **Hydrants.** This standard shall apply to all new hydrant installations and when existing hydrants are replaced on public water systems required to provide fire flow. Standard hydrants shall have not less than 5-inch main valve openings (MVO) with two 2½ inch National Hose (N.H.) outlet ports and one 4½ inch N.H. outlet port. All 2½ inch ports and the 4½ inch outlet ports shall have threads that correspond with and meet the approval of the affected fire department.

All new hydrants and replaced hydrants shall be provided with 5-inch storz fittings. Hydrants shall meet the current A.W.W.A. standards.

(1) Hydrant Locations. Hydrant locations shall be determined by the Fire Marshal, guided by the maximum spacings indicated by Table 17C.60-8.

(2) Auxiliary gate valve. There shall be an auxiliary gate valve installed to permit the repair and replacement of the hydrants without disruption of water service.

(3) Setup. Hydrants shall stand plumb and be set to the finished grade. The bottom of the lowest outlet of the hydrant shall be no less than 18 inches above the grade. There shall be 36 inches of clear area about the hydrant for operation of a hydrant wrench on the outlets and on the control valve. The pumper port shall face the street. Where the street cannot be clearly defined or recognized, the port shall face the most likely route of approach and the location of the fire truck while pumping, as determined by the Fire Marshal.

(4) Obstructions. Hydrants shall not be obstructed by any structure or vegetation, or have the visibility impaired for a distance of 50 feet in the direction of vehicular approach to the hydrant.

(5) Accessibility. Hydrants shall be accessible for fire department pumpers.

(6) Protection. Fire hydrants subject to vehicle damage (e.g., those located in parking lots) shall be adequately protected.

(7) Testing. All hydrants shall be subject to testing and inspection by the fire department, subject to reasonable notice and scheduling with the purveyor.

(8) Plans. The location of all water mains, fire hydrants, and valves to be installed shall be properly and accurately marked on identifiable plans or drawings. Three copies of all plans or drawings shall be furnished to the Fire Marshal for review and approval.

(9) Color Coding. If fire hydrants are to be color coded, the following colors shall be used to designate the level of service being provided by that hydrant:
- (a) Green: over 1,000 G.P.M.
- (b) Orange: 500 to 1,000 G.P.M.
- (c) Red: less than 500 G.P.M.
- (d) Black: for drafting use only (hard suction/steamer port)
- (e) White Cross on top of hydrant-for filling tankers only.

(10) Maintenance of Hydrants.
- (a) Fire department may, in accordance with their agreement with the water purveyor as required in Section F., test hydrants for flow capability and may color code tops of hydrants with proper notification to purveyor.
- (b) Fire department may, in accordance with their agreement with the water purveyor as required in Section F., maintain exterior working parts of hydrants above ground, including keeping brush and other physical obstructions from blocking access to, or operation of, hydrants.
- (c) Fire department may, in accordance with their agreement with the water purveyor as required in Section F., check operation of hydrants and notify purveyor of any malfunction or leaking which will require correction.
- (d) Purveyor will notify fire department of any hydrant installation. Said notification will state whether or not they have minimum fire flow.
- (e) Purveyor will respond as expeditiously as possible when notified of a malfunction of a hydrant and will affect repair in a workmanlike manner. In the event that repairs require reduction of water flow or shutdown of a system, the purveyor shall notify the local fire district immediately.

D. **Requirements for Large Lot Divisions, One Acre Short Subdivisions and One Acre Formal Subdivisions (Residential).** Prior to the approval of any large lot division, short subdivision where each lot is one gross acre or more, or formal subdivision where each lot is one gross acre or more and limited to single family residential use, the following statement shall be affixed on the face of the plat:

"Fire flow and/or fire protection requirements shall be determined at the time of application for building permit."

E. **Procedures for Compliance.**

The following shall be required for those activities identified in Section B.1.-6.:

1. Prior to preliminary plat or preliminary plan approval, the applicant shall submit to the Fire Marshal a letter from the water purveyor addressing its willingness and ability to satisfy the requirements of this Regulation.
2. Prior to final plat, final short plat or final plan approval, the following shall be required:
   a. Water system plans and specifications which comply with these Regulations shall be designed and stamped by a registered, professional engineer. Said plans shall be signed by the purveyor and shall be filed with the Fire Marshal and the Washington State Department of Health.
   b. Water system plans shall be approved in writing by the Fire Marshal.
   c. The approved water system shall be installed prior to final plat, final short plat or final plan approval provided that this requirement can be waived if a bond or other security is posted and approved prior to said approval. Bonded improvements shall be constructed within two (2) years of final plat or final plan approval. The form of security, if other than a bond, shall be approved by the Prosecuting Attorney's Office. The amount of the bond or security shall be determined by the contractor who shall install the system. The bond or other security shall be issued to Pierce County and shall be approved by the Fire Marshal.
   d. Three copies of the "as built" drawings and test results showing the amount of fire flow at each hydrant at 20 P.S.I., at those hydrant(s) required by the Fire Marshal, shall be filed with the Fire Marshal.
3. When the distribution system is installed, said installation shall be under the direction of a registered, professional engineer who shall certify the construction of the system is in accordance with the approved design. In the event a bond is posted, installation of the system shall be completed and operable, in accordance with this Regulation, prior to occupancy or any other use of any structure.

F. **Purveyor Requirements.**

1. All purveyors shall continuously supply water at or above the minimum fire flow requirements; provided that the purveyor need not comply with these requirements in the event of vandalism, acts of God, loss of power, or temporary shut down for repairs and/or replacement.
2. Water distribution systems supplying water for fire flow to fire hydrants shall be designed and maintained to provide the designed and/or required water volume automatically.
3. Written operational agreements which identify responsibilities for maintenance and testing of water distribution systems supplying water for fire flow shall be negotiated between the fire district and the water purveyor. The Fire Marshal shall not approve any water systems, extensions of water systems, or replacements of water systems or mains, until such time as said agreement has been executed by both parties and filed with the Fire Marshal.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.170 Records.

Section 901.6.2 of the International Fire Code is deleted in its entirety and replaces as follows:

901.6.2 Records. Records of semi-annual, annual and five year inspections shall be submitted to the Fire Prevention Bureau in accordance with Table 17C.60-9. Records of daily, weekly and monthly inspections shall be retained on the premises for a minimum of 3 years and be made available to the Fire Marshal upon request.

Table 17C.60-9
Records of Fire Protection System Inspections

Fire Sprinkler Systems	Annual
Fire Alarm Systems	Annual
Commercial Hood Suppression Systems	Semi-annual
Standpipe Systems Hydrostatic Test	Annual 5 year
Private Fire Hydrant Systems	Annual
Fire Pumps	Annual
Other Fire Suppression Systems	Annual

(Ord. 2004-30s § 4 (part), 2004)

17C.60.180 Automatic Sprinkler Systems for Group R Occupancies.

Section 903.2.7 of the International Fire Code is deleted in its entirety and replaced as follows:

903.2.7 Group R. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area. Approved automatic sprinkler systems shall be installed in any structure containing five or more townhouse units.
(Ord. 2004-30s § 4 (part), 2004)

17C.60.181 Automatic Sprinkler Systems – State Amendment not Adopted.

The State Building Code Council amendment of Section 903.2.10.3 of the International Fire Code is not adopted. (Ord. 2004-30s § 4 (part), 2004)

17C.60.182 Automatic Sprinkler Systems – LC Occupancies.

A new Section 903.2.14 is added to the International Fire Code to read as follows:

903.2.14 LC Occupancies. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group LC fire area.
Exception: An automatic sprinkler system need not be installed if the license care facility is licensed for six or fewer clients.
(Ord. 2004-30s § 4 (part), 2004)

17C.60.190 Standpipe System.

Section 905.3.7 is added to the International Fire Code to read as follows:

904.3.7 Marinas. Portions of floats more than 250 feet from emergency vehicle access shall be equipped with a Class II Standpipe system. Water lines shall normally be dry where subject to freezing temperatures.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.200 Portable Fire Extinguishers.

Section 906.1 of the International Fire Code is amended as follows:

906.1 Where required. Portable fire extinguishers shall be installed in the following locations:

1. In all Group A, B, E, F, H, I, M, R-1, R-2, R-4 and S occupancies.
2. Within 30 feet (9144 mm) of commercial cooking equipment.
3. In areas where flammable or combustible liquids are stored, used or dispensed.
4. On each floor of structures under construction, except Group R-3 occupancies, in accordance with Section 1415.1.
5. Where required by the sections indicated in Table 906.1.
6. Special-hazard areas, including but not limited to laboratories, computer rooms and generator rooms, where required by the fire code official.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.210 Fire Alarm Systems – Group R-2 Occupancies.

Section 907.2.9 of the International Fire Code is deleted in its entirety and replaced as follows:

907.2.9 Group R-2. A manual fire alarm system shall be installed in Group R-2 occupancies where:

1. Any dwelling unit or sleeping unit is located three or more stories above the lowest level of exit discharge;
2. Any dwelling unit or sleeping unit is located more than one story below the highest level of exit discharge; or
3. The building contains more than 4 dwelling units.

Exceptions:

1. A fire alarm system is not required in buildings not more than two stories in height where all dwelling units or sleeping units and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1 hour fire partitions and each dwelling unit or sleeping unit has an exit directly to a public way, exit court or yard.
2. Manual fire alarm boxes are not required throughout the building when the following conditions are met:
   2.1 The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or Section 903.3.1.2;
   2.2 The notification appliances will activate upon sprinkler flow; and
   2.3 At least one manual fire alarm box is installed at an approved location.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.215 Smoke Alarms in Existing Buildings.

Section 907.3.2 of the International Fire Code is deleted in its entirety and replaced as follows:

A. Smoke alarms in dwelling units.
   1. Smoke detection devices shall be installed inside all dwelling units:
      a. In all owner occupied buildings for which a building permit was applied on or after February 11, 1975, and
      b. In all buildings that are occupied by persons other than the owner.
   2. Smoke detection devices shall have a power supply and be installed in conformance with the building code in effect at the time of building permit application. Buildings for which permits were applied prior to February 11, 1975, may have battery smoke detectors located in accordance with the 1973 edition of the Uniform Building Code.
   3. Installation of smoke detection devices shall be the responsibility of the owner. Maintenance of smoke detection devices shall be the responsibility of the tenant, who shall maintain the device as specified by the manufacturer. At the time of a vacancy, the owner shall ensure that the smoke detection device is operational prior to the re-occupancy of the dwelling unit.

B. Smoke alarms in transient accommodations.
   1. Smoke detection devices shall be installed inside all guest rooms and hallways of transient accommodations.
   2. The smoke detection devices shall have a power supply and be installed in conformance with the building code in effect at the time of building permit application. Buildings for which permits were applied prior to April 8, 1980, may have battery powered smoke detectors located in accordance with the 1979 edition of the Uniform Building Code.
   3. Installation and maintenance of smoke detection devices shall be the responsibility of the owner, who shall maintain the device as specified by the manufacturer.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.220 Outside Storage of Tires.

Sections 2505, 2506, 2507 and 2508.1 of the International Fire Code are deleted in their entirety and replaced as follows:

A. Whenever outside storage of more than 200 tires exists on a property, the following requirements shall apply:
   1. Each pile of tires shall not be greater than 10 feet in height.
   2. Piles of tires shall not be within 20 feet of a property line or right-of-way, or within 60 feet of a building or structure.
   3. Piles of tires shall not be in excess of 40 feet in any horizontal dimension.
   4. There shall be a minimum separation of 20 feet between piles of tires and such separation shall be free of rubbish, equipment, weeds or other vegetation, and other materials at all times.
   5. There shall be a fence at least 6 feet in height surrounding the tire storage yard. The fence shall be constructed of wood or other materials in such a way as to obstruct the view of the tire storage yard.

B. Whenever there are more than 2,500 tires the following requirements shall be met in addition to the requirements set forth in subsection A., above.
   1. A dirt berm or barrier not less than 5 feet in height shall be erected around each pile of tires;

2. The separation between piles of tires shall be a minimum of 40 feet to include 10 feet at the base of each dirt berm or barrier plus 20 between dirt berms or barriers;
3. Tire storage shall in no event exceed 30,000 tires per acre;
4. EV Access shall be provided to within 150 feet of all portions of the tire storage yard;
5. Fire flow shall be provided. In urban areas the fire flow requirement shall not be less than 1,500 gpm for a duration of 2 hours; in rural areas the fire flow requirement shall not be less than 750 gpm for a duration of 90 minutes. Number of fire hydrants and their location shall be determined by the Fire Marshal.
6. Any person, firm, or corporation granted a permit under this Chapter shall at all times maintain in full force and effect a policy of general business liability insurance covering the premises and his or her employees or agents in the conduct of his or her business in the amount of at least $100,000.00 per person, not to exceed $1,000,000.00 per incident. Such policy also shall be submitted to the Risk Management Department, whose written approval of the policy is required before a permit may be issued. A copy of such policy, and of the approval of the Risk Management Department, shall be filed with the Fire Marshal with written endorsement thereon showing that the Fire Marshal must be given written notice in the event of cancellation of the policy either by the company or the insured.

C. **Cleanup Following a Fire.** If any dangerous, hazardous, or extremely hazardous wastes occur, or are stored, on the site of a tire storage yard, due to the results of a fire in such yard, or due to any other occurrence, such wastes shall be disposed of and cleaned up in accordance with all applicable Federal, State, and local waste disposal regulations. No further tire storage may occur until the appropriate agency has certified that proper disposal has taken place.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.230 Fireworks.

Section 3301.1.3 of the International Fire Code is deleted in its entirety and replaced as follows:

The sale, storage, possession, transportation, and discharge of fireworks shall be in accordance with RCW 70.77, WAC 212-17 and the following:

A. **Definitions.** Definitions for fireworks are listed in RCW 70.77 and WAC 212-17.

B. **Permit to Sell Required.** It is unlawful for any person, firm, or corporation to engage in the retail sale of, or to sell any fireworks within the unincorporated area of Pierce County without first having obtained a permit pursuant to the provisions of this Chapter. Applications for permits will be accepted by the County only during the period between March 15 and May 10 of the year for which the permit is sought. May 10 shall be the official date of receipt for such applications. Applications shall be accompanied with a permit fee in the amount specified in International Fire Code Section 105.8 as amended herein. Permits shall be approved by the Pierce County Executive or designee. Sales shall not commence until an on-site inspection of the sales site has been conducted and approved by the Fire Marshal.

C. **Dangerous Fireworks Prohibited.** It is unlawful for any person to sell, possess, transport, use, or explode any fireworks classified as dangerous within the unincorporated area of the County except as permitted by RCW Chapter 70.77. Any person found in violation of this Section shall be subject to the penalties prescribed in RCW 70.77.

D. **Dates When Sales and Purchases Permitted.** No permit holder shall sell at retail or offer for sale nor shall any person purchase any fireworks authorized to be sold in this Chapter within the unincorporated area of the County, except from 12:00 noon to 11:00 p.m. on June 28, from 9:00 a.m. to 11:00 p.m. from June 29 through July 4, and from 9:00 a.m. to 9:00 p.m. on July 5 of any year. Sale and purchase of fireworks on December 27 through December 31 authorized by RCW Chapter 70.77 is specifically prohibited in unincorporated Pierce County.

E. **Dates When Discharge Permitted.** No person shall use or explode any fireworks within the unincorporated area of the County except from between 12:00 noon and 11:00 p.m. on June 28 and between 9:00 a.m. and 11:00 p.m. on June 29 through July 3, between 9:00 a.m. and 12:00 midnight on July 4, and between 9:00 a.m. and 11:00 p.m. on July 5 of any year; provided, that this prohibition shall not apply to duly authorized public displays where the same are authorized pursuant to the laws of the State; and provided further, that this prohibition shall not apply to persons or organizations specified in Item G., below. Discharge of fireworks on December 31 and January 1 authorized by RCW 70.77 is specifically prohibited in unincorporated Pierce County.

F. **Hours of Discharge.** No person shall use or explode any fireworks within the unincorporated area of the County between the hours of 11:00 p.m. and 9:00 a.m., except that the period of discharge on July 4 is extended to 12:00 midnight. Any person found in violation of this Section shall be subject to the penalties prescribed in RCW 70.77; provided, however, this Section shall not apply to authorized public displays as are specified in Item G., below.

G. **Exemptions from Discharge Time Regulations.** The discharge of fireworks by religious organizations for ceremonial use and/or by private organizations or persons for specific uses, when approved by the Fire Marshal, shall be permitted at any time or date so approved.

H. **Number of Permits Limited.** No person, firm, or corporation shall receive more than one permit for the sale of fireworks during any one calendar year. The maximum number of permits issued by the County in any year shall not exceed one for every 7,000 or fraction thereof, in excess of 3,500 in population, residing in the unincorporated limits of the County.

I. **Issuance of New Permits.** In the event there are more applications for permits than there are permits available, permits shall be granted in the following manner:

1. Any person, firm or corporation having been issued a permit and exercised its rights under that permit for the year prior to the making of the application shall be entitled to renew the permit except upon a determination by the Fire Marshal that fewer permits are available due to reduction in population, a drawing will be conducted to determine which of the applicants will be granted permits.
2. Upon a determination by the County Fire Marshal that additional permits are available due to growth in population or cancellation or termination of any existing permits, the County shall notify all prospective applicants for permits to sell fireworks of whom it has notice, of the time, date and place at which a drawing for the permits shall be conducted.

J. **Number of Retail Outlets Limited.** A permit granted pursuant to this Chapter shall entitle the permit holder to maintain only one retail outlet. All permits issued pursuant to this Chapter shall be used only by the designated permit holder and shall be nontransferable. Any transfer or purported transfer of such a permit shall be a violation of this Chapter.

K. **Submittal Standards.** An application for the sale of fireworks shall include the following:

1. The permit applicant shall have a valid and subsisting license issued by the State authorizing the holder thereof to engage in the sale of fireworks.
2. The permit applicant shall own or have the right to possess a temporary fireworks stand complying with the standards set forth in this Chapter for temporary fireworks stands.
3. The permit applicant shall procure and maintain a policy or policies of public liability and property damage insurance with a company or companies licensed to do business in the State, with liability limits of not less than $100,000.00 for bodily injuries to any one person in one accident or occurrence; $500,000.00 for bodily injuries to two or more persons in any one accident or occurrence; and $100,000.00 property damage; or, at the option of the applicant, a combined single limit of $500,000.00 per occurrence.
4. The permit holder's location or place of business shall be only in those areas or zones within the County wherein commercial activities are authorized under the applicable zoning laws of the County; provided, that the sale of approved fireworks shall not be deemed an enlargement of an existing nonconforming use; and provided further, that no fireworks shall be sold in any residential area where a commercial enterprise does not exist.
5. A site plan showing the location of the stand and separations required by WAC 212-17-21509 shall be submitted with the permit application. Except for minor adjustments on the site to comply with the separation requirements, a stand shall not be moved from the location on the plan unless a revised site plan has been submitted prior to June 18.
6. An Ortho Photo of the stand location area shall be provided. The location of the stand shall be noted on the photo.
7. A current letter of authorization from the property owner, stating the stand location is approved, shall be provided.
8. Identification of the temporary storage area for the fireworks (when not in the fireworks stand) shall be provided.
9. The permit applicant shall post with the County a performance bond or cash deposit in an amount not less than $250.00, conditioned upon the prompt removal of the temporary stand and the cleaning up of all debris from the site of the temporary stand, which deposit shall be returned to the applicant only in the event that he removes the temporary stand and cleans up all debris to the satisfaction of the Fire Marshal. In the event of the applicant's failure to do so, the performance bond or cash deposit shall be forfeited to the County and such failure may be grounds to refuse to grant a permit the following year. In no event shall the applicant be entitled to the return of the performance bond or cash deposit if he has failed to remove the temporary stand and clean up all debris before July 16 of each year. The applicant shall be responsible for the cost of the cleanup that exceeds the amount of the performance bond or cash deposit.

10. The application shall be signed by the permit applicant or its duly authorized officer or agent.

L. **Stands to be Temporary.** Fireworks approved for sale and sold at retail sale shall be sold from temporary stands only, or other such temporary structures as approved by WAC 212.17.

M. **Revocation of Permit.** The Fire Marshal or duly authorized representative may summarily revoke any fireworks permit for any failure or refusal on the part of the permit holder to obey any rule or regulation.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.240 Public Display.

Section 3308 of the International Fire Code is deleted in its entirety and replaced as follows:

A. **Public display of fireworks shall be in accordance with RCW 70.77 and WAC 212.17 and the following:**
A permit will be required for all public displays of fireworks. Any person desiring to put on a public display of fireworks shall apply in writing to the Fire Marshal for a permit at least ten days in advance of the proposed display. The applicant shall submit information and evidence concerning the following:

1. The name of the organization sponsoring the display, if other than the applicant;
2. The date the display is to be held;
3. The exact location for the display;
4. The name and license number of the pyrotechnic operator who is to supervise discharge of the fireworks, and the name of at least one experienced assistant;
5. The number of set pieces, shells (specify single or multiple break), and other items;
6. The manner and place of storage of such fireworks prior to the display;
7. A diagram of the ground on which the display is to be held showing the point at which the fireworks are to be discharged, the location of all buildings, highways and other lines of communication, the lines behind which the audience will be restrained, and the location of all nearby trees, telegraph or telephone lines, or other overhead obstruction;
8. Applicant shall procure and maintain public liability insurance with limits of not less than $500,000.00 for bodily injury to any one person in one accident or occurrence; $1,000,000.00 for bodily injury to two or more persons in any one accident or occurrence; and $500,000.00 property damage; or, at the option of the applicant, a combined single limit of $1,000,000.00 per occurrence. The applicant shall also procure a State Fire Marshal's general license for the public display of fireworks;
9. The fee for each permit for public display of fireworks shall be as specified in International Fire Code Section 105.8 as added herein.

(Ord. 2004-30s § 4 (part), 2004)

17C.60.250 Severability.

If any provision of this Chapter, or its application to any person or legal entity or circumstance, is held invalid, the remainder of the Regulation, or the application of the provision to other persons or legal entities or circumstances, shall not be affected. (Ord. 2004-30s § 4 (part), 2004)

Chapter 17C.70

INTERNATIONAL MECHANICAL CODE

Sections:

17C.70.010 Code Adopted.
17C.70.020 Department of Mechanical Inspection.
17C.70.030 Appointment.
17C.70.040 Expiration.
17C.70.050 Fees.
17C.70.060 Work Commencing Before Permit Issuance.
17C.70.070 Violations.
17C.70.080 Means of Appeal.

17C.70.010 Code Adopted.

The edition of the International Mechanical Code, currently or hereafter adopted and amended by the State Building Code Council and included in Chapter 51-16 Washington Administrative Code, is adopted as the Mechnical Code for the unincorporated areas of Pierce County; provided, that the following amendments to the International Mechanical Code shall govern over the published provisions of the Mechanical Code. The effective date of subsequent editions of the International Mechanical Code in Pierce County shall coincide with the effective date of their adoption and amendment by the State Building Code. (Ord. 2004-30s § 10 (part), 2004; Ord. 99-24S § 11 (part), 1999)

17C.70.020 Department of Mechanical Inspection.

Section 103.1 of the International Mechanical Code is deleted. See Section 17C.10.030, "Creation of Enforcement Agency." (Ord. 2004-30s § 10 (part), 2004)

17C.70.030 Appointment.

Section 103.2 of the International Mechanical Code is deleted. (Ord. 2004-30s § 10 (part), 2004)

17C.70.040 Expiration.

Section 106.4.3. of the International Mechanical Code is deleted. See Section 17C.10.130, "Permit Expiration." (Ord. 2004-30s § 10 (part), 2004)

17C.70.050 Fees.

Section 115.2 of the International Mechanical Code is deleted. See Section 17C.10.070, "Fees." (Ord. 2004-30s § 10 (part), 2004)

17C.70.060 Work Commencing Before Permit Issuance.

Section 106.5.1 of the International Mechanical Code is deleted. See Section 17C.10.080, "Investigation Fee." (Ord. 2004-30s § 10 (part), 2004)

17C.70.070 Violations.

Section 108 of the International Mechanical Code is deleted. See Section 17C.10.050, "Violations and Penalties." (Ord. 2004-30s § 10 (part), 2004)

17C.70.080 Means of Appeals.

Section 109 of the International Mechanical Code is deleted. See Section 17C.10.060, "Building and Fire Code Board of Appeals." (Ord. 2004-30s § 10 (part), 2004)

APPENDIX C

Interlocal Agreements

STANDARD SERVICE AGREEMENT
ESTABLISHING WATER UTILITY
SERVICE AREA BOUNDARIES

PREAMBLE

THIS AGREEMENT establishing water utility service area boundaries is entered into this day for purposes of identifying the external boundaries of the service area for which this water purveyor has assumed water service responsibility.

WHEREAS, service area agreements are required by WAC 246-293-250 to help assure that water reserved for public water supply purposes within Pierce County will be utilized in the future in an efficient and planned manner; and

WHEREAS, the designation of retail water service area and future service planning areas, together with the cooperation of other utilities, will help assure efficient planning to accommodate growth, avoid duplication of service, and facilitate the best use of resources; and

WHEREAS, The responsibilities applicable to water purveyors are outlined in the Pierce County Coordinated Water System Plan (CWSP) and by the adopted rules and regulations of the Washington State Department of Health (DOH); and

WHEREAS, It is not the intent of this Agreement to give new authority or responsibilities to the water purveyor or to the County or State regulatory agencies, in addition to those requirements imposed by law; and

NOW, THEREFORE, the undersigned party, having entered into this Agreement by its signature, concur with and will abide by the following provisions:

Section 1. The terms used within the contract shall be as defined in the implementing regulations of Chapter 70.116 RCW, except as identified below.

A. Lead Agency shall mean the department or organization within Pierce County that has been designated by the Pierce County Executive as being administratively responsible for the coordination and filing of the Pierce County Water Service Area map, Standard Service Agreement Establishing Water Utility Service Area Boundaries, Agreements for Retail Service Areas, Utility Service Policies, and other administrative documents necessary for the implementation of the Pierce County CWSP.

B. Pierce County Coordinated Water System Plan (CWSP) shall mean the plan adopted by the Pierce County Council for public water systems within critical water supply service areas within Pierce County which identifies the present and future needs of the systems and sets forth means for meeting those needs in the most efficient manner possible.

C. Pierce County Water Service Area Map shall mean the map referenced in this Agreement for the retail service area signed by the water purveyor, except as amended in accordance with the CWSP procedures and with the concurrence of the affected water purveyors.

So. Prairie Agreement

D. Retail Service Area shall mean the designated geographical area within Pierce County in which the undersigned water purveyor assumes full responsibility for providing water service to individual customers.

E. Utility Service Policies shall mean those policies and conditions of service that are attached to the provision of water service for individual customers. The identified policies and conditions of service are those conditions incorporated within the water purveyor's water system improvement and expansion plans required under the provisions of the Public Water Systems Coordination Act and DOH.

Section 2. Lead Agency. The lead agency for administering the Pierce County Water Utility service area agreements shall be the Pierce County Department of Public Works and Utilities unless otherwise established by the Pierce County Executive. The lead agency shall function only as a coordination center. The lead agency will maintain the original documents and will be responsible for updating the water system map and agreements as provided for in the CWSP.

Section 3. Authority. The authority for this Agreement is granted by the Public Water Systems Coordination Act of 1977, Chapter 70.116 RCW.

Section 4. Service Area Boundaries. The undersigned Water Purveyor acknowledges that the Pierce County Water Service Area Maps identifying its retail service area boundaries, dated November 9, 1998, and included as Attachment A to this Agreement, identify the Water purveyor's present and future service area. The undersigned further acknowledges that there are no service area conflicts with an adjacent water utility or purveyor, or, if such a conflict exists, agrees that no new water service will be extended within disputed areas except as stipulated in an adjudication by DOH.

This agreement shall apply to service areas existing as of August, 1994, and to the service area boundaries identified in the above referenced maps, or as shown on current revisions thereof, provided that no revisions of service areas shown on these maps shall be made without prior written concurrence of the water utilities/purveyors involved and such written concurrence is filed with the Lead Agency. Revisions may also require an amendment to the purveyor's or utility's service plans.

Section 5. Boundary Adjustments. If, at some time in the future it is in the best interest of the undersigned parties to make service area boundary adjustments, such modifications must be by written concurrence of all involved utilities and the proper legislative authority (ies), and must be noted and filed with the designated Pierce County lead agency and DOH. It is understood by the undersigned utility that it may decline to provide service within its designated service area boundary, but in that case, an applicant may be referred to other adjacent purveyors or utilities or a new utility may be created and the original service area boundary will be adjusted accordingly.

Section 6. System Extension Policies. The undersigned utility agrees that in order to expand its existing water service area, (other than by addition of retail customers to existing water mains), or to serve in the capacity of a pre-qualified satellite system management agency (SSMA), it shall have adopted design standards and Utility Service extension policies. The design standards shall meet or exceed the Pierce County Water System Minimum Standards and Specifications.

A water utility anticipating expansion of retail service in unincorporated areas of Pierce County, or intending to operate as an SSMA, shall identify utility service policies in its updated water system plan. The undersigned utility agrees to identify, for information, its utility service policies or provide a copy of the updated water system plan to the Lead Agency prior to application for extension of its existing water system into new service areas within the unincorporated areas of Pierce County.

Municipalities further agree that if they identify a service area outside of their existing municipal corporate boundaries, the municipality will assume full responsibility for providing water service equivalent to the level of service provided for their customers inside the city limits with similar service requirements, and must also meet or exceed Pierce County's minimum design standards.

Section 7. Special Working Agreements. Special working agreements, if they exist and are relevant, between this water purveyor and an adjacent water purveyor shall be attached to this Agreement as Attachment B and incorporated herein by this reference.

Section 8. Compliance with the CWSP. Nothing in this Agreement shall waive any requirement of the state, federal or local government regarding the provision of water service. This Agreement shall comply with the inter-local agreement requirement of the CWSP.

IN WITNESS WHEREOF, the undersigned party has executed this Agreement as of November 9, 1998.

TOWN OF SOUTH PRAIRIE
Water Purveyor

Representative

MAYOR
Title

Receipt Acknowledged:

Pierce County Public Works and Utilities Department

Date 1-4-99

A water utility anticipating expansion of retail service in unincorporated areas of Pierce County, or intending to operate as an SSMA, shall identify utility service policies in its updated water system plan. The undersigned utility agrees to identify, for information, its utility service policies or provide a copy of the updated water system plan to the Lead Agency prior to application for extension of its existing water system into new service areas within the unincorporated areas of Pierce County.

Municipalities further agree that if they identify a service area outside of their existing municipal corporate boundaries, the municipality will assume full responsibility for providing water service equivalent to the level of service provided for their customers inside the city limits with similar service requirements, and must also meet or exceed Pierce County's minimum design standards.

Section 7. Special Working Agreements. Special working agreements, if they exist and are relevant, between this water purveyor and an adjacent water purveyor shall be attached to this Agreement as Attachment B and incorporated herein by this reference.

Section 8. Compliance with the CWSP. Nothing in this Agreement shall waive any requirement of the state, federal or local government regarding the provision of water service. This Agreement shall comply with the inter-local agreement requirement of the CWSP.

IN WITNESS WHEREOF, the undersigned party has executed this Agreement as of November 9, 1998.

TACOMA WATER
Water Purveyor

Craig Gibson
Representative

PROJECT MANAGER
Title

Receipt Acknowledged:

Susan PM Clark

Pierce County Public Works and Utilities Department

Date 1-4-99

A water utility anticipating expansion of retail service in unincorporated areas of Pierce County, or intending to operate as an SSMA, shall identify utility service policies in its updated water system plan. The undersigned utility agrees to identify, for information, its utility service policies or provide a copy of the updated water system plan to the Lead Agency prior to application for extension of its existing water system into new service areas within the unincorporated areas of Pierce County.

Municipalities further agree that if they identify a service area outside of their existing municipal corporate boundaries, the municipality will assume full responsibility for providing water service equivalent to the level of service provided for their customers inside the city limits with similar service requirements, and must also meet or exceed Pierce County's minimum design standards.

Section 7. Special Working Agreements. Special working agreements, if they exist and are relevant, between this water purveyor and an adjacent water purveyor shall be attached to this Agreement as Attachment B and incorporated herein by this reference.

Section 8. Compliance with the CWSP. Nothing in this Agreement shall waive any requirement of the state, federal or local government regarding the provision of water service. This Agreement shall comply with the inter-local agreement requirement of the CWSP.

IN WITNESS WHEREOF, the undersigned party has executed this Agreement as of November 9, 1998.

Clear Water Inc
Water Purveyor

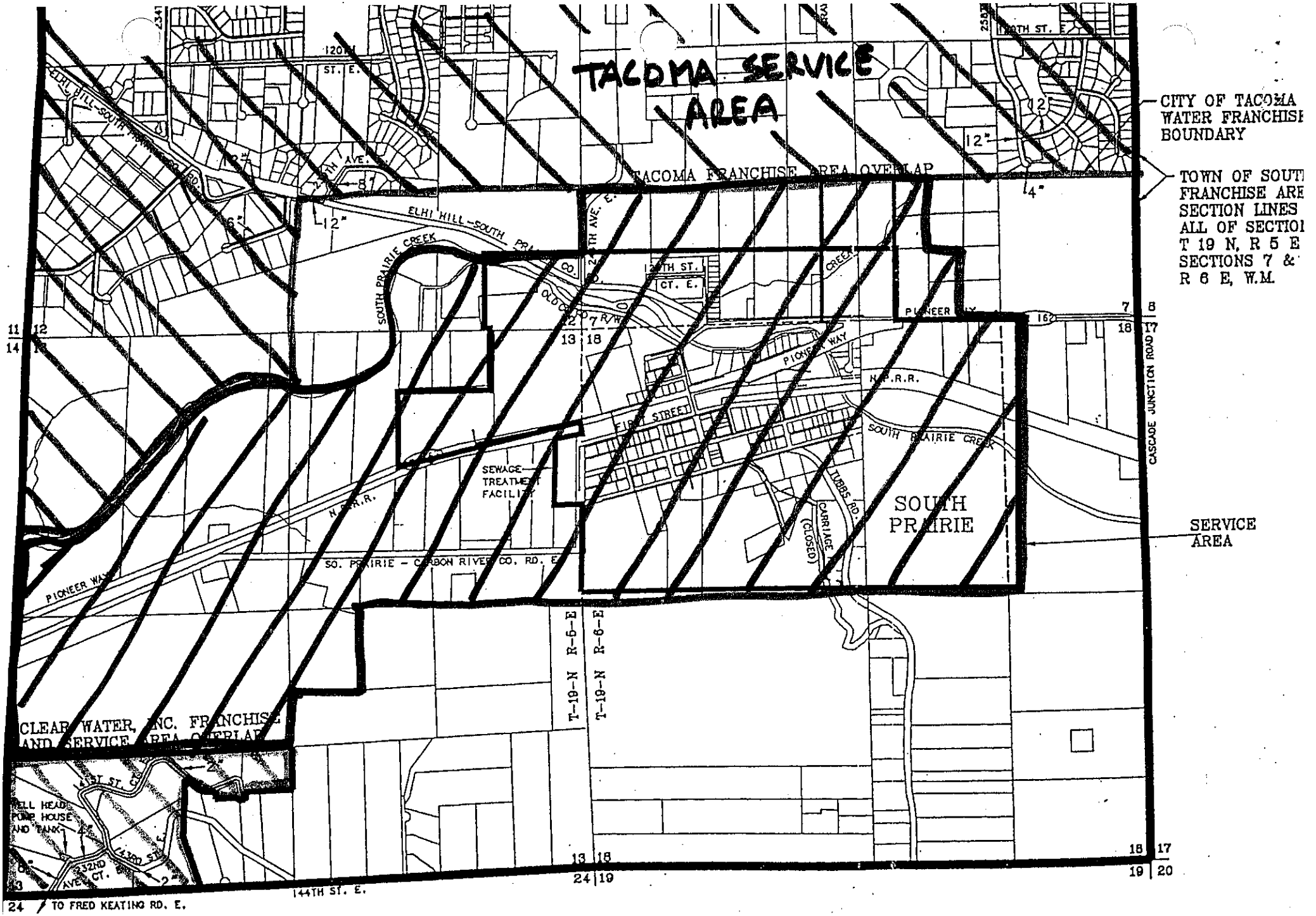
Representative

Pres.
Title

Receipt Acknowledged:

Pierce County Public Works and Utilities Department

Date 1-4-99


TACOMA SERVICE AREA
CITY OF TACOMA WATER FRANCHISE BOUNDARY
TOWN OF SOUTH FRANCHISE AREA SECTION LINES ALL OF SECTION T 19 N, R 5 E SECTIONS 7 & R 6 E, W.M.
TACOMA FRANCHISE AREA OVERLAP
SERVICE AREA
SOUTH PRAIRIE
CLEAR WATER, INC. FRANCHISE AND SERVICE AREA OVERLAP
SEWAGE TREATMENT FACILITY
SOUTH PRAIRIE CREEK
ELHI HILL-SOUTH PRAIRIE CO. RD.
SO. PRAIRIE - CARBON RIVER CO. RD. E.
PIONEER WAY
N.P.R.R.
FIRST STREET
TUBBS RD.
CARRIAGE RD. (CLOSED)
CASCADE JUNCTION ROAD
T-19-N R-5-E
T-19-N R-6-E
144TH ST. E.
TO FRED KEATING RD. E.
WELL HEAD PUMP HOUSE AND TANK
120TH ST. E.
124TH AVE. E.
12"
4"
8"
6"
2"

PUGET POWER

MAKE THE CONNECTION! PUGET POWER PSE PUGET SOUND ENERGY

March 28, 1997

Town of South Prairie
Attn: Larry Harder
PO Box F
South Prairie, WA 98385

Dear Mr. Harder,

Mr. Garry Cooper of Puget Sound Energy's Puyallup office asked me to prepare this pole attachment agreement and forward it to you for signature. I understand the attachments have existed for some time and therefore would simply like to get a signed agreement in the file. Enclosed is an executable original of Puget Power's Pole Attachment Agreement to be signed by the Town of South Prairie's authorized representative. Please fill in any remaining blanks, sign, date and return the document to Puget Power at the address shown in the Agreement. Puget will then sign the Agreement and return a fully executed copy for the Town of South Prairie's records.

Please call me at (206) 462-3101 if you have any questions or concerns.

Very truly yours,

Bob Carlsen

Robert T. Carlsen
Joint Facilities Administrator

Enclosure: Pole Attachment Agreement

cc: Town of South Prairie File
Garry Cooper, PSE

POLE ATTACHMENT AGREEMENT

This Agreement, dated as of March 1, 1997 is made by and between Puget Sound Energy, Inc., a Washington corporation ("Puget") and Town of South Prairie ("South Prairie").

1. Puget hereby grants to South Prairie permission, on the terms and conditions specified in this Agreement, to install, maintain and use South Prairie's communicaton equipment on fifteen of Puget's poles, as designated on Appendix A and made a part hereof. South Prairie's communication equipment (the "Equipment") consists of water pump control wire located as shown on Appendix A.

2. The Term of this Agreement shall commence as of the date of this Agreement, and shall terminate on the earlier of the following to occur:

(a) Upon any five-year anniversary of the commencement of the Term, provided that either party has given the other written notice of termination at least sixty (60) days prior to such anniversary; or

(b) Written notice of termination is given by Puget to South Prairie upon South Prairie's failure to cure any default under or breach of this Agreement by South Prairie within thirty (30) days after Puget gives South Prairie written notice of such default or breach.

3. Upon execution of this Agreement, South Prairie shall pay to Puget an application processing fee in the amount of zero dollars ($0.00).

4. The permission granted herein is personal to South Prairie and shall not be assigned in whole or in part without prior written consent of Puget.

5. South Prairie shall install the Equipment, and thereafter at all times maintain and operate such Equipment, in a skillful, lawful, and proper manner satisfactory to Puget. South Prairie's installation and operation of the Equipment shall not in any way interfere with any power line, telephone line or other facility attached to Puget's poles.

6. South Prairie shall bear all expenses in connection with the installation, operation, and removal of the Equipment.

7. In the event of an emergency, Puget may relocate the Equipment and take such other action affecting the Equipment as Puget deems appropriate in the circumstances. South Prairie's emergency phone number is (206) _____.

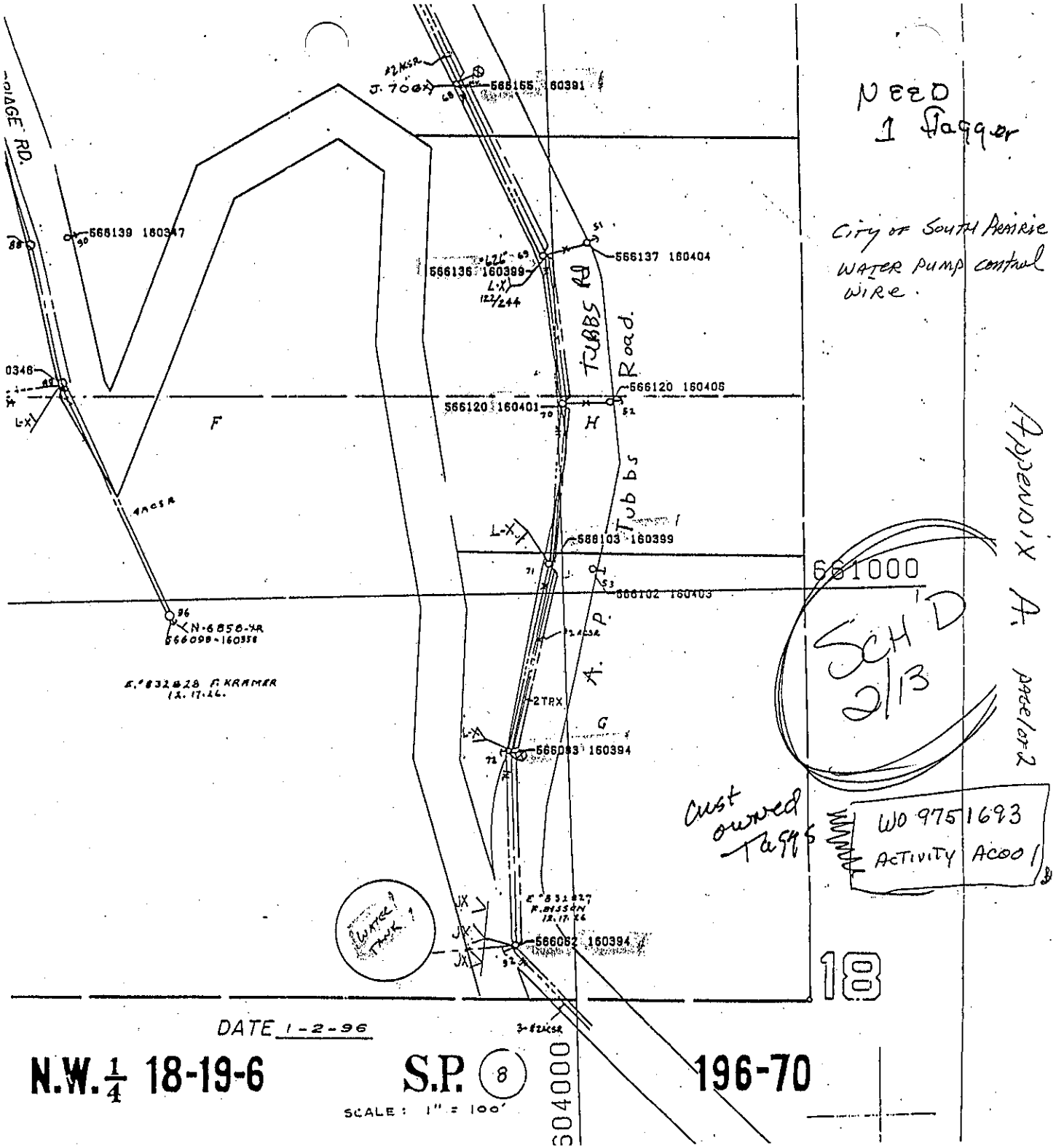
8. Within thirty (30) days of the termination of the Term of this Agreement, South Prairie shall remove the Equipment from Puget's poles. At the expiration of such thirty (30) days all rights of South Prairie to use such poles shall terminate. If South Prairie fails to remove the Equipment from such poles within such time, Puget shall have the right to do so at South Prairie's expense. Such removal, whether by Puget or South Prairie, shall not release South Prairie from any obligation accruing prior to, or arising out of any incidence which occurs prior to such removal.

9. Any notice to South Prairie hereunder shall be deemed given on the date of its deposit in a United States post office enclosed in an envelope, postage prepaid, and addressed to South Prairie.

10. South Prairie has obtained or hereby agrees to obtain from public authorities and private owners of real property any and all permits, licenses or grants necessary for the lawful exercise of the permission hereby given.

11. To the extent permitted by applicable law, South Prairie releases and shall defend, indemnify and hold harmless Puget from any and all claims, losses, costs, liabilities, damages and expenses (including, but not limited to, reasonable attorneys' fees) arising (whether before or after the termination of the Term) out of or in connection with the activities performed under this Agreement, including, but not limited to, the attachment of the Equipment to the poles, the operation of the Equipment during the Term, and the removal of such Equipment; provided, however, that South Prairie shall not be required to so defend, indemnify, or hold harmless Puget from any claim, loss, cost, liability, damage or expense to the extent the same is caused by or results from the negligence of Puget or its agents, employees, or representatives.

South Prairie:	**PUGET:**
Town of South Prairie	Puget Sound Energy, Inc.
By:_____ (print name) _____	By:_____ Susan McLain
Its: _____	Its: Director, Planning and Work Practices
Date Signed:_____	Date Signed:_____
Address: PO Box F South Prairie, WA 98385 Attn: Maintenance Supervisor	Address: P.O. Box 97034 OBC-14S Bellevue, WA 98009-9734 Attn: Joint Facilities Administrator


NEED
1 flagger
City of South Prairie
WATER PUMP control
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Appendix A. page 1 of 2
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661000
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N.W. 1/4 18-19-6
S.P. 8
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Tubbs Road.
A. P. I.
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566139 160347
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566136 160399
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566102 160403
566093 160394
566062 160394
N-6858-YR
566098-160358
E. 832828 F. KRAMER
12.17.26.
E. 832827
F. BISSON
12.17.26
WATER TANK
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G
J. 706X
122/244
2TRX
4ACSR
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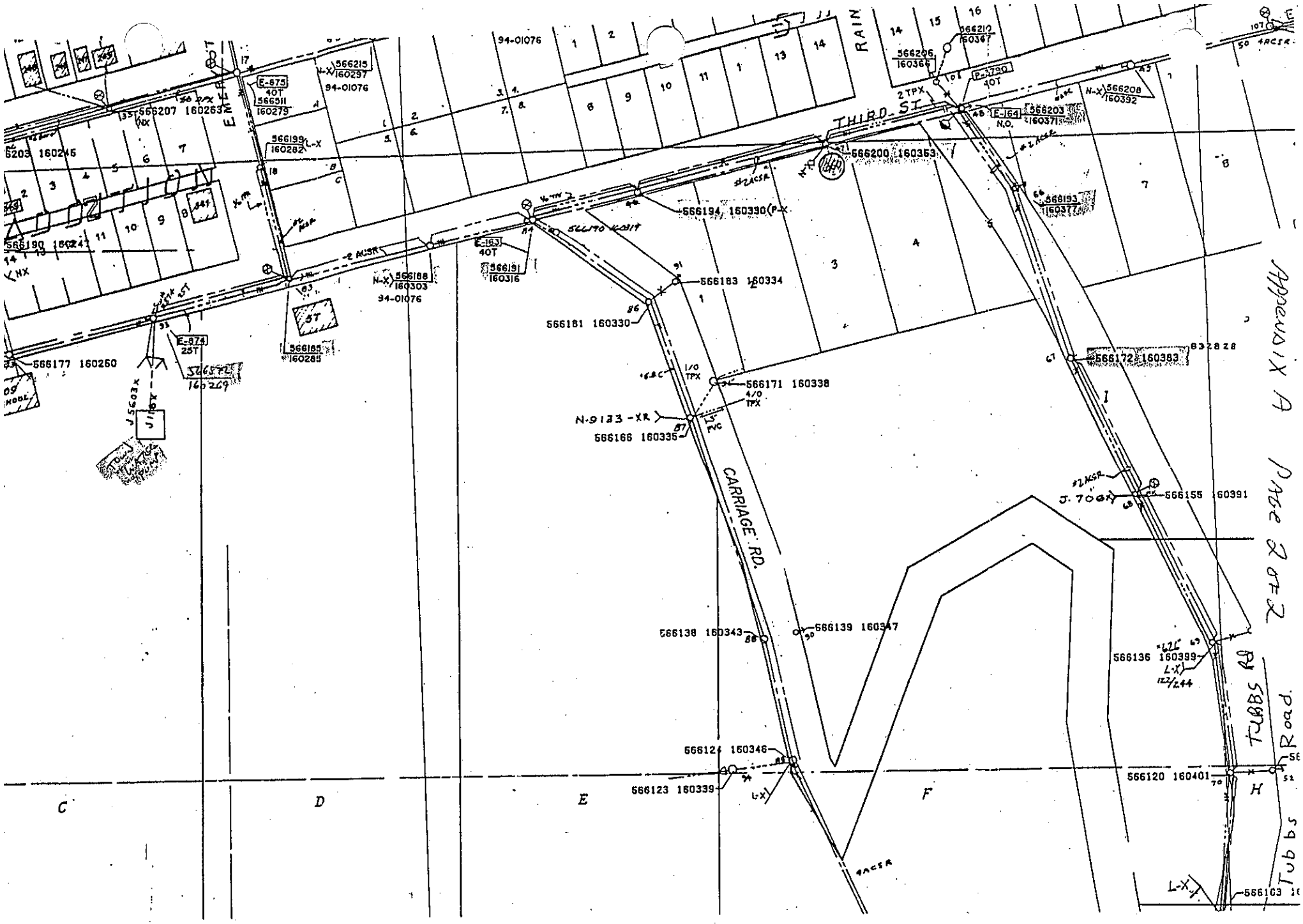
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E-163 40T 566191 160316
E-164 N.O.
P-790 40T
J 5603X
J 7063X
N-9133-XR
2 ACSR
4 ACSR
APPENDIX A Page 2 of 2

COPY

INTERIM INTERLOCAL AGREEMENT FOR FIRE PROTECTION AND LEASE OF FIRE STATION

This Interim Interlocal Agreement is made by and between Town of South Prairie, hereinafter referred to as "Town", and Pierce County Fire Protection District No. 20, hereinafter referred to as "District", for the purpose of documenting the parties' interim agreement for fire protection and the lease of the fire station, for the period between January 1, 2003, and the effective date of the next Interlocal Agreement for fire protection, which is estimated to be January 1, 2004. In no event shall this interim agreement extend beyond December 31, 2003.

Whereas, the District has provided fire protection and EMS services to the Town's residents for many years, but the last Interlocal Agreement expired on December 31, 2002; and

Whereas, the parties have negotiated a new Interlocal Agreement, which shall take effect January 1, 2004, if the Town's voters approve a levy lid lift in the November 2003 election; and

Whereas, it is necessary for the parties to execute an interim agreement to provide essential terms of agreement for the period between January 1, 2003, and the effective date of any new agreement;

NOW THEREFORE, FOR GOOD AND VALUABLE CONSIDERATION AS SHOWN HEREIN, THE PARTIES AGREE AS FOLLOWS:

1. Rent: During the interim period, between agreements, District agrees to pay, and the Town agrees to accept, $500 per month for rent of the fire station.
2. Service: During the same period, the Town agrees to pay, and the District agrees to accept, $500 per call or response by the District as set forth in an itemized billing to include date, nature of response, and location of response.

3. **Utilities:** During the same period, the District agrees to pay, and the Town agrees to accept, a payment of one-half of the actual utilities expenses.

4. **Accounting:** Both parties agree to modify the current balances due, as shown on any accounting or invoices, to bring such balances into conformity with this agreement. The parties further agree, that the two sums due may be offset, one against the other, and that the party owing a net balance to the other may pay the balance due on a monthly payment plan, extending to the end of 2004, if necessary.

5. **Interim Period:** The "interim period" shall mean and include the time between January 1, 2003 and the effective date of any new Interlocal Agreement for fire protection, **provided** that in no circumstances shall the interim agreement extend beyond December 31, 2003.

TOWN OF SOUTH PRAIRIE

Mayor
Date: 11/4/03

TOWN OF SOUTH PRAIRIE CORPORATE SEAL STATE OF WASHINGTON 1909

By:
Town Clerk/Treasurer

PIERCE COUNTY FIRE DISTRICT #20

Chairman
Date: 11-17-03

Commissioner

Commissioner

APPROVED AS TO FORM:

By:
Michael Reynolds, WSBA #5795
Town Attorney

APPROVED AS TO FORM:

By:
Joseph F. Quinn, WSBA #6810
Attorney for District

COPY

INTERLOCAL AGREEMENT FOR FIRE AND EMERGENCY MEDICAL SERVICES

AND USE OF FIRE STATION

1. **Date and Parties:**

This Agreement, for reference purposes only, is dated the 4 day of NOVEMBER, 2003 and is entered into by and between PIERCE COUNTY FIRE DISTRICT 20, a municipal corporation hereinafter referred to as the "DISTRICT", and the TOWN OF SOUTH PRAIRIE, a municipal corporation, hereinafter referred to as the "TOWN". The agreement shall be effective on January 1, 2004, upon condition that the resident electors (registered voters) approve the levy lid lift increase proposed by the Town in the November 2003 general election, and shall have a term of five (5) years.

2. **Authority for Agreement:**

This Agreement is entered into by and between the parties hereto pursuant to the authority granted to the Town under RCW 35A.11.040 and to the District under the authority of RCW 52.12.031 and in conformity with Chapter 39.34 RCW, commonly known as the Interlocal Cooperation Act.

3. **Purpose of Agreement:**

The District provides fire suppression and emergency service for a portion of Pierce County, and has historically provided such services within the Town, pursuant to contract. The parties desire to formalize their agreement for such services and recognize the consideration provided by the Town to the District, by the lease of the Fire Station and other consideration set forth below.

4. **Agreement Term:**

This Agreement shall become effective on January 1, 2004, and shall remain in effect for five (5) years, i.e. until December 31, 2008 unless earlier terminated pursuant to the provisions hereof. The Agreement shall be automatically renewed for another five-year term if not terminated or changed through mutual agreement of the parties. During the last six months of the term of the agreement, the parties should review the agreement and re-negotiate any renewal agreement. This Agreement may be terminated by either party, with or without cause, by providing notice to the other party, in writing, at least 365 days prior to the proposed termination date. Any earlier purported termination shall only be for good cause shown, and shall be subject to the alternative dispute resolution provision herein.

5. **Scope of District Services:**

The District will provide fire suppression, fire protection, and emergency medical services within the Town, at the same level of service as provided elsewhere in the District's service area. The District shall have no responsibility, however, for Uniform Fire Code inspection services. Nor shall the District take on the added responsibility of investigation of fires for "cause and origin" within the boundaries of the Town.

6. **Consideration from the Town:**

In consideration for the foregoing services, in addition to the lease of the Fire Station, the Town agrees to provide the following consideration. All EMS levy funds collected by the Town, or on its behalf, shall be paid over to the District in two equal semi-annual payments, on or before June 30th and on or before December 31st. The Town levies the exact same EMS tax levy rate as the

District, and should the District or the Town desire to place a levy rate change before the voters it shall inform the other with an adequate time to place the issue before the other's voters. The Town shall pay for fire suppression and fire protection services by paying over to the District, for services rendered, the amount below, derived from property taxes. The intent of the parties is that the levy rate for fire protection within the Town should be the same as the equivalent rate in the District. The District current rate is $1.30 per thousand of assessed valuation. The Town agrees to request a levy increase of $0.75 per thousand at the November 2003 election. If such request is not approved, this agreement shall be null and void. If such request is approved, the Town will pay over to the District such amounts when received. Such payments shall also be due and payable, in two equal semi-annual payments, on or before June 30th and on or before December 31st. The Town shall endeavor to match the District's suppression levy rate for 2004, to be collected in 2005, and continue to do so in subsequent years, during the term of this agreement.

7. **The Lease:**

The Town hereby agrees to Lease, in consideration of the foregoing, the Fire Station to the District for the same term. The District will be responsible for maintaining the interior of the fire station portion of the building and the fire station's exterior grounds. The Town will maintain the Community Center and its respective grounds and shall be responsible for major structural repairs. The District will pay two-thirds of the utilities costs, including but not limited to electrical, water, and sewer. The Town shall invoice the District for its two-thirds contribution immediately after paying such utilities invoices. The District agrees to pay such invoices at the

end of the month if received prior to the 10th of the month, and if received after the 10th of the month, invoices will be paid at the end of the following month. The District will pay the Town $12,000 rent annually in two equal installments on January 1st and July 1st.

8. **Notices:**

Any notice required to be given by either party to the other shall be deposited in the United States mail, postage prepaid, addressed to the District at:

Pierce County Fire District 20
18421 Old Buckley Hwy., Suite F
Bonney Lake, WA 98390

Or to the Town at:

Town of South Prairie
PO Box F
South Prairie, WA 98385

Any change in official mailing address of either party shall be transmitted to one by the other as deemed necessary.

9. **Severability:**

If any provisions of this Agreement or its application are held invalid, the remainder of the Agreement or the application of the remainder of the Agreement shall not be affected.

10. **Modification:**

This instrument constitutes the entire Agreement between the parties and shall supersede any and all prior Agreements, **provided** that this agreement does not modify or affect in any way the previous agreement between the parties relating to the addition to the building financed by the District, for which the Town will continue to reimburse the District as previously agreed. No

change, modification or amendment shall be valid unless evidenced in writing, properly agreed to and signed by both parties.

11. **No Third Party Benefits:**

This Agreement is entered into for the benefit of the parties to this Agreement only and shall confer no benefits, direct or implied, on any third persons.

13. **Liability:**

The District shall be responsible for the actions of all fire personnel while responding to emergency medical and/or fire suppression calls within the Town or District boundaries and shall indemnify and hold the Town harmless from any claims by the District's fire and emergency medical personnel, or any third parties, including any Town employee who may be responding as a firefighter or emergency medical technician. The Town shall be responsible for all actions of all Town personnel, except as above, and for the safe condition of the premises at the inception of the lease, and shall indemnify and hold the District harmless from any claims by the Town's personnel, or any third parties that are not involved in firefighting or emergency medical response.

14. **Insurance:**

a. The District shall provide comprehensive liability coverage for all District personnel and District equipment while responding to fire suppression and/or emergency medical service calls within the Town or District boundaries.

b. The District and the Town, respectively, shall provide insurance on all property in which title is retained.

c. The Town shall provide liability, casualty and property insurance on the fire station, naming the District as an Additional Insured with respect to the District's usage of the building.

15. **Alternative Dispute Resolution:**

The parties agree that litigation shall not be pursued until alternative dispute resolution has been exhausted. In the event of any dispute arising under the terms hereof, the parties agree to first engage in non-binding mediation to facilitate settlement. If that is unsuccessful, the parties agree to engage in binding arbitration. Both services shall be provided through a dispute resolution service acceptable to both parties. Each party shall bear its own costs and attorney fees in the event of mediation or arbitration.

16. **Successors and Assigns:**

If either party to this Agreement ceases to exist by reason of merger, dissolution, or any other such corporate change of form, and if there is a successor corporation or entity surviving the merger, dissolution, or otherwise to which the rights or duties of either contracting party are assignable, then the terms and provisions of this Interlocal Agreement are deemed to apply to that successor/assignee municipal corporation, so long as the applicable laws of the State of Washington allow such municipal corporation to assume those duties and responsibilities.

17. **Fire Station Addition:**

The District has completed an addition to the Fire Station at its expense. In the event the Town terminates the District's use of the Fire Station within twenty (20) years from January 1995, the Town shall repay the District the amortized rate at $4,400 per year.

TOWN OF SOUTH PRAIRIE

Mayor

TOWN OF SOUTH PRAIRIE CORPORATE SEAL 1909 STATE OF WASHINGTON

ATTEST:

By: _____
Town Clerk/Treasurer

APPROVED AS TO FORM:

By: _____
Michael Reynolds, WSBA # 5795
Town Attorney

PIERCE COUNTY FIRE DISTRICT #20

Chairman

Commissioner

Commissioner

APPROVED AS TO FORM:

By: _____
Joseph F. Quinn, WSBA # 6810
Attorney for District

ADDENDUM NO. 1 TO

INTERLOCAL AGREEMENT FOR FIRE AND EMERGENCY MEDICAL SERVICES AND USE OF FIRE DEPARTMENT FACILITIES

Come now the Town of South Prairie (hereinafter "the Town") and Pierce County Fire District No. 20 (hereinafter "the District") and amend the Interlocal Agreement for Fire and Emergency Medical Services and Use of Fire Department Facilities, executed between the parties on November 4, 2003 and effective January 1, 2004, as follows:

1. Term. The term of the agreement is hereby extended five more years to a concluding date of December 31, 2013. The balance of paragraph 4 of the Interlocal Agreement ("Agreement Term") shall remain in full force and effect.
2. Status of Ownership of Equipment. The parties reaffirm that the Town owns and insures Engine 20-12. The parties agree that the District will maintain Engine 20-12 and all equipment and will operate the engine in a legal, ethical, and professional manner at all times. Only qualified drivers will operate the engine in accordance with WSDOT and Fire District regulations.

Dated this 6th day of April, 2004.

TOWN OF SOUTH PRAIRIE

Wayne Ross
Mayor

PIERCE COUNTY FIRE DISTRICT #20

Brenda Harter
Chairman

Commissioner

PCFD #20/Add. To S.P. Ag.
JFQ/March 16, 2004

Commissioner

ATTEST:

Town Clerk/Treasurer

APPROVED AS TO FORM:

Michael Reynolds, WSBA #5795
Town Attorney

APPROVED AS TO FORM:

Joseph F. Quinn, WSBA #6810
Attorney for District

TOWN OF SOUTH PRAIRIE CORPORATE SEAL 1909 STATE OF WASHINGTON

APPENDIX D

Cross-Connection Control Plan

Cross-Connection Control Program Plan for Town of South Prairie Water System

A. Requirement for Program

The Town of South Prairie, public water system identification number 82300 R, hereinafter referred to as "the Purveyor", has the responsibility to protect the public water system from contamination due to cross connections. A cross connection may be defined as *"any actual or potential physical connection between a potable water line and any pipe, vessel, or machine that contains or has a probability of containing a non-potable gas or liquid, such that it is possible for a non-potable gas or liquid to enter the potable water system by backflow."*

All public water systems are required to develop and implement cross-connection control (CCC) programs. The CCC requirements are contained in Washington Administrative Code (WAC) 246-290-490 of the Group A Drinking Water Regulations. The minimum required elements of a CCC program are:

1. Establishment of legal authority and program policies;
2. Evaluation of premises for cross-connection hazards;
3. Elimination and/or control of cross connections;
4. Provision of qualified personnel;
5. Inspection and testing of backflow preventers;
6. Quality control of testing process;
7. Response to backflow incidents;
8. Public education for consumers;
9. Record keeping for CCC program; and
10. Special requirements for reclaimed water use.

Other CCC program requirements include:

1. Coordination with the Local Administrative Authority (LAA), i.e., the local building or plumbing official regarding CCC activities;
2. Prohibition of the return of used water into the public water system (PWS) distribution system; and
3. Inclusion of a written CCC program in a Water System Plan (WSP) or a Small Water System Management Program (SWSMP).

Note: *Customer* as used herein means the property owner and/or occupant of the premises served by the PWS (i.e., whoever interfaces with the PWS regarding water service). Also, unless otherwise defined, all CCC-related terms used in this example program have the same definitions as those contained in WAC 246-290-010 of the Washington State Drinking Water Regulations.

B. Program Objectives

The objectives of the CCC program are to:

1. Reasonably reduce the risk of contamination of the public water distribution system; and
2. Reasonably reduce the Purveyor's exposure to legal liability arising from the backflow of any contaminant originating from the customer's plumbing system and then supplied to other customers; and

C. Summary of Program Decisions

The following table summarizes the major policy and program decisions adopted for the ***Town of South Prairie*** water system. The items in the table represent CCC program areas that have more than one acceptable approach or option.

CCC Program Decision Summary Table for the Town of South Prairie

Decision Item	Decision
1. Type of Program [General, WAC 246-290-490(2)(e)]	
a. Premises isolation only	No
b. Premises isolation and in-premises protection (combination program)	Yes
2. Extent of Coordination with LAA [WAC 246-290-490(2)(d)]	
a. Information exchange	Yes
b. Interaction	No
c. Joint program	No
3. Relationship with Customer [Element 1]	
a. Signed service agreement or contract	No
b. Ordinance/resolution; implied service agreement	Yes
4. Enforcement of Corrective Action [Element 1]	
a. Rely upon shut-off of water service	Yes
b. Rely upon purveyor-installed premises isolation	No
5. Assessment and Re-assessment of Hazard [Element 2]	
a. By purveyor's staff or equivalent	Yes
b. By cross-connection control specialist (CCS) employed by customer; report reviewed by purveyor's CCS	No
6. Location and Ownership of Premises Isolation Assembly [Element 3]	
a. On purveyor's service line	No
b. On customer's service line	Yes
7. CCS Option – Purveyor's Program Management [Element 4]	
a. Purveyor's staff member certified	Yes
b. Inter-agency agreement or use other agency's CCS	No
c. Contract with consultant CCS	No
8. Testing of Assemblies [Element 5]	
a. By purveyor's staff or purveyor-employed backflow assembly tester (BAT)	No
b. By customer-employed (contractor) BAT	Yes
9. Cost Recovery [WAC 246-290-100(4)(h) and –105(4)(p)]	
a. Borne by all customers (general water rates)	Yes
b. Assessed to specific class (commercial meters)	No
c. Each customer directly bears cost	No

D. Required Elements of Program

The drinking water regulations for Group A public water systems in Washington, WAC 246-290, require CCC programs to include certain minimum elements. The elements are listed in WAC 246-290-490(3). This section describes how the water system intends to comply with each of the required program elements. Elements are numbered the same as they appear in the WAC.

Element 1: *Adoption of a written legal instrument authorizing the establishment and implementation of a CCC program.*

The ***Town of South Prairie*** water system has adopted a resolution (Ordinance No. 338), reproduced as **Exhibit A**, which authorizes the Purveyor to implement a CCC program. This Ordinance will be updated to meet revised WAC requirements (see schedule below) and is also provided in **Exhibit A**. The ordinance also authorizes the system to terminate water service to consumers who do not comply with the resolution. The primary method for protection of the distribution system will be the installation of a backflow preventer by the customer, at the customer's expense.

For customers supplied prior to or after the adoption of the attached ordinance, an implied service contract allows the Purveyor to protect the distribution system from contamination through a Purveyor-installed backflow preventer on a customer's service.

The written and implied contract terms are discussed further under Element 3.

The following schedule is anticipated for adoption of a revised ordiance:

Legal Instrument Status	*Schedule*
Preparation of proposed legal instrument	*January 2007*
Introduction of the legal instrument to governing body	*March 2007*
Adoption of legal instrument	*April 2007*
Legal instrument becomes effective	*July 2007*

Element 2: *Development and implementation of procedures and schedules for evaluating new and existing service connections to assess the degree of hazard.*

Initial Cross-Connection Hazard Surveys

The procedures for evaluating the backflow prevention requirements for new and existing customers are as follows:

1. For all ***new non-residential services***, the Purveyor will require that the customer submit with the application for water service an evaluation (performed at customer's expense) by a DOH-certified cross-connection control specialist (CCS) of the hazard posed by the proposed plumbing system, with recommendations for the installation at the meter of either a double-check valve assembly (DCVA) or a reduced-pressure principle backflow assembly (RPBA) or commensurate in-premises backflow protection (**Exhibit B**). The Purveyor may accept the recommendations or submit the recommendations to a CCS employed by the PWS for peer review and concurrence, before acceptance.

   As an alternative to the above requirement for a survey by a CCS, the customer may agree to install an approved air gap (AG) or RPBA for premises isolation as a condition of service.

2. For all ***new residential services***, the Purveyor will require that the customer submit with the application for water service a completed "Water Use Questionnaire" (**Exhibit C**). If the customer's questionnaire indicates special plumbing, such as a lawn sprinkler system, or hazardous water use on the premises, the customer shall submit to the Purveyor an evaluation by a DOH-certified CCS of the hazard posed by the proposed special plumbing system, with recommendations for the installation at the meter of either a DCVA, an RPBA or commensurate in-premises protection.

   As an alternative to the above requirement for a survey by a DOH-certified CCS, the Purveyor, at his/her discretion, may specify the backflow preventer required to be installed as a condition of service.

3. For all ***existing non-residential services***, the Purveyor will require the customer to submit to the Purveyor, within nine months of notification, an evaluation by a DOH-certified CCS, of the hazard posed by the plumbing system, with recommendations for the installation at the meter of either a DCVA, an RPBA or commensurate in-premises backflow preventers (**Exhibit B**). The Purveyor may accept the recommendations or submit the recommendations to a CCS employed by the Purveyor for peer review and concurrence, before acceptance.
   As an alternative to the above requirement for a survey by a DOH-certified CCS, the customer may agree to install an AG or RPBA for premises isolation within 90 days of notification by the Purveyor or an alternate time period acceptable to the Purveyor.

4. For all ***existing residential services***, the Purveyor will require the customer to submit to the Purveyor, within four months of notification, a completed "Water Use Questionnaire" (**Exhibit C**). If the customer's reply indicates special plumbing or water use on the premises, the customer shall submit an evaluation by a DOH-certified CCS of the hazard posed to the water system by the

customer's plumbing system, with recommendations for the installation at the meter of a DCVA, an RPBA or commensurate in-premises backflow preventers.

As an alternative to the above requirement for a survey by a CCS, the Purveyor may specify the backflow preventer required to be installed as a condition of service. The Purveyor's CCS will provide guidance on the type of backflow preventer to be installed.

5. For all existing services, should the customer fail to supply the required information for a hazard assessment or fail to submit a completed "Water Use Questionnaire," the Purveyor may have the assessment made by a CCS employed by the Purveyor, require the installation of an RPBA for premises isolation, or take other such actions consistent with the previously stated policies and bill the customer for the associated costs.

Cross-Connection Hazard Survey Schedule for Initial Hazard Assessments

The schedule for initial hazard assessment is outlined in the following table. The schedule starts the date of final approval of the Water System Plan, of which this cross-connection control plan is a part.

Initial Assessment Task	Schedule
Assessment of all new connections	At time of application for water service
Identification and assessment of high-hazard premises which are listed on Table 9 of Washington Administrative Code (WAC) 246-290-490	Within nine months
Identification and assessment of hazardous premises supplemental to Table 9 of WAC 246-290-490	Within 12 months
Identification of residential connections with special plumbing facilities and/or water use on the premises	Within 15 months

Cross-Connection Hazard Survey Schedule for Subsequent Hazard Re-Assessments

For subsequent cross-connection hazard surveys, procedures for evaluating the backflow prevention requirements are:

1. For **residential services,** the Purveyor will require the customer to submit to the Purveyor, within two months of purveyor notification, a completed "Water Use Questionnaire" **(Exhibit C).** The procedure used for evaluating the hazard re-assessment and the potential change in the required backflow prevention will be the same as used for the initial hazard assessment.
2. For all **non-residential services**, the Purveyor will require the customer to submit to the Purveyor, within two months of purveyor notification, a hazard re-assessment (at the customer's expense) by a DOH-certified CCS.

The frequency of hazard re-assessments will be as shown in the table below:

Type of Service	Frequency of Re-Evaluation
Any services with reduced-pressure principle backflow assembly (RPBA) installed for premises isolation	None required as long as the RPBA passes annual tests and inspections
Commercial services with double-check valve assembly (DCVA) installed for premises isolation	Every two years and upon change in use or ownership
Commercial services when purveyor relies upon in-premises protection	Every two years and upon change in use, ownership, or plumbing system
Residential services with special plumbing where the purveyor relies upon compliance with Uniform Plumbing Code (UPC)	Every 2-3 years (questionnaire)
Residential services with DCVA installed for premises isolation	Every 4-5 years (questionnaire)
Residential services with no known special plumbing or water use on the premises	Every 4-5 years and upon change in use, ownership, or plumbing system (questionnaire)

The Purveyor will inform the customer that the Purveyor's survey of a customer's premises (whether by a representative of the Purveyor or through the evaluation of a questionnaire completed by the customer) is for the sole purpose of establishing the Purveyor's minimum requirements for the protection of the public water supply system, and that the required backflow protection will be commensurate with the Purveyor's assessment of the degree of hazard.

The Purveyor will also inform the customer or any regulatory agencies that the Purveyor's survey, requirements for the installation of backflow prevention assemblies, lack of requirements for the installation of backflow prevention assemblies, or other actions by the purveyor's personnel or agent do not constitute an approval of the customer's plumbing system or an assurance to the customer or any regulatory agency of the absence of cross connections.

Element 3: *Development and implementation of procedures and schedules for elimination and/or control of cross-connections.*

Backflow Preventer Requirements

The following service policy shall apply to all new and existing customers:

1. The Purveyor will require that water service to all **non-residential customers** be isolated at the meter by a DOH-approved DCVA or RPBA acceptable to the Purveyor. All high-hazard connections of the type described in Table 9 of WAC 246-290-490 shall be isolated with an RPBA. In lieu of isolation with a DCVA, other non-residential customers, with the concurrence of the Purveyor's CCS, may install in-premises protection commensurate with the degree of hazard, as determined by the Purveyor's CCS.

2. The Purveyor will require all **residential customers** with facilities of the type described in Table 9 of WAC 246-290-490 to be isolated with an RPBA. All other residential customers with special plumbing or water use on the premises will be isolated with a DCVA. "Special plumbing" includes, but is not limited to, the following:

   a. A lawn irrigation system;
   b. A solar heating system;
   c. An auxiliary source of supply, e.g., a well or creek;
   d. Piping for livestock watering, hobby farming, etc.;
   e. Residential fire sprinkler system; and
   f. Property containing a small boat moorage.

3. *[**Combination or Joint Program Alternative:** "Residential customers not required to be isolated with an RPBA may install in-premises protection in accordance with the Uniform Plumbing Code (UPC) in lieu of isolation with a DCVA."]* ***Jennifer: Not sure what this means.***

4. **Customers without written contracts** are considered to have an implied contract that requires the customer to bear all reasonable costs of service. The Purveyor will install the required DCVA or RPBA on the service, upstream of the meter, and charge the customer for the cost of the initial installation, and all future maintenance, testing, and repair, as set forth in the Purveyor's schedule of rates and charges. The failure of the customer to pay these costs shall constitute a breach of contract by the customer, and the Purveyor will proceed with the established delinquency of payment procedures. As an alternative, the customer may sign a service contract and install the required backflow preventer downstream of the meter in accordance with the Purveyor's installation standards described hereinafter.

5. **Approved Backflow Preventers and Installation**

   All backflow preventers relied upon by the Purveyor to protect the public water system shall meet the definition of "approved backflow preventer" as contained in WAC 246-290-010. The Purveyor will obtain and maintain a current list of assemblies approved for installation in Washington State from the DOH Office of Drinking Water.

All backflow preventers will be installed in:

- The orientation for which they are approved;
- A manner and location that facilitates their proper operation, maintenance, and testing or inspection;
- A manner that will protect them from weather-related conditions such as flooding and freezing; and
- Compliance with applicable safety regulations.

Installation standards contained in the most recently published edition of the Pacific Northwest Section, American Water Works Association (PNWS-AWWA) *CCC Manual* or the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USCFCCCHR) *CCC Manual* shall be followed unless the manufacturer's requirements are more stringent.

The Purveyor has no regulatory responsibility or authority over the installation and operation of the customer's plumbing system. The customer is solely responsible for compliance with all applicable regulations and for prevention of contamination of his plumbing system from sources within his/her premises. Any action taken by the Purveyor to survey plumbing, inspect or test backflow prevention assemblies, or to require premises isolation (installation of DCVA or RPBA on service) is solely for the purposes of reducing the risk of contamination of the Purveyor's distribution system.

The Purveyor will inform the customer that any action taken by the Purveyor shall not be construed by the customer as guidance on the safety or reliability of the customer's plumbing system. The Purveyor will not provide advice to the customer on the design and installation of plumbing other than through the general public education program discussed in Element 8.

Except for easements containing the Purveyor's distribution system, the Purveyor will not undertake work on the customer's premises.

6. Schedule for Installation of Backflow Preventers

The following table shows the schedule that the Purveyor will follow for installation of backflow preventers when they are required (based on the hazard evaluation).

Type of Service	Schedule
New connections with cross-connection hazards	Before service is initiated
Existing connections with Table 9-type hazards and other high cross-connection hazards	Within 90 days after notification
Existing connections with other than Table 9 of WAC 246-290-490 or high cross-connection hazards	Within 180 days after notification (suggested)
Existing fire protection systems using chemicals or supplied by unapproved auxiliary water source	Within 90 days after notification

Existing fire protection systems not using chemicals and supplied by purveyor's water	Within 1 year after notification (suggested)

The Purveyor may consider granting an extension of time for installation of backflow preventer for an existing connection if requested by the premises owner.

Model correspondence letters have been provided in Exhibit I.

Element 4: *Provision of qualified personnel, including at least one person certified as a CCS, to develop and implement the CCC program.*

1. **Program Administration:** The responsibility for administration of the CCC Program rests with the Purveyor. General policy direction and risk management decisions are established by the **Town Council.**

2. The Purveyor will employ or have on staff at least one person certified by DOH as a CCS to develop and implement the CCC program. As an alternative, or when no staff or employees are properly qualified, the Purveyor may retain a DOH-certified CCS on contract to provide the necessary expertise and services.

3. The following cross-connection related tasks will be performed by or under the direction of the Purveyor's certified CCS (on staff or under contract):

   - Preparation of and recommendations regarding changes to the CCC program;
   - Performance of and/or reviews of CCC hazard evaluations;
   - Recommendations on the type of backflow preventer to be installed;
   - Recommendations on schedules for retrofitting of backflow preventers;
   - Inspections of backflow preventers for proper application and installation;
   - Reviews of backflow preventer inspection and test reports;
   - Reviews of backflow testing quality control information;
   - Recommendations and/or the granting of exceptions to mandatory premises isolation;
   - Participation in or cooperation with other water utility staff in the investigation of backflow incidents and other water quality problems;
   - Completion of Backflow Incident Reports; and
   - Completion of CCC Activity and Program Summary Reports.

4. The Purveyor may delegate other CCC program activities to other personnel who are not certified CCSs, including clerical support staff. These activities include:

   - Administration of paperwork associated with service agreements;
   - Mailing, collecting, and initial screening of hazard evaluation/water use questionnaires;
   - Mailing of assembly testing notices;
   - Receiving and screening of assembly testing reports;
   - CCC program database administration and record keeping;
   - Dissemination of public education material; and
   - Assisting tasks associated with coordination with the LAA.

5. The following table identifies the current CCS employed or retained on contract by the Purveyor to manage the Purveyor's CCC program and/or act as the CCC technical resource for the Purveyor:

Name of CCS	Larry Harter
Address	P.O. Box F
City, State, Zip	South Prairie, WA 98385
Telephone Number	360-897-8969
CCS Certification Number	4583

Element 5: *Development and implementation of procedures to ensure that approved backflow preventers are inspected and/or tested (as applicable).*

1. Inspection and Testing of Backflow Preventers

All backflow preventers that the Purveyor relies upon for protection of the water system will be subject to inspection and, if applicable, testing. This includes backflow preventers installed for in-premises protection that the Purveyor relies upon for protection of the water systems.

Inspection and testing of backflow preventers will be as follows:

- The Purveyor's DOH-certified CCS will inspect backflow preventers for proper application (i.e., to ensure that the preventer installed is commensurate with the assessed degree of hazard).
- Either a DOH-certified CCS or backflow assembly tester (BAT) will perform inspections of backflow preventers for correct installation.
- A DOH-certified backflow assembly tester will test all assemblies relied upon by the Purveyor to protect the public water system.

2. Frequency of Inspection and Testing

Inspection and testing of backflow preventers will be conducted:

- At the time of installation;
- Annually after installation;
- After a backflow incident; and
- After repair, reinstallation, relocation, or re-plumbing.

The Purveyor may require a backflow preventer to be inspected and/or tested more frequently than once a year, when it protects against a high-health hazard or when it repeatedly fails tests or inspections.

3. Responsibility for Inspection and Testing

The Purveyor will be responsible for inspection and testing of all purveyor-owned backflow preventers.

The Purveyor will require the customer to be responsible for inspection and testing of backflow preventers owned by the customer. The customer shall employ, at customer expense, a DOH-certified BAT to conduct the inspection and test within the time period specified in the testing notice sent by the Purveyor. The test report shall be completed and signed by the BAT, then countersigned and returned by the customer to the Purveyor, before the due date specified by the Purveyor. The customer may request an extension of the due date for returning a test report by submitting a written request to the Purveyor. The Purveyor may grant one extension up to 90 days.

4. Approved Test Procedures

The Purveyor will require that all assemblies relied upon to protect the public water system be tested in accordance with DOH-approved test procedures as specified in WAC 246-290-490(7)(d). Any proposal to use alternate test procedures must be approved by the Purveyor's CCS. The purveyor will require all assembly tests to be reported on the form shown in **Exhibit D** and returned as specified above.

5. Notification of Inspection and/or Testing

The Purveyor will notify in writing all customers who own backflow preventers that are relied upon to protect the public water system to have their backflow preventer(s) inspected and/or tested. Notices will be sent out not less than 30 days before the due date of the inspection and/or test. The notice will also specify the date (up to 30 days after the due date of the inspection and/or test date) by which the inspection/test report must be received by the Purveyor.

6. Enforcement

When a customer fails to send in the inspection/test report within 15 days after the due date specified, and the Purveyor has not approved an extension to the due date, the Purveyor will take the following enforcement action:

- The Purveyor will send a second notice giving the customer an additional 15 days to send in the inspection/test report.
- If the customer has not sent in the inspection/test report within 10 days of the due date given in the second notice, the Purveyor will send a third notice, by certified mail, giving the customer an additional 15 days to send in the report. The notice will also inform the customer that failure to satisfactorily respond to this notice will result in water service shut-off.
- The Purveyor will send copies of the third notice to the owner and occupants of the premises (if different from the customer) and to the LAA.
- If the owner and/or occupants have not responded satisfactorily to the Purveyor within 10 days

of the due date specified in the third notice, the Purveyor will implement water service shut-off procedures.

Element 6: *Development and implementation of a backflow prevention assembly testing quality assurance/quality control program.*

1. List of BATs

The Purveyor will not maintain a pre-approved list of BAT's but will require pre-approval of any DOH-certified BATs that are to perform the following activities:

- Backflow preventer inspection for proper installation; and
- Backflow assembly testing.
- Cross-connection hazard evaluations;
- Backflow preventer inspection for proper application; and
- Backflow preventer inspection for proper installation.

2. Approval Qualifications

BATs and CCSs who wish to be included on the Purveyor's pre-approved list and/or provide testing in the Purveyor's service area must apply to the Purveyor and furnish the following information:

- Evidence of current DOH certification in good standing;
- Make and model of testing equipment (BAT listing only);
- Evidence of test equipment verification of accuracy and/or calibration within the past 12 months (BAT listing only);
- The Purveyor may consider the inclusion of the applicant on a current list of pre-approved CCSs or BATs issued by another public water system with more than 1,000 connections having similar quality assurance requirements as sufficient evidence of qualification to be approved by the Purveyor.

3. Quality Assurance

The Purveyor's CCS will review within 30 days of receipt the backflow preventer inspection/test report forms submitted by the customer.

The Purveyor's CCS will provide follow up on test reports that are deficient in any way.

The Purveyor's CCS will report incidences of fraud or gross incompetence on the part of any BAT or CCS to DOH Operator Certification program staff.

Element 7: *Development and implementation (when appropriate) of procedures for responding to backflow incidents.*

1. Backflow Incident Response Plan

The Purveyor's CCS will participate in developing a backflow incident response plan that will be part of the water system's emergency response program as required by WAC 246-290-415(2). The incident response plan will include, but will not be limited to:

- Notification of affected population;
- Notification and coordination with other agencies, such as DOH, the LAA, and the local health jurisdiction;
- Identification of the source of contamination;
- Isolation of the source of contamination and the affected area(s);
- Cleaning, flushing, and other measures to mitigate and correct the problem; and
- Apply corrective action to prevent future backflow occurrences.

2. Technical Resources

The Purveyor will use the most recently published edition of the manual, *Backflow Incident Investigation Procedures*, published by the PNWS-AWWA as a supplement to the Backflow Incident Response Plan (**Exhibit F**) for the **Town of South Prairie**, and the Backflow Incident Report Form.

Element 8: *Development and implementation of a cross-connection control public education program.*

1. Customer Education

The Purveyor will distribute with water bills or some other means, at regular intervals, public education brochures to system customers. For residential customers, such brochures will describe the cross-connection hazards in homes and the recommended assemblies or devices that should be installed by the homeowner to reduce the hazard to the public water system. The education program will emphasize the responsibility of the customer in preventing the contamination of the public water supply. The Purveyor's staff will produce the public education brochures or the Purveyor will obtain brochures from:

- PNWS-AWWA;
- Spokane Regional Cross-Connection Control Committee (SRC4);
- Western Washington Cross-Connection Prevention Professionals Group (The Group);
- USC FCCCHR;
- Other national backflow prevention associations, such as the American Backflow Prevention Association (ABPA); and/or
- Other water utilities.

The information distributed by the Purveyor will include, but not be limited to, the following subjects:

- Cross-connection hazards in general;
- Irrigation system hazards and corrective actions;
- Fire sprinkler cross-connection hazards;

- Importance of annual inspection and/or testing of backflow preventers; and
- Thermal expansion in hot water systems when backflow preventers are installed for premises isolation.

The Purveyor will distribute information brochures to all customers every two to three years, and to every new water service customer.

Element 9: *Development and maintenance of cross-connection control records.*

1. Types of Records and Data to be Maintained

The Purveyor will maintain records of the following types of information required by WAC 246-290-490:

- Service connections/customer premises information including:
  - Assessed degree of hazard; and
  - Required backflow preventer to protect the public water system.
- Backflow preventer inventory and information including:
  - Air gap (AG) location, installation and inspection dates, inspection results and person conducting inspection;
  - Backflow assembly location, assembly description (type, manufacturer, make, model, size, and serial number), installation, inspection and test dates, test results and data, and person performing test; and
  - Information on atmospheric vacuum breakers used for irrigation system applications, including manufacturer, make, model, size, dates of installation and inspections, and person performing inspections.

The Purveyor will maintain records on all assemblies that protect the public water system from contamination. At a minimum, the Purveyor will maintain records on all premises isolation assemblies required to protect the public water system. Where applicable, the above information will also be maintained for backflow preventers installed for in-premises protection that is relied upon by the Purveyor to protect the public water system.

2. Reports to be Prepared and Submitted to DOH

The Purveyor will prepare the following reports (**Exhibit G**) required by WAC 246-290-490 including:

- Cross-connection control program activities report for the calendar year, to be sent to DOH when requested;
- Cross-connection control program summary information, when required, or when there are significant policy changes;
- Backflow incident reports to DOH (and voluntarily to the PNWS-AWWA CCC Committee);

and

- Documentation when exceptions to mandatory premises isolation are granted.

At a minimum, the Purveyor's CCS will prepare and sign the exceptions reports.

The Purveyor's CCS will prepare and sign all CCC-related reports required by WAC 246-290-490.

Element 10: *Additional cross-connection control requirements for reclaimed water.*

At this time the **Town of South Prairie** does not receive or distribute reclaimed water. In the event that reclaimed water use is proposed within the PWS's service area, the Purveyor will make all cross-connection control requirements mandated by the Permitting Authority in accordance with Chapter 90.46 RCW part of the written CCC program plan and comply with such additional requirements.

E. Other Provisions

1. Coordination with Local Administrative Authority

Both WAC 246-290-490 and the Uniform Plumbing Code amended for Washington require coordination between the water purveyor and the Local Administrative Authority (LAA) in all matters pertaining to cross-connection control.

The Purveyor will provide a copy of this CCC program to **the South Prairie Building Department** or designee via a copy of the Purveyor's water system plan or in a separate document. The Purveyor will inform the LAA of any changes in policy or procedure that may impact the LAA.

The Purveyor will provide information to the LAA in a timely manner regarding any:

- Requirement imposed on a residential customer for the installation of a DCVA or an RPBA on the service, with a description of the cross-connection hazard identified;
- Upgrade of the premises isolation backflow preventer, i.e., from a DCVA to an RPBA;
- Action taken to discontinue water service to a customer; and
- Backflow incident known by the Purveyor to have contaminated the public water system or a customer's plumbing system.

2. *Written Agreement with Local Administrative Authority*

The Purveyor will pursue development of a written agreement with the Local Administrative Authority regarding the details of the coordination on CCC issues between the two parties. The agreement will include, but not be limited to, the following items:

- *The purpose of the written agreement;*
- *Identification of the parties and other interested agencies;*
- *Delineation of responsibilities;*

- *Procedures regarding new service connections;*
- *Procedures regarding existing and changes to existing services;*
- *Special policies and procedures, such as for fire protection and irrigation services;*
- *Procedures regarding water service shut-offs, backflow incidents, and other events;*
- *Communications between parties; and*
- *Other contingencies.*

3. ***Prohibition of Return of Used Water.*** *The PWS must prohibit the intentional return of used water to the Purveyor's distribution system per WAC 246-290-490 (2)(l).*

   Used water is defined as water that has left the control of the Purveyor. This includes water used for heating and cooling purposes and water that may flow back into the distribution system from customers with multiple connections.

   It is the policy of the **Town of South Prairie** water system to:

   - Prohibit the intentional return of used water to the distribution system by any customer served by the public water system; and
   - Require that all customers with multiple connections, where the hydraulics permit the potential return of used water, to install a backflow preventer (DCVA or RPBA) commensurate with the degree of hazard at each point of connection.

4. **Unapproved Auxiliary Supplies.** All water supplies other than those owned by the Purveyor are considered unapproved auxiliary supplies as defined in WAC 246-290-010. The Purveyor will require backflow protection for customers with auxiliary supplies on their premises as follows:

   - Per Table 9 of WAC 246-290-490, the Purveyor will require the installation of an RPBA for premises isolation at the service connection to any customer having an unapproved auxiliary supply on the premises that is interconnected with the Purveyor's water system.

5. **Tanker Trucks.** The Purveyor may allow tanker trucks to obtain water from the Purveyor's water system under the following conditions:

   - The tanker truck is equipped with an approved AG or an approved RPBA with a current satisfactory inspection or test report

6. **Temporary Water Connections.** The Purveyor will not supply water through temporary connections, such as those used for construction projects or main disinfection, except through a backflow preventer arrangement approved by the Purveyor. The applicant for the temporary connection shall document that the backflow preventer is a DOH-approved model and has passed an inspection and/or test within the past 12 months and/or upon relocation, whichever is more recent.

7. **Interties and Wholesale Water Customers.** The Purveyor will require that interties with other public water systems or wholesale customers (such as mobile home parks) be isolated at the point of delivery by:

- A minimum of a DCVA; and
- A minimum of an RPBA if the Purveyor considers the purchasing system or wholesale customer to pose a high-health hazard to the Purveyor's system."

The Purveyor may waive or reduce the level of protection at the intertie, if the purchasing public water system or wholesale customer:

- Is a Group A public water system **not** exempt from DOH regulation as per WAC 246-290-020(2);
- Has a CCC program that complies with WAC 246-290-490 and which has been approved by DOH; and
- Implements the CCC program at a level satisfactory to the Purveyor.

F. Relationship to Other Planning and Operations Program Requirements

The Purveyor will consider the requirements and consequences of the CCC program on the utility's planning and operations requirements. Such considerations include, but are not limited to ensuring:

- Promoting adequate communication between CCC program personnel and other utility staff;
- That adequate training is provided to staff to recognize potential cross-connection control problems;
- That cross-connection issues be considered in water quality investigations;
- That the design of the water distribution system makes adequate provisions for expected head losses incurred through the installation of experienced by backflow assemblies;
- That CCC program personnel be consulted in the design of water and wastewater treatment facilities and when proposals are made to receive or distribute reclaimed water;
- That operations under normal and abnormal conditions do not result in excessive pressure losses; and
- That adequate financial and administrative resources are available to carry out the CCC program.

Additional information to assist the Purveyor can be found at Exhibit H, Cross Connection Control Resource Information.

Exhibit A – Current and Proposed
Cross Connection Control Ordinance

Ordinance No. _____

Cross-Connection Control Policy

Finding of Fact

Whereas it is the responsibility of a water purveyor to provide water to the customer at the meter that meets Washington state water quality standards;

Whereas it is the water purveyor's responsibility to prevent the contamination of the public water system from the source of supply (i.e., to the customer's connection to the service pipe or meter);

Whereas it is a requirement of the Washington State Department of Health (DOH) for the Purveyor to establish a cross connection-control program satisfactory to DOH;

Whereas cross-connections within the customer's plumbing system pose a potential source for the contamination of the public water supply system;

Now be it resolved that the **Town of South Prairie**, hereinafter referred to as the Purveyor, establishes the following service policy to protect the purveyor-owned water system from the risk of contamination. For public health and safety, this policy shall apply equally to all new and existing customers.

Definitions

Unless otherwise defined, all terms used in this ordinance pertaining to cross-connection control have the same definitions as those contained in WAC 246-290-010 of the Washington State Drinking Water Regulations.

Prevention of Contamination

The customer's plumbing system, starting from the termination of the Purveyor's water service pipe, shall be considered a potential high-health hazard requiring the isolation of the customer's premises by a DOH-approved, customer-installed and maintained reduced-pressure principle backflow assembly (RPBA) or reduced-pressure detector assembly (RPDA). The RPBA or RPDA shall be located at the end of the Purveyor's water service pipe (i.e., immediately downstream of the meter). Water shall only be supplied to the customer through a DOH-approved, customer-installed and maintained RPBA or RPDA.

Notwithstanding the aforesaid, the Purveyor, upon an assessment of the risk of contamination posed by the customer's plumbing system and use of water, may allow:

- A single-family or duplex residential customer to connect directly to the water service pipe, i.e., without a purveyor-approved DCVA or RPBA.

- Any customer other than a single-family or duplex residential customer, as a minimum, to be supplied through a DOH-approved, customer-installed and maintained double-check valve assembly (DCVA) or double-check detector assembly (DCDA).
- *"Any customer, other than a single-family or duplex residential customer to connect directly to the water service pipe (i.e., without a purveyor-approved DCVA or RPBA), PROVIDED THAT the customer installs and maintains backflow preventers, at the point of hazard, that are commensurate with the degree of hazard assessed by the Purveyor."*

Conditions for Providing Service

Water service is provided based on the following terms and limitations:

1. The customer agrees to take all measures necessary to prevent the contamination of the plumbing system within his/her premises and the Purveyor's distribution system that may occur from backflow through a cross connection. These measures shall include the prevention of backflow under any backpressure or backsiphonage condition, including the disruption of the water supply from the Purveyor's system that may occur during routine system maintenance or during emergency conditions, such as a water main break.

2. The customer agrees to install, operate, and maintain at all times his plumbing system in compliance with the current edition of the Uniform Plumbing Code having jurisdiction as it pertains to the prevention of contamination and protection from thermal expansion, due to a closed system that could occur with the present or future installation of backflow preventers on the customer's service and/or at plumbing fixtures.

3. For cross-connection control or other public health-related surveys, the customer agrees to provide for the Purveyor's employees or agents free access to all parts of the premises during reasonable working hours of the day for routine surveys and at all times during emergencies.

   Where agreement for free access for the Purveyor's survey is denied, the Purveyor may supply water service provided that premises isolation is provided through a DOH- approved reduced-pressure principle backflow assembly (RPBA).

4. The customer agrees to install all backflow prevention assemblies requested by the Purveyor and to maintain those assemblies in good working order. The assemblies shall be of a type, size, and make approved by DOH and acceptable to the Purveyor. The assemblies shall be installed in accordance with the recommendations given in the most recently published edition of the *Cross Connection Control Manual, Accepted Procedures and Practice,* published by the Pacific Northwest Section, American Water Works Association, or latest edition thereof.

5. The customer agrees to:

   (a) Have all assemblies (e.g., RPBAs and/or DCVAs) that the Purveyor relies upon to protect the public water distribution system tested upon installation, annually thereafter and/or more frequently if requested by the Purveyor, after repair, and after relocation;
   (b) Have all testing done by a purveyor-approved and currently DOH-certified Backflow Assembly Tester (BAT);
   (c) Have the RPBA or DCVA tested in accordance with DOH-approved test procedures; and
   (d) Submit to the Purveyor the results of the test(s) on Purveyor-supplied test report forms within the time period specified by the Purveyor.

6. The customer agrees to bear all costs for the aforementioned installation, testing, repair, maintenance and replacement of the RPBA, RPDA, DCVA or DCDA installed to protect the Purveyor's distribution system.

7. At the time of application for service, if required by the Purveyor, the customer agrees to submit to the Purveyor plumbing plans and/or a cross-connection control survey of the premises conducted by a purveyor-approved and DOH-certified Cross-Connection Control Specialist (CCS).

   The cross-connection control survey shall assess the cross-connection hazards and list the backflow preventers provided within the premises. The results of the survey shall be submitted prior to the Purveyor turning on water service to a new customer. The cost of the survey shall be borne by the customer.

8. For classes of customers other than single-family residential, when required by the Purveyor, the customer agrees to periodically submit a cross-connection control re-survey of the premises by a DOH-certified CCS acceptable to the Purveyor. The Purveyor may require the re-survey to be performed in response to changes in the customer's plumbing or water use, or performed periodically (annually or less frequently) where the Purveyor considers the customer's plumbing system to be complex or subject to frequent changes in water use. The cost of the re-survey shall be borne by the customer.

9. Within 30 days of a request by the Purveyor, a residential customer shall agree to complete and submit to the Purveyor a "Water Use Questionnaire" for the purpose of surveying the health hazard posed by the customer's plumbing system on the Purveyor's distribution system. Further, the residential customer agrees to provide within 30 days of a request by the Purveyor a cross-connection control survey of the premises by a DOH-certified CCS acceptable to the Purveyor.

10. The customer agrees to obtain the prior approval from the Purveyor for all changes in water use, and alterations and additions to the plumbing system, and shall comply with any additional requirements imposed by the Purveyor for cross-connection

control.

11. The customer agrees to immediately notify the Purveyor and the local health jurisdiction of any backflow incident occurring within the customer's premises (i.e., entry of any contaminant/pollutant into the drinking water) and shall cooperate fully with the Purveyor to determine the reason for the backflow incident.

12. The customer acknowledges the right of the Purveyor to discontinue the water supply within 72 hours of giving notice to the customer, or a lesser period of time if required to protect public health, if the customer fails to cooperate with the Purveyor in the survey of premises, in the installation, maintenance, repair, inspection, or testing of backflow prevention assemblies or air gaps required by the Purveyor, or in the Purveyor's effort to contain a contaminant or pollutant that is detected in the customer's system.

    Without limiting the generality of the foregoing, in lieu of discontinuing water service, the Purveyor may install an RPBA on the service pipe to provide premises isolation, and recover all costs for the installation and subsequent maintenance and repair of the assembly, appurtenances, and enclosure from the customer as fees and charges for water. The failure of the customer to pay these fees and charges may result in termination of water service in accordance with the Purveyor's water billing policies.

13. *"The Purveyor will require premises isolation for a customer that is of the high-hazard type or category requiring "Mandatory Premises Isolation" established by the DOH regulations (Table 9, WAC 246-290-490)."*

14. Where the Purveyor imposes mandatory premises isolation in compliance with DOH regulations, or agrees to the customer's voluntary premises isolation through the installation of a RPBA immediately downstream of the Purveyor's water meter, the customer acknowledges his obligation to comply with the other cross-connection control regulations having jurisdiction (i.e., Uniform Plumbing Code). Although the Purveyor's requirements for installation, testing, and repair of backflow assemblies may be limited to the RPBAs used for premises isolation, the customer agrees to the other terms herein as a condition of allowing a direct connection to the Purveyor's service pipe.

15. The customer agrees to indemnify and hold harmless the Purveyor for all contamination of the customer's plumbing system or the Purveyor's distribution system that results from an unprotected or inadequately protected cross connection within the customer's premises. This indemnification shall pertain to all backflow conditions that may arise from the Purveyor's suspension of water supply or reduction of water pressure, recognizing that the air gap separation otherwise required would require the customer to provide adequate facilities to collect, store, and pump water for his/her premises.

16. The customer agrees that, in the event legal action is required and commenced between the Purveyor and the customer to enforce the terms and conditions herein, the substantially prevailing party shall be entitled to reimbursement of all incurred costs and expenses including, but not limited to, reasonable attorney's fees as determined by the Court.

17. The customer acknowledges that the Purveyor's survey of a customer's premises is for the sole purpose of establishing the Purveyor's minimum requirements for the protection of the public water supply system, commensurate with the Purveyor's assessment of the degree of hazard.

    It shall not be assumed by the customer or any regulatory agency that the Purveyor's survey, requirements for the installation of backflow prevention assemblies, lack of requirements for the installation of backflow prevention assemblies, or other actions by the Purveyor's personnel constitute an approval of the customer's plumbing system or an assurance to the customer of the absence of cross connections therein.

18. The customer acknowledges the right of the Purveyor, in keeping with changes to Washington State regulations, industry standards, or the Purveyor's risk management policies, to impose retroactive requirements for additional cross-connection control measures.

The Purveyor will record the customer's agreement to the above terms for service on an "Application for Water Service," "Application for Change of Water Service," or other such form prepared by the Purveyor and signed by the customer.

Implementation of the Cross-Connection Control Policy

The Purveyor will engage the services of a DOH-certified CCS to develop, implement and be in responsible charge of the **Town of South Prairie** Water System's cross-connection control program.

The Purveyor, under the direction of the aforementioned CCS, will prepare a written cross-connection control program plan to implement the requirements of this ordinance. The written program shall be consistent with this ordinance and shall comply with the requirements of Chapter 246-290 WAC (Group A Drinking Water Regulations).

The Purveyor will use the most recently published editions of the following publications as references and technical aids:

1. *Cross-Connection Control Manual, Accepted Procedures and Practice,* published by the Pacific Northwest Section, American Water Works Association, or latest edition thereof.

2. *Manual of Cross-Connection Control,* published by the Foundation for Cross-

Connection Control and Hydraulic Research, University of Southern California, or latest edition thereof.

3. *Cross-Connection Control Guidance Manual for Small Water Systems,* published by the DOH Office of Drinking Water.

The Purveyor will incorporate the written program plan into the Water System Plan and will submit the plan to DOH for approval when requested.

The Purveyor, in consultation with the aforementioned CCS, shall have the authority to make reasonable decisions related to cross connections in cases and situations not provided for in the ordinance or written program.

If any provision in this ordinance, or in the written cross-connection control program is found to be less stringent than or inconsistent with the Drinking Water Regulations (Chapter 246-290 WAC), or other Washington state statutes or rules, the more stringent state statute, rule, or regulation shall apply.

Ordinance Passed: _____

Effective Date: _____

Signatures: _____

Exhibit B – Hazard Evaluation

Cross-Connection Control Hazard Survey Report

Non-Residential Customers

Survey date: _____

Customer Information

Premises name: _____ Telephone: _____

Address: _____ ZIP: _____

Contact person: _____ Title: _____

Description of premises: _____

Description of water use: _____

Water Service and Backflow Prevention Assembly (BPA) Size/Type

Service Type	Service Size	Meter Size	BPA Size	BPA Type
Domestic				
Fire				
Irrigation				
Other				

Cross-Connection Control Specialist (CCS) Information

Name: _____ Telephone: _____

Company name: _____

Address: _____ ZIP: _____

DOH CCS Certification #: _____ Year certified: _____

Survey Results

Note: The CCS's survey shall include an inspection of the premises isolation assembly to verify that it is installed correctly and is a currently listed DOH-approved assembly.

Item	Location & Description of Cross Connection	Backflow Prevention Provided/Required

Attach additional sheets if needed.

Surveyor's Comments

Surveyor's Recommendations

I certify that this cross-connection hazard survey accurately reflects the overall risk posed by the customer's plumbing system to the Purveyor's distribution system. Based on the above survey, I certify that:

1. I found the following type(s) of premises isolation backflow preventer(s):

   Air Gap ____ RPBA/RPDA ____ DCVA/DCDA _____ None ____.

2. The existing backflow preventer(s) is/are properly installed.

   Yes ____ No ____ N/A ____.

3. The existing backflow preventer(s) is/are commensurate with the degree of hazard:.

   Yes ____ No ____ N/A ____.

4. Since no backflow preventer was installed for premises isolation, the premises owner should install a premises isolation backflow preventer of the following type:

   Air Gap ____ RPBA/RPDA ____ DCVA/DCDA ____ N/A ____.

5. The premises owner should replace the existing premises isolation backflow preventer(s) with the following:

   Air Gap ____ RPBA/RPDA ____ DCVA/DCDA ____ N/A ____.

The completed survey report shall be first signed by the CCS conducting the survey, and then counter-signed by the owner of the premises or the owner's authorized agent.

CCS Signature: _____ **Date:** _____

As the Owner of the Premises (or Owner's authorized agent), I certify that I have received a copy of this completed Cross-Connection Control Hazard Survey Report.

Signature: _____ **Date:** _____

Note: Customers and regulatory agencies should be aware that the Purveyor's requirement for this cross-connection hazard survey and/or for the installation of a specific backflow prevention assembly on a service pipe ***do not*** constitute an approval of the customer's plumbing system, compliance of the customer's plumbing system with the Uniform Plumbing Code or an assurance of the absence of cross connections in the customer's plumbing system.

Exhibit C – Water Use Questionairre

Water Use Questionnaire

Residential Customers

Customer Account Number (optional)
Customer Name
Address Line 1
Address Line 2

Please indicate whether the special plumbing or activities listed below apply to your premises:

Yes	No	Plumbing or Activity Present on Customer's Premises*
		Underground sprinkler system
		Water treatment system (e.g., water softener)
		Solar heating system
		Residential fire sprinkler system
		Other water supply (whether or not connected to plumbing system)
		Sewage pumping facilities or grey water system
		Boat moorage with water supply
		Hobby farm
		Animal watering troughs
		Swimming pool or spa
		Greenhouse
		Decorative pond
		Photo lab or dark room
		Home-based business. If Yes, list type/describe (e.g., beauty salon, machine shop, etc.): _____ _____ _____

* Based on their knowledge of residential connections served, public water systems may "customize" this list by adding or deleting plumbing categories or activities

Completed by (print name): _____ Date: _____

Resident's Signature: _____

Exhibit D – Report Form for Backflow Assembly Testing

Backflow Prevention Assembly Test/Air Gap Inspection Report

PWS ID 82300 R WATER SYSTEM NAME THE TOWN OF SOUTH PRAIRIE COUNTY PIERCE

ACCOUNT #_____ BACKFLOW PREVENTER ID _____ TEST REPORT ID _____

NAME OF PREMISES _____ Commercial ☐ Residential ☐

SERVICE ADDRESS _____ CITY _____ ZIP _____

CONTACT PERSON _____ PHONE ( ) _____ FAX ( ) _____

LOCATION OF ASSEMBLY _____

DOWNSTREAM PROCESS _____ DCVA ☐ RPBA ☐ PVBA ☐ OTHER _____

NEW INSTALL☐ EXISTING☐ REPLACEMENT☐ OLD SER. # _____ PROPER INSTALLATION? YES ☐ NO ☐

MAKE OF ASSEMBLY_____ MODEL _____ SERIAL NO. _____ SIZE _____

INITIAL TEST	DCVA / RPBA CHECK VALVE NO.1	DCVA / RPBA CHECK VALVE NO.2	RPBA	PVBA/SVBA AIR INLET
PASSED ☐ FAILED ☐	LEAKED ☐ _____ PSID	LEAKED ☐ _____ PSID	OPENED AT ____ PSID #1 CHECK _____ PSID AIR GAP OK? _____	OPENED AT _____ PSID DID NOT OPEN ☐
NEW PARTS AND REPAIRS	CLEAN REPLACE PART ☐ ☐_____ ☐ ☐_____ ☐ ☐_____ ☐ ☐_____	CLEAN REPLACE PART ☐ ☐_____ ☐ ☐_____ ☐ ☐_____ ☐ ☐_____	CLEAN REPLACE PART ☐ ☐_____ ☐ ☐_____ ☐ ☐_____ ☐ ☐_____	CHECK VALVE HELD AT _____ PSID LEAKED ☐ _____ CLEANED ☐ REPAIRED ☐
TEST AFTER REPAIRS PASSED ☐ FAILED ☐	LEAKED ☐ _____ PSID	LEAKED ☐ _____ PSID	OPENED AT ____ PSID #1 CHECK _____ PSID	AIR INLET _____ PSID CHK VALVE _____ PSID

AIR GAP INSPECTION: Required minimum air gap separation provided? Yes ☐ No☐ Detector Meter Reading _____

REMARKS: _____ LINE PRESSURE _____ PSI

_____ CONFINED SPACE? _____

I certify that this report is accurate, and I have used WAC 246-290-490 approved test methods and test equipment.

TESTERS SIGNATURE: _____ CERT. NO. _____ DATE ____/____/____

TESTERS NAME PRINTED: _____ TESTERS PHONE # ( ) _____

REPAIRED BY: _____ DATE ___/____/____

FINAL TEST BY:_____ CERT. NO. _____ DATE ____/____/____

CALIB/VERIF DATE __ /__ /__ GAUGE # _____ MODEL_____ SERVICE RESTORED? YES ☐ NO ☐

(SPECIALTY) PLUMBER CERT. NO. _____ CONTRACTOR LICENSE NO. _____

Backflow Prevention Assembly Test/Air Gap Inspection Report

File Record

PWS Assigned Inventory Number: _____

Name of Premises:
Premises Address:
Location of Assembly:
Type of Hazard Isolated:
Assembly Type: **Assembly Size (inches):**
Make: **Model:** **Serial No.:**
Date Installed: **DOH-Approved?** **Y** **N**

Date Test Notice Issued	Date of Test Report	Name of Certified Tester (BAT)	BAT Certification Number	Results Satisfactory? Y/N[+]	Repairs Made? Y/N*

[+]Attach all ***Backflow Assembly Test/AG Inspection Report*** forms.

*Include retest after repairs as a separate line.

Comments/Notes (attach additional sheets if necessary):

_____

_____

Exhibit E – NOT USED

Exhibit E – NOT USED

Exhibit F – Backflow Incident Response Plan and Backflow Incident Report Forms

Backflow Incident Response Plan for a Small Water System

A. General

This Backflow Incident Response Plan should be considered a supplement to the Purveyor's Emergency Plan.

Purveyors should immediately begin a backflow incident investigation whenever the initial evaluation of a water quality complaint indicates that:

1. A backflow incident has occurred (i.e., drinking water supply has been contaminated) or may have occurred; or

2. The complaint can't be explained as a "normal" aesthetic problem.

Also, whenever a water main break (or power outage for pumped systems) causes a widespread loss of water pressure in the system (creating backsiphonage conditions), purveyors should initiate a check of distribution system water quality as a precursor to the need for a backflow incident investigation.

WAC 246-290-490 requires purveyors to notify DOH, the Local Administrative Authority and local health jurisdiction as soon as possible, but no later than the end of the next business day when a backflow incident contaminates the potable water supply (in the distribution system and/or in the customer's plumbing system). Purveyors should include a list of emergency contact telephone numbers at the beginning of the water system's O & M Manual, so that the information is readily available when an incident occurs.

A backflow incident investigation is often a team effort. The investigation should be made by or initially led by the DOH-certified Cross-Connection Control Specialist employed by the Purveyor. The investigation team may include state health (regional) staff, local health personnel and/or local plumbing inspectors.

Purveyors can get more detailed guidance on how to respond to a backflow incident from the manual, *Backflow Incident Investigation Procedures*, published by the Pacific Northwest Section, American Water Works Association (PNWS-AWWA). Contact information for the PNWS-AWWA is provided in Exhibit H of this plan.

B. Short List of Tasks

Small water system purveyors can use the following short list of tasks as initial guidance for dealing with backflow incidents. Purveyors should consult the most recently published edition of the PNWS-AWWA *Backflow Incident Investigation Procedures Manual* referenced above for greater detail as soon as possible after learning of a possible or confirmed backflow incident. Note: the water system is referred to as the Purveyor in the short task list.

1. Customer Notification

a. As soon as possible, the Purveyor will notify customers not to consume or use water.

b. The Purveyor will start the notification with the customers nearest in location to the assumed source of contamination (usually the customer(s) making the water quality complaint).

c. The Purveyor will inform the customer about the reason for the backflow incident investigation and the Purveyor's efforts to restore water quality as soon as possible. The Purveyor will let the customer know that customers will be informed when they may use water, the need to boil water used for consumption until a satisfactory bacteriological test result is obtained from the lab, etc.

d. Where a customer cannot be contacted immediately, the Purveyor will place a written notice on the front door handle, and a follow-up visit will be made to confirm that the customer received notice about the possible contamination of the water supply.

e. When dealing with a backflow incident, the Purveyor will let customers know that it could take several days to identify the source and type of contaminant(s) and to clean and disinfect the distribution system.

2. Identification of Source of Contamination

a. The Purveyor will give consideration to the distribution system as a potential source of the contaminant (e.g., air valve inlet below ground).

b. The Purveyor will not start flushing the distribution system until the source of contamination is identified (flushing may aggravate the backflow situation, and will likely remove the contaminant before a water sample can be collected to fully identify the contaminant).

c. The Purveyor will conduct a house-to-house survey to search for the source of contamination and the extent that the contaminant has spread through the distribution system. Note: a check of water meters may show a return of water (meter running backward) to the distribution system.

d. When the cross connection responsible for the system contamination is located, the Purveyor should discontinue water service to that customer, until the customer completes the corrective action ordered by the Purveyor.

3. Isolation of Contaminated Portion of System

a. The Purveyor will isolate the portions of the system that are suspected of being contaminated by closing isolating valves; leave one valve open to ensure that positive water pressure is maintained throughout the isolated system.

b. The Purveyor will be sure to notify all affected customers in the isolated area first and then notify other customers served by the system.

4. **Public Health Impacts**

a. The Purveyor will seek immediate input from and work with state and local health agencies to accurately communicate and properly mitigate potential health effects resulting from the backflow incident.

b. If appropriate, the Purveyor will refer customers that may have consumed the contaminant or had their household (or commercial) plumbing systems contaminated to public health personnel and Local Administrative Authorities (plumbing inspectors).

5. **Cleaning/Disinfecting the Distribution System**

a. The Purveyor will develop and implement a program for cleaning the contaminated distribution system consistent with the contaminant(s) identified.

b. Where both chemical and bacteriological contamination has occurred, the Purveyor will disinfect the system after the removal of the chemical contaminant.

c. Where any bacteriological contamination is suspected, the Purveyor will provide field disinfection.

C. Additional Information on Cleaning/Disinfecting the Distribution System

Most chemical or physical contaminants can be flushed from the water distribution system or customer's plumbing system with adequate flushing velocity. However, this may not be the case in systems where scale and corrosion deposits (e.g., tuberculation on old cast iron mains) provide a restriction to obtaining adequate flushing velocity, or where chemical deposits or bacteriological slimes (biofilm) are present (on which the chemical contaminant may adhere).

To remove a chemical or physical contaminant from the distribution system, purveyors may need to:

1. Physically clean the affected area using foam swabs (pigs); and/or

2. Alter the form of the chemical contaminant (e.g., through oxidation using chlorination or addition of detergents).

When adding any chemical (including chlorine) to remove a contaminant from the distribution system, it is essential that the Purveyor fully understand the chemistry of the contaminant. **Adding the wrong chemical could make the contaminant more toxic to customers and/or more difficult to remove from the distribution system.**

To disinfect water mains using the "slug" or "continuous flow" method, a field unit should be used for chlorine injection, such as a chemical feed - metering or proportioning pump for sodium hypochlorite.

Purveyors should contact the appropriate DOH regional office to discuss proposed approaches to contaminant removal and disinfection prior to taking corrective action.

Backflow Incident Report Form

Many backflow incidents occur that are not reported. This is usually because:

- The incidents are of short duration;
- The incidents are not detected;
- Neither the customer nor the Purveyor realizes that a contamination was caused by a backflow incident;
- The customer is not aware the incident should be reported;
- Customers do not know who to report the incidents to; and/or
- Liability concerns on the part of either the customer or purveyor or both.

DOH and the PNWS-AWWA Cross-Connection Control Committee are making an effort to bring backflow incidents to the attention of water purveyors, Local Administrative Authorities, legislators, and the general public. If you have any knowledge of a backflow incident, please fill out a copy of the Backflow Incident Report Form and return it to DOH and the PNWS-AWWA CCC committee.

Backflow Incident Report Form

Reporting Agency: _____ Report Date: _____

Reported By: _____ Title: _____

Mail Address: _____ City: _____

State: _____ Zip Code: _____ Telephone: _____

Date of Incident: _____ Time of Occurrence: _____

General Location (Street, etc.): _____

Backflow Originated From:

Name of Premises: _____

Street Address: _____ City: _____

Contact Person: _____ Telephone: _____

Type of Business: _____

Description of Contaminants:
(Attach Chemical Analysis or MSDS if available)

_____

_____

Distribution of Contaminants:

Contained within customer's premises: Yes: _____ No: _____

Number of persons affected: _____

Effect of Contamination:

Illness Reported: _____

Physical irritation reported: _____

Cross-Connection Source of Contaminant (boiler, chemical pump, irrigation system, etc.):

_____

_____

Cause of Backflow (main break, fire flow, etc.):

_____

_____

Corrective Action Taken to Restore Water Quality (main flushing, disinfection, etc.):

_____

_____

Corrective Action Ordered to Eliminate or Protect from Cross Connection (type of backflow preventer, location, etc.)

_____

_____

Previous Cross-Connection Survey of Premises:

Date: _____ By: _____

Types of Backflow Preventer Isolating Premises:

RPBA: _____ RPDA: _____ DCVA: _____ DCDA: _____ PVBA: _____ SVBA: _____

AVB: _____ Air Gap: _____ None: _____ Other Type: _____

Date of Latest Test of Assembly: _____

Notification of Washington State Health Department:

Date: _____ Time: _____ Person Notified: _____

Attach sheets with additional information, sketches, and/or media information, and mail to:

PNWS-AWWA CCC Committee
c/o George Bratton
1252 S. Farragut Drive
Coupeville, WA 98239

Exhibit G – DOH Required Reports

Annual Summary Report Forms

This exhibit contains sample cross-connection control (CCC) Annual Summary Report forms. Per WAC 246-290-490, purveyors are required to complete these forms to report information on the status of a public water system's CCC program and implementation activities. When the Department of Health sends out hard copies or electronic copies of the forms, they are color-coded. Purveyors often refer to the forms by color instead of name. The respective color of each form is noted below.

The three forms are:

1. **Cross-Connection Control Activities Annual Summary Report**

   Purveyors use this form to report (for a calendar year) their CCC implementation activities, such as status of high-hazard premises protection, backflow preventer inventory/testing information, and hazard evaluations. This is the "blue form."

2. **Cross-Connection Control Program Summary Report**

   This form is use to report the type, policies, and provisions of a public water system's CCC written program. This is the "cream form."

3. **Exceptions to High Health Hazard Premises Isolation Requirements**

   Purveyors use this form to document and report exceptions to mandatory premises isolation requirements allowed under WAC 246-290-490(4)(b)(iii). Only purveyors granting exceptions need to complete and submit this form. This is the "green form."

Updated forms may be available. Contact the DOH Office of Drinking Water for more information (see **Exhibit H**).

Public Water System Cross-Connection Control Activities
Annual Summary Report for Year 2_____

Part 1: Public Water System (PWS) and Cross-Connection Control Specialist (CCS) Information

PWS ID:	PWS Name:	County:
Provide name and Certification Number of CCS who develops and implements your CCC program.		
CCS Name (Last, First & MI): ,		CCS Phone: (___) ___-____
CCS Cert. No.:	BAT Cert. No. (if applicable):	
CCS is (check one): PWS owner or employee ☐	On contract to PWS ☐	Volunteer or other ☐

Part 2: Status of Cross-Connection Control (CCC) Program

PWS has: A written CCC program Y ☐ N ☐ CCC implementation activities Y ☐ N ☐

(Written program may be a separate document or part of water system plan or small water system management program.)

Please provide information regarding PWS's specific CCC Program Elements. Check one box in each column.

Program Element Number	Description of Element [See WAC 246-290-490(3)]	This Program Element is Currently:	
		Included in Written Program	Being Implemented or is Completed
1	Legal Authority Established	Y ☐ N ☐	Y ☐ N ☐
2	Hazard Evaluation Procedures and Schedules	Y ☐ N ☐	Y ☐ N ☐
3	CCC Procedures and Schedules	Y ☐ N ☐	Y ☐ N ☐
4	Certified CCS Provided	Y ☐ N ☐	Y ☐ N ☐
5	Backflow Preventer Inspection and Testing	Y ☐ N ☐	Y ☐ N ☐
6	Testing Quality Control Assurance Program	Y ☐ N ☐	Y ☐ N ☐
7	Backflow Incident Response Procedures	Y ☐ N ☐	Y ☐ N ☐
8	Public Education Program	Y ☐ N ☐	Y ☐ N ☐
9	CCC Records	Y ☐ N ☐	Y ☐ N ☐
10	Reclaimed Water Permit	Y ☐ N ☐ N/A ☐	Y ☐ N ☐ N/A ☐

Part 3A: System Characteristics at End of 2_____

Indicate the number of connections of each type that the PWS serves (whether or not they are protected by backflow preventers). **Estimate if necessary.**

Type of Service Connection	Number
Residential (as defined by PWS)	
All Other (include dedicated fire sprinkler and irrigation lines and PWS-owned facilities such as water and wastewater treatment plants and pumping stations, parks, piers and docks)	
Total Number of Connections	

Part 3B: Cross-Connection Control for High-Hazard Premises or Systems Served by the PWS

If PWS does not serve any high-hazard premises or systems, check here ☐ and go to Part 4.

- Complete all cells. Count only premises PWS serves water to. Enter zero (0) in cells if PWS does not serve such premises.
- Estimate number of connections served if necessary (OK to use phone book).
- Hazard evaluations do not need to be done to complete this table.

Type of High-Hazard Premises or Systems [WAC 246-290-490(4)(b)]	Number of Connections at end of 2____			
	Being Served Water by PWS[1]	With Premises Isolation by AG/RP[2]	With Premises Isolation AG/RP Inspected or Tested[3]	Granted Exception from Mandatory Premises Isolation
Agricultural (farms and dairies)				
Beverage bottling plants (including breweries)				
Car washes				
Chemical plants				
Commercial laundries and dry cleaners				
Both reclaimed water and potable water provided				
Film processing facilities				
Dedicated fire protection systems with chemical addition or using unapproved auxiliary supplies				
Food processing plants (including canneries, slaughter houses, rendering plants)				
Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers				
Separate irrigation systems using purveyor's water supply and chemical addition[4]				
Laboratories				
Metal plating industries				
Mortuaries				
Petroleum processing or storage plants				
Piers and docks				
Radioactive material processing plants or nuclear reactors				
Survey access denied or restricted				
Wastewater lift stations and pumping stations				
Wastewater treatment plants				
Unapproved auxiliary water supply interconnected with potable water supply				
Other high-hazard premises (list)[5]				
Totals				

[1] Count multiple connections or parallel installations as separate connections.

[2] Count only those connections with AG or RP installed for premises isolation. Do not include connections with only in-premises protection, or those with DCVA/DCDAs installed for premises isolation.

[3] Count only those connections ***whose premises isolation preventers*** were tested or inspected during year 2____

[4] For example, parks, playgrounds, golf courses, cemeteries, estates, etc.

[5] Premises with hazardous materials or processes (requiring isolation by AG or RP), such as: aircraft and automotive manufacturers, pulp and paper mills, metal manufacturers, military bases, and wholesale customers that pose a high hazard to the PWS. May be grouped together in categories, e.g.: other manufacturing, or other commercial. ***If needed, attach additional sheet giving same information as requested by table.***

Part 4A: Backflow Preventer Inventory and Testing Data During Year 2____

- Complete all cells. Enter zero (0) if there are no backflow preventers in the category.
- **Count only the backflow preventers that the PWS relies upon for protection of the distribution system.** ***If your records do not distinguish between premises isolation and in-premises protection preventers, enter all data in Premises Isolation section and check the box.***
- Count AVBs on irrigation systems only. **If you do not track AVBs, check box above the "AVB" column.**
- Count multiple tests or failures for any particular backflow preventers as one test or failure for that backflow preventer.
- Multiple Service or Parallel Connections: count each assembly separately.
- Assemblies on Dedicated Fire or Irrigation Lines: count as Premises Isolation Assemblies.

If PWS does not track AVBs check here ☐

	Backflow Preventer Category and Testing/ Inspection Information	Air Gap	RPBA	RPDA	DCVA	DCDA	PVBA	SVBA	AVB
Premises Isolation, including preventers isolating PWS-owned facilities. ***If In-Premises Protection preventers are also included, check here*** ☐.									
Rows 1 – 3 pertain ONLY to Premises Isolation preventers in service at beginning of 2____									
1	In service at beginning of 2____								
2	Inspected and/or tested in 2____[1]								
3	Failed Inspection or test in 2____								
Rows 4 – 6 pertain ONLY to NEW Premises Isolation preventers installed during 2____									
4	New preventers installed in 2____[2]								
5	Inspected and/or Tested in 2____[1]								
6	Failed inspection or test in 2____								
Premises Isolation Total at end of 2____[3]									
Installed for In-Premises Protection (Fixture Protection or Area Isolation), including preventers within PWS-owned facilities.									
Rows 7 – 9 pertain ONLY to In-Premises Protection preventers in service at beginning of 2____									
7	In service at beginning of 2____								
8	Inspected and/or Tested in 2____[1]								
9	Failed Inspection or Test in 2____								
Rows 10 – 12 pertain ONLY to NEW In-Premises Protection preventers installed during 2____									
10	New preventers installed in 2____[2]								
11	Inspected and/or Tested in 2____[1]								
12	Failed inspection or test in 2____								
In-Premises Protection Total at end of 2____[3]									
Grand Total at end of 2003									

[1] Initial and/or routine annual inspection (for proper installation and approval status) and/or test (for testable assemblies only using DOH/USC test procedures).

[2] Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced preventers those in service at beginning of 2____. Replacement preventers may be of a different type than the original.

[3] Total installed at end of 2____ can't be more than preventers in service at beginning of 2____ plus those installed during 2____. May be less due to changes in preventer type and preventers taken out of service during 2____.

Part 4B: Other Implementation Activities in 2003

Complete all cells. Enter zero (0) if not applicable.

Activity or Condition	Number
New services connections evaluated for cross-connection hazards to PWS in 2____.	
New services connections requiring backflow protection to protect PWS.[1]	
Existing services connections evaluated for cross-connection hazards to PWS in 2____.	
Existing services connections requiring backflow protection to protect PWS.[1,2]	
Exceptions granted to high-hazard premises per WAC 246-290-490(4)(b) in 2____.[3]	
CCC Corrective enforcement actions taken by PWS during 2003.[4]	

[1] Include services where either premises isolation or in-premises preventers were required to protect the PWS.

[2] Include existing services that need new, additional or higher level backflow prevention.

[3] A DOH Exception to Hazard Premises Form *must* be attached for each exception granted during the year.

[4] "Enforcement actions" mean actions taken by the PWS (such as water shut-off, PWS installation of backflow preventer) when the customer fails to comply with PWS's CCC requirements.

Part 5: Backflow Incidents, Risk Factors and Indicators during 2____

	Backflow Incidents, Risk Factors and Indicators during 2____	*Number* (Enter 0 if none)	Check if Data Not Available
Backflow Incidents during 2____			
1	Backflow incidents that contaminated the PWS.[5]		☐
2	Backflow incidents that contaminated the customer's drinking water system *only*.[5]		☐
Risk Factors for Backflow during 2____			
3	Distribution main breaks per 100 miles of pipe.		☐
4	Low pressure events (<20 psi in PWS distribution system).		☐
5	Water outage events.		☐
Indicators of Possible Backflow during 2____			
6	Total health-related complaints received by PWS.[6]		☐
7	Received during BWA or PN events.[7]		☐
8	Received during low pressure or water outage events.		☐
9	Total aesthetic complaints (color, taste, odor, air in lines, etc.).		☐
10	Received during BWA or PN events.[7]		☐
11	Received during low pressure or water outage events.		☐

[5] Complete and submit a Backflow Incident Report form for each known backflow incident.

[6] Such as stomach ache, headache, vomiting, diarrhea, skin rashes, etc.

[7] "**BWA**" means ***Boil Water Advisory*** and "**PN**" means ***Public Notification*** for water quality reasons.

Part 6: Comments and Clarifications

Enter comments or clarifications to any of the information included in this report.
Note for on-screen completion: Comments will not "wordwrap" from one line to the next. Press <Enter> to continue on new line. Maximum length of each comment is 255 characters, including spaces.

Part No.	Comment

Part 7: Report Completion Information

Enter dates in MM/DD/YYYY format.

I certify that the information provided in this CCC Activities Report is complete and accurate to the best of my knowledge.		
CCC Program Mgr. Name (Print)[1]:		Title:
Signature:		Date:
Phone: (___) ___-____	E-mail: _____@_____	
I have reviewed this report and certify that the information provided is complete and accurate to the best of my knowledge.		
PWS Mgr./Owner Name (Print)[2]:		Title:
Signature:	Op. Cert. No.:	Date:

[1] CCC Program Manager is generally the CCS who is responsible for development and implementation of the PWS's CCC Program.
[2] The person that the CCC Program Manager reports to or other manager having direct responsibility and or oversight of the CCC program.

Cross-Connection Control Program Summary
For 2_____

Describe the characteristics of the PWS's CCC Program at the end of the 2_____ reporting year.

Part 1: Public Water System (PWS) Identification

PWS ID:	PWS Name:	County:

Part 2: Cross-Connection Control (CCC) Program Characteristics

A. Type of Program Currently Implemented

Type of Program	Check One
Premises isolation only.	☐
Combination program: reliance on both premises isolation and in-premises protection.	☐
In transition from a combination program to a premises isolation only program.	☐

B. Coordination with Local Administrative Authority (LAA) on Cross-Connection Issues

Indicate the status of coordination with LAAs in your service area. The LAA is the entity that enforces the Uniform Plumbing Code. ***Check one box in each of last 3 columns for each LAA in your service area.***

LAA No.	Name of LAA[1] (e.g., the City or County Building Department)	PWS currently:		If not coordinating, did LAA Decline to Coordinate?
		Coordinates with LAA	Has Written Agreement with LAA	
1		Y☐ N☐	Y☐ N☐	Y☐ N☐
2		Y☐ N☐	Y☐ N☐	Y☐ N☐
3		Y☐ N☐	Y☐ N☐	Y☐ N☐
4		Y☐ N☐	Y☐ N☐	Y☐ N☐
5		Y☐ N☐	Y☐ N☐	Y☐ N☐

[1] If more than 5 LAAs, attach separate sheet giving the above information.

C. Corrective or Enforcement Actions Available to the Purveyor

Type of Corrective Action	Indicate Whether Available	Most Often Used (Check one)
Denial or discontinuance of water service.	Y☐ N☐	☐
purveyor installs backflow preventer and bills customer.	Y☐ N☐	☐
Assessment of fines (in addition to elimination or control of cross-connection).	Y☐ N☐	☐
Other corrective actions (describe below):	Y☐ N☐	☐

D. CCC Program Typical Responsibilities

Typical responsibilities *do not* include enforcement action related procedures or circumstances.

CCC Program Activity	Responsible Party (Check one per row)	
	Customer	Purveyor
Hazard Evaluation by DOH-certified CCS.	☐	☐
Backflow preventer (BP) ownership.	☐	☐
BP installation.	☐	☐
BP ***initial*** inspection (for proper installation – all BPs).	☐	☐
BP ***initial*** test (for testable assemblies).	☐	☐
BP ***annual*** inspection (Air Gaps and AVBs).	☐	☐
BP ***annual*** test (for testable assemblies).	☐	☐
BP maintenance and repair.	☐	☐

E. Backflow Protection for Fire Protection Systems

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

PWS coordinates with ***LAA*** on CCC issues for fire protection systems (FPS).	Y ☐ N ☐ N/A ☐	
PWS coordinates with ***local Fire Marshal*** on CCC issues for FPS.	Y ☐ N ☐ N/A ☐	
PWS ensures backflow prevention is installed before serving ***new*** connections with FPS.	Y ☐ N ☐	
PWS requires retrofits to ***high***-hazard FPS.	Y ☐ (No. of days allowed: _____)	N ☐ N/A ☐
PWS requires retrofits to ***low***-hazard FPS.	Y ☐ (No. of days allowed: _____)	N ☐ N/A ☐

F. Backflow Protection for Irrigation Systems

Minimum level of backflow prevention required on irrigation systems ***without*** chemical addition.	Not Addressed ☐ AVB ☐ PV/SVBA ☐ DCVA ☐ RPBA ☐	
PWS currently inspects AVBs upon ***initial*** installation.	Y ☐ N ☐ N/A ☐	
PWS currently inspects AVBs upon repair, reinstallation or relocation.	Y ☐ N ☐ N/A ☐	

G. Used Water

PWS prohibits, by ordinance, rules, policy or agreement, the intentional return of used water (e.g., for heating or cooling) into the distribution system.		Y ☐ N ☐
If not prohibited at present, date plan to prohibit.	Date (mm/dd/yyyy):	N/A ☐
Current number of service connections returning used water to distribution system.		

H. Backflow Protection for Unapproved Auxiliary Water Supplies[1] NOT Interconnected with PWS

Indicate the **minimum** backflow preventer and type of protection required for service connections having unapproved auxiliary water supplies *when they are NOT interconnected to the PWS.* Check only one per row.

Existing service connections.	None ☐	DCVA ☐	RPBA ☐	AG ☐
Type of protection required.	None ☐	In-premises protection ☐		Premises isolation ☐
New service connections.	None ☐	DCVA ☐	RPBA ☐	AG ☐
Type of protection required.	None ☐	In-premises protection ☐		Premises isolation ☐

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

I. Backflow Protection for Tanker Trucks and Temporary Water Connections

Minimum level of backflow protection (installed on or associated with the truck) required for tanker trucks taking water from PWS.	AG ☐ DCVA ☐ RPBA ☐ Not specified ☐ Tanker trucks not allowed ☐
PWS requires tanker trucks to obtain water at designated filling sites each equipped with permanently installed backflow preventer(s).	Y ☐ (Min. site protection: DCVA ☐ RPBA ☐) N ☐ N/A ☐ No sites provided ☐
PWS currently accepts tanker trucks approved by other PWSs without further inspection or testing.	Y ☐ N ☐ N/A ☐
Minimum level of backflow protection required for temporary water connections (e.g., for construction sites).	AG ☐ DCVA ☐ RPBA ☐ Not specified ☐ Temp. connections not allowed ☐
PWS requires testing each time the temporary connection backflow preventer is relocated.	Y ☐ N ☐ N/A ☐ (Temp. connections not allowed)
PWS provides approved backflow preventer for temporary connections.	Y ☐ N ☐ N/A ☐ (Temp. connections not allowed)

J. Backflow Protection for Non-Residential Connections

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

Type of Connection	PWS has Customers of this Type	Minimum Premises Isolation Backflow Protection Required
Commercial	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐
Industrial	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐
Institutional	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐
Other (specify): _____	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐
Other (specify): _____	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐

K. Backflow Protection for Wholesale Customers

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

Type of Intertie	PWS has (plans to have) Customers of this Type	Backflow Protection Required (If protection is required, indicate minimum level)
Existing	Y ☐ N ☐	Not specified/Not required ☐ Always required ☐ Required only if purchaser's CCC program is inadequate ☐ Minimum required (if applicable): DCVA ☐ RPBA ☐
New	Y ☐ N ☐	Not specified/Not required ☐ Always required ☐ Required only if purchaser's CCC program is inadequate ☐ Minimum required (if applicable): DCVA ☐ RPBA ☐

Part 3: CCC Program Record-Keeping and Inventory

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

BMI ☐ BPMS ☐ Engsoft ☐ Tokay ☐ Other commercial CCC software ☐ (specify): _____

Custom developed for or by PWS[1] ☐ Other non-CCC software (e.g., Excel) ☐ None Used ☐

[1] Do not include commercial CCC software customized for PWS. Indicate these on line above.

Part 4: Comments and Clarifications

Enter comments or clarifications to any of the information included in this report.
Note for on-screen completion : Comments will not "wordwrap" from one line to the next. Press <Enter> to continue on new line. Maximum length of each comment is 255 characters, including spaces.

Part No.	Comment

Part 5: CCC Program Summary Completion Information

Enter dates in MM/DD/YYYY format.

I certify that the information provided in this CCC Program Summary is complete and accurate to the best of my knowledge.		
CCC Program Mgr Name (Print)[2]:		Title:
Signature:		Date:
Phone: (___) ___-____	E-mail: _____@_____	
I certify that the information provided in this report accurately represents the status and description of this water system's CCC Program.		
PWS Mgr Name (Print)[3]:		Title:
Signature:	Op. Cert No:	Date:

[2] The CCC Program Manager is generally the CCS who is responsible for development and implementation of the CCC program.

[3] The person that the CCC Program Manager reports to or other manager having direct responsibility and/or oversight of CCC program.

Exceptions to High Health Hazard Premises Isolation Requirements For 2_____ Annual Summary Report

Exceptions forms must be completed and submitted to the Department of Health (DOH) with the Annual Summary Report per WAC 246-290-490(4)(b)(iii).

Complete one form for **each** exception that was granted:

- During 2_____; or
- Prior to 2_____, **if** you didn't submit an Exceptions form to DOH previously (i.e., don't duplicate previously submitted Exception forms).

If your system didn't grant any exceptions in 2_____, and you have already submitted forms for exceptions granted prior to 2_____, don't complete any Exception forms for 2_____.

Part 1: Public Water System (PWS) Information

PWS ID:	PWS Name:	County:

Part 2: Premises Information

Name of Premises	
Service Address	
Premises Type or Category – Refer to Table 9 of WAC 246-290-490(4)(b)	
Additional Information or Description of Premises to help explain why exception is appropriate:	

Part 3: Information Regarding Exception to Premises Isolation

Enter dates in MM/DD/YYYY format.

Date of Hazard Evaluation	
Date Exception Granted	
Expiration Date of Exception (if any)	
Date of Next Hazard Evaluation	

Name of Premises: _____

Part 4: Justification for not Requiring Premises Isolation Using AG, RPBA or RPDA

- The reasons for not requiring mandatory premises isolation shown in the table are typical examples. *purveyors are not required to follow or apply any of these reasons.*
- purveyors may provide other reasons consistent with WAC 246-290-490(4)(b)(ii), i.e., no hazard exists for this particular service.

Reason that the Premises *Do Not* Pose a High Health Hazard to PWS	**Check if Applicable**
Medical/Health Services Facility not having laboratory or similar facilities, e.g., Psychiatric or Counseling Office.	☐
Dental Office having independent water supplies for dental work (no interconnection with purveyor's water system).	☐
"Bottling Plant" without bottling processes, e.g., Warehousing only.	☐
Laundry or Dry Cleaners without cleaning processes on premises, e.g., customer drop-off and/or pick-up only.	☐
Marina/Dock for small boat moorage only (no water/sewage facilities on board).	☐
Agricultural Premises with "hobby farm" (non-commercial) activities only.	☐
Other (please describe):_____	☐
	☐
	☐
	☐

Part 5: Form Completion Information

Enter dates in MM/DD/YYYY format.

I am the Cross-Connection Control Specialist (CCS) who granted this exception to mandatory premises isolation and certify that the information provided is complete and accurate to the best of my knowledge.		
Name (Print):		CCS Cert. No:
Signature:		Date:
Phone: (___) ___-____	E-mail: _____@_____	
I am the Manager* of the PWS and I concur with the granting of this exception to mandatory premises isolation and certify that the information provided is complete and accurate to the best of my knowledge.		
Name (Print):		Title:
Signature :	Op. Cert. No:	Date:

* The person that the CCS reports to or other manager having direct responsibility for and/or oversight of the CCC program. It is not required that this person be in charge of the entire water system.

Exhibit H – CCC Resource Information

Cross-Connection Control Resource Information

Guide to Cross-Connection Control Publications

Title	Publisher	Contact Information
Cross Connection Control Manual, Accepted Procedure And Practice 6th Edition, 1995 ("Yellow Manual")	Pacific Northwest Section, American Water Works Association	PO Box 2050 Clackamas, OR 97015-2050 (877) 767-2992 (toll-free)
Summary of Backflow Incidents 4th Edition, 1995	Pacific Northwest Section, American Water Works Association	PO Box 2050 Clackamas, OR 97015-2050 (877) 767-2992 (toll-free)
Backflow Incident Investigation Procedures 1st Edition, 1996	Pacific Northwest Section, American Water Works Association	PO Box 2050 Clackamas, OR 97015-2050 (877) 767-2992 (toll-free)
Note: the above three manuals along with two additional manuals are available on one CD-ROM (pdf format). The cost of the CD is much lower than the cost to purchase the three manuals separately in printed form.		
Manual of Cross-Connection Control 9th Edition, 1993	University of Southern California, Foundation for Cross-Connection Control & Hydraulic Research	KAP-200 University Park MC-2531 Los Angeles, CA 98089-2531 (213) 740-2032

Local, Regional and National Cross-Connection Control Organizations

Organization Information	Description	Resources Available (*Publications in Italics*)
Within Washington		
Washington State Department of Health Office of Drinking Water P. O. Box 47822 Olympia, WA 98504-7822 1-800-521-0323 (toll-free) www.doh.wa.gov/ehp/dw	Administers the State Drinking Water Regulations (Chapter 246-290 WAC), including Cross-Connection Control (CCC) Requirements for Public Water Systems (WAC 246-290-490).	• Regulation interpretation and general technical assistance on starting and implementing a CCC program • *Cross-Connection Control Guidance Manual for Small Water Systems* • *Backflow Assemblies Approved for Installation in Washington State* (available from Training and Outreach Section)
Western Washington Cross-Connection Prevention Professionals Group ("The Group") P. O. Box 94551 Seattle, WA 98124 www.backflowgroup.org	An organization of CCC professionals (including Cross-Connection Specialists [CCSs], Backflow Assembly Testers [BATs], and others interested in CCC) in Western Washington who meet monthly to discuss CCC-related topics and exchange information on program development and implementation. Annual dues are $10.00.	• *Brochures on assembly installation requirements* • Annual seminar in October each year • BAT forum in the spring • Special CCC seminars • Internet access to USC List of Approved Assemblies
Spokane Regional Cross-Connection Control Committee (SRC4) P. O. Box 13086 Spokane, WA 99213 www.src4.org	An organization of CCC professionals (CCSs, BATs, and others) in Eastern Washington who meet monthly to discuss CCC-related topics and exchange information on program development and implementation. Annual dues are $20.00.	• *Brochures for consumers on common CCC subjects* • Annual seminar in February each year • Special CCC seminars and exam review sessions • Comprehensive CCC Newsletter periodically • Internet access to USC List of Approved Assemblies

Organization Information	Description	Resources Available *(Publications in Italics)*
Washington Environmental Training and Resource Center (WETRC) 2401 SE 320th Street, M/S WW Auburn, WA 98029 1-800-562-0858 (toll-free) http://www.greenriver.edu/WETRC/	Part of Green River Community College, WETRC is the principal training center in Washington for drinking water related subjects, including CCC. WETRC offers various CCC courses including those designed to prepare individuals for the CCS and BAT certification exams. WETRC also currently administers the BAT program for DOH.	• *Backflow Assembly Field Test Procedures Approved for Use in Washington State (DOH publication provided as part of BAT classes)* • General CCC classes • CCS classes • BAT classes and exams
Evergreen Rural Water of Washington (ERWOW) P. O. Box 2300 Shelton, WA 98584 1-800-272-5981 (toll-free) www.erwow.org	An organization that represents small public water systems in Washington. It provides training in various subjects of interest to small systems, including CCC program development and implementation.	• CCC program review course • CCS exam review course
Regional		
British Columbia Institute of Technology (Piping Department) 3700 Willingdon Ave Burnaby, British Columbia Canada V5G 3H2 (604) 434-5734 www.bcit.ca	An educational institution, founded by the British Columbia Provincial government, that specializes in technical and technology subjects. The Institute grants Bachelor degrees in several areas. Cross-Connection Management and Backflow Assembly Tester certificates are offered through the British Columbia Water and Wastewater Association (BCWWA).	• CCC Program Management (CCS) • Backflow Assembly Testing (BAT)

Organization Information	Description	Resources Available (*Publications in Italics*)
CCC Committee **Pacific Northwest Section** **American Water Works Association** (PNWS-AWWA) P. O. Box 2050 Clackamas, OR 97015-2050 1-877-767-2992 (toll-free) www.pnws-awwa.org	An official committee of the PNWS-AWWA that has a well-defined membership representing the Pacific Northwest states. The Committee publishes numerous CCC-related manuals, provides CCC training and offers CCS scholarships for systems with ≤ 2500 connections. The Committee holds quarterly meetings that are open to all interested parties.	• *Cross-Connection Control Manual, Accepted Procedure and Practice – 6th Edition* • *Summary of Backflow Incidents – 4th Edition* • *Backflow Incident Investigation Procedures** • *Numerous CCC public education brochures* *First 3 publications available on CD-ROM for $25.
Clackamas Community College 19600 South Molalla Ave Oregon City OR 97045 (503) 675-6958 www.clackamas.cc.or.us	Clackamas Community College is one of the principal training centers in Oregon for drinking water related subjects, including CCC. The Water and Environmental Technology Program offers Certificate and Associate of Applied Science Degree Programs.	Clackamas offers various CCC courses including those designed to prepare individuals for the CCS and BAT certification exams, such as: • General CCC classes • Inspector (CCS) classes • BAT classes and exams
National		
American Backflow Prevention Association (ABPA) P. O. Box 3051 Bryan, TX 77805-3051 (979) 846-7606 www.abpa.org	An international organization whose members are from all aspects of the backflow prevention industry including, building officials, standards organizations, CCC professionals, assembly testers, plumbers, public health officials and backflow preventer manufacturers. Annual dues are $30.00.	• *ABPA News* (bimonthly publication with news and technical articles on the CCC industry) • *The Dangers of Cross-Connections* (video for public water systems on the need for CCC programs and how to develop them) • Website has a forum for discussion of CCC topics

Organization Information	Description	Resources Available (*Publications in Italics*)
University of Southern California Foundation for Cross-Connection Control and Hydraulic Research Kaprielian Hall - 200 Los Angeles, CA 90089-2531 (213) 740-2032 www.usc.edu/dept/fccchr	The Foundation, associated with the University of Southern California, conducts research and has products and services (technical assistance) to help public water systems and others with their CCC programs. The Foundation has a comprehensive backflow assembly evaluation program, publishes a list of approved backflow prevention assemblies, and publishes a CCC manual. Annual membership costs vary depending on system size and/or type of organization.	• *Manual of Cross-Connection Control, 9th Edition* (10th Edition currently under development) • *List of Approved Backflow Prevention Assemblies* (for Foundation members only) • Website has useful introduction to CCC and prevention of backflow
Drinking Water and Backflow Prevention S.F.A. Enterprises, Inc. P.O. Box 33209 Northglenn, CO 80233-9951 1-888-367-3927 (toll-free) www.dwbp-online.com	A private company whose emphasis is to provide information and assist in the awareness of the potential hazards associated with the quality of drinking water supply.	• *Drinking Water and Backflow Prevention.* (a monthly magazine with news and technical articles about CCC and backflow prevention industry)

Cross-Connection Control Software

The following list identifies some of the companies that supply PC software database management programs for cross-connection control. The average price is in excess of $1,000. However, prices often depend upon the maximum number of assemblies being tracked. Many companies have free demo CDs available. ***Note: appearance on this list does not constitute an endorsement by DOH.***

Software Program Title	Company Name and Address	Contact Information
BPMS	**BPMS Software** 4060 Irmin St Burnaby, British Columbia Canada V5J 1X4	**www.bpms.net** 1-877-250-2698 (toll-free) Email: bpms@bpms.net
C4-Complete Cross Connection Control Software	**Hydro Designs, Inc.** 2222 Franklin Road, #200 Bloomfield Hills, MI 48302	**www.hydrodesignsinc.com** (248) 335-3122 Email: Jhudak@hydrodesignsinc.com
CHS MMIS7 for Water	**CHS Software & Consulting, Inc.** 12507 Bel-Red Rd., Ste 101 Bellevue, WA 98005	**www.chssoftware.com** (425) 637-3693 Email: chs@seanet.com
Cross-Track	**BMI** 17752 NE San Rafael St Portland, OR 97230	**www.bmi-backflow.com** 1-800-841-7689 (toll-free) Email: support@bmi-backflow.com
Smart Water Systems	**Smart Water Systems** P O Box 481 Manchester, WA 98353-0481	**(No website at present)** (360) 871-4987 Email: gherbison@netscape.net
Specialized Systems Software	**Specialized Systems Software** 356 NE Kingwood Place College Place, WA 99324	**www.specsys.us** (509) 629-0877 Email: info@specsys.us

Software Program Title	Company Name and Address	Contact Information
Tokay Backflow Prevention Management Software	**Tokay Software** P O Box 2439 Framingham, MA 01703	**www.tokay.com** 1-800-865-2965 (Toll-free) Email: tokay@tokay.com
XC^2	**Engsoft Solutions** 9 Mono Avenue Fairfax, CA 94930	**www.engsoft.com** 1-800-761-4999 (Toll-free) Email: XC2@engsoft.com

Exhibit I – Model Correspondence

Exhibit I – Model Correspondence

Letter Requesting Customer to Complete Water Use Questionnaire

Date

Customer Account Number (optional)
Customer
Customer Address Line 1
Customer Address Line 2

Dear _____ Water System Customer:

Washington State drinking water regulations, WAC 246-290-490, require public water systems to develop and implement cross-connection control programs. Cross-connection control programs help protect public health by preventing contamination of the drinking water as it is delivered to water system customers. The attached brochure explains what a cross connection is, describes typical household cross connections and what you can do to help protect your drinking water.

As part of our efforts to keep your drinking water safe, we are conducting a cross-connection control hazard survey of residential customers served by our system. The purpose of the survey is to help us determine if any of our residential customers have special plumbing or activities on their premises that could increase the risk of contamination to our water system.

For most residential customers, the cross-connection control hazard posed to the public water system is minimal. This is because your household plumbing was installed in compliance with the Uniform Plumbing Code. The Uniform Plumbing Code generally provides adequate protection of your water potable water piping and our public water distribution system from cross connections. However, a few customers with special plumbing or activities on their premises may pose an increased health risk to other customers served by our system. These customers may need to have a backflow preventer installed on their service lines or provide alternate protection to prevent contamination of the public water system.

Please complete the attached questionnaire by checking the applicable boxes on the table; and return the completed, signed questionnaire by {insert date} to the address shown on the letterhead {or insert address if different}.

Thanks in advance for filling out the questionnaire. We appreciate your cooperation in helping us to protect the drinking water we deliver to our customers. If you have any questions about the survey or how to fill out the questionnaire, please contact me at {**insert phone number**}. We will review your questionnaire and determine whether we need to contact your for further information.

Sincerely,

Name
CCC Program Manager

Enclosures: CCC Brochure
Water Use Questionnaire

Notice of Survey of Premises (Non-Residential/Multi-Family Residential) Customer-Employed Cross-Connection Control Specialist

Date

Customer Account Number (optional)
Customer Name
Customer Address Line 1
Customer Address Line 2

Dear _____ Water System Customer:

Washington State drinking water regulations, WAC 246-290-490, require public water systems to develop and implement cross-connection control programs. Cross-connection control programs protect public health by preventing contamination of the drinking water supply. The attached brochure explains what a cross connection is and what you can do to help protect your drinking water.

As part of the cross-connection control program, our system must assess the degree of hazard posed by each of our customer's plumbing systems upon the public water system. Non-residential customers and multi-family residential customers pose a special concern, because of the greater scope and complexity of their plumbing systems, special uses of water on the premises (e.g., manufacturing), fire protection systems, etc. Depending on the hazard assessment results, you may need to have a backflow preventer installed on your service line or provide alternate protection.

A cross-connection survey needs to be conducted for us to make the hazard assessment for your premises. The drinking water regulations require a person with special training, i.e., a Department of Health certified Cross-Connection Specialist (CCS), to conduct the surveys. Our system's policy is to have surveys of all non-residential premises and multi-family residential premises conducted by a CCS *employed by the customer*. Survey results must be submitted to our system for review.

Please arrange for the attached survey form to be completed and returned to this office by {insert date}. A list of local CCSs who provide this type of service is attached.

We appreciate your cooperation in meeting this hazard survey requirement. If you have any questions, please contact me at **{insert phone number}**.

Sincerely,

Name
CCC Program Manager

Enclosures: CCC Brochure
Water Use Questionnaire
CCS List

Request to Install Backflow Prevention Assembly

Date

Customer Account Number (optional)
Customer Name
Customer Address Line 1
Customer Address Line 2

Dear _____ Water System Customer:

Washington State drinking water regulations, WAC 246-290-490, require public water systems to develop and implement cross-connection control programs. Cross-connection control programs protect public health by preventing contamination of the drinking water as it is delivered to people served by the water system. **The purpose of this letter is to inform you of a requirement to install a backflow assembly.**

Our water system's policy considers each of our customer's plumbing systems, starting from the termination of the service pipe downstream of the water meter, to pose a potential cross-connection hazard to the public water system. Our policy requires a backflow prevention assembly commensurate with the degree of hazard to be installed on the service line. The purpose of this backflow prevention assembly is to isolate your plumbing system from the water distribution system. We've attached a copy of Resolution {**insert number**} describing our cross-connection control policy.

We have received the cross-connection control survey report submitted by your Cross-Connection Control Specialist (CCS). The survey assessed the overall public health hazard posed by your plumbing system (and water use) to the public water system. We agree with the assessment made by the CCS. **Based on the assessment, a Department of Health-approved {insert type of assembly} is required to be installed on your service line (at a location downstream of the water meter).**

Please make arrangements for the assembly to be installed by {**insert date**} or when your plumbing system is modified, whichever comes sooner. {***Optional language***: We realize that this expense was not anticipated, so if you are unable to comply with this deadline, please contact us to discuss an alternative date}. We've enclosed a copy of our standard installation drawings for this type of assembly. Your CCS should oversee the installation of the assembly to ensure compliance with these standards.

We appreciate your cooperation in this matter. If you have any questions, please contact me at {**insert phone number**}.

Sincerely,

Name
CCC Program Manager

cc: {City/County Plumbing Inspector}

Enclosures: Standard Installation Drawings

Request To Submit Test of Backflow Prevention Assembly

Date

Customer Account Number (optional)
Customer Name
Customer Address Line 1
Customer Address Line 2

Dear _____ Water System Customer:

Washington State drinking water regulations, WAC 246-290-490, require public water systems to develop and implement cross-connection control programs to protect the drinking water supply from contamination. As part of this program, backflow prevention assemblies have been installed on your water service(s) and/or within your plumbing system to protect our water distribution system. Annual testing is required to ensure that the backflow prevention assemblies properly function.

The purpose of this letter is to request that you now arrange for the annual testing of the reduced pressure principle (RPBA), double check valve (DCVA), and/or pressure vacuum breaker (PVBA or SVBA) assembly/assemblies described on the attached list. A Washington State Department of Health certified backflow assembly tester (BAT) must conduct the testing. **Testing results should be sent to the address above and submitted by {insert date}.**

For your convenience, we are enclosing a list of backflow assembly testers pre-approved to test assemblies that protect our water system. Test report forms are also enclosed. The test report forms need to be properly completed by the BAT, signed by the customer/assembly owner, and returned to us.

Note: the Uniform Plumbing Code in effect in Washington also requires annual assembly testing. In addition to the testing required for the assemblies that protect the public water system (i.e., identified on the attached list), you may wish to have all of the remaining assemblies within your premises tested at this time.

If you have any questions, please feel free to contact me at **{insert phone number}.**

Sincerely,

Name
CCC Program Manager

Enclosures: Assembly List
Pre-Approved BAT List
Assembly Test Report Forms

Second Notice to Test Backflow Prevention Assembly

Date

Customer Account Number (optional)
Customer Name
Customer Address Line 1
Customer Address Line 2

Subject: Testing of Backflow Prevention Assembly - Second Notice
First Notice Date: _____ Second Notice Date: _____

Dear _____ Water System Customer:

Washington State drinking water regulations, WAC 246-290-490, require public water systems to implement cross-connection control programs to protect the drinking water supply from contamination. As part of this program, backflow prevention assemblies were installed on your service or within your premises to protect our water distribution system from contamination. The WAC requires these assemblies to be tested annually to verify that they are in good working condition.

The assembly/assemblies identified in our letter of {**insert date**} (copy attached) must be tested by a Department of Health certified Backflow Assembly Tester (BAT) upon installation and annually thereafter. This requirement is a condition of our system continuing to supply potable water to your premises. **According to our records, as of today's date, you have not submitted the requested Assembly Test Report(s).** If you believe this is in error, please contact me as soon as possible at the number below.

If you have not submitted the Assembly Test Reports as requested, please:

- Immediately employ a DOH-certified BAT to test the listed assembly/assemblies; and
- Submit a signed copy of the completed Assembly Test Report(s) to me at the address above **within 15 days of the date of this letter.**

Your cooperation in this matter is essential for protecting your drinking water supply and the public water supply from contamination. Failure to comply with the annual assembly testing requirement will trigger an enforcement action by our system. Enforcement could include a shut-off of your water service.

If you have any questions, please contact me at {**insert phone number**}.

Sincerely,

Name
CCC Program Manager

Enclosure: First Test Notice Letter

APPENDIX E

Developer Extension Process Outline and Forms

DEVELOPER EXTENSION PROCESS OUTLINE

Developer Extensions to the Town of South Prairie system will utilize the process outlined in this section. The process outlined is an attempt to cover the major milestones. The detailed checklists for several project elements will provide additional guidelines for the Developer as well as the Town. Included in this section are the following checklists and forms to assist in completing the Developer Extension process:

- Construction Certification and Follow-Up Procedures
- Developer Extension Agreement Application
- Developer Extension Checklist
- Plan Review Checklist
- Developer Extension Agreement
- Restoration Performance Bond
- Easement Deed
- Warranty Bill of Sale

1. Developer:
   - Completes a Developer Extension Agreement Application.
   - Deposits funds as required by Resolution or Ordinance with the Town for cost of administration.
   - Submits a conceptual plan of the project.
2. Town:
   - Begins a Developer Extension Checklist
   - Accepts or rejects the Developers Extension Agreement Application
3. Developer and Town sign Developer Extension Agreement
4. Developer:
   - Prepares and submits preliminary drawings based on Town Standards
   - Deposits ~~$1,000~~funds as required by Resolution or Ordinance with the Town for cost of plan review and any general facility charges.
5. Town of South Prairie:
   - Reviews plans for conformance with Standards
   - Returns to Developer for revisions as necessary
6. Developer:
   - Corrects and submits final drawings based on Town of South Prairie Standards
   - Submits water availability requests and fees
   - Secures all necessary permits
7. Town of South Prairie submits to DOH for approval, if required
8. Developer
   - Holds preconstruction conference
   - Constructs project
   - Tests project components
   - Prepares "as-built" records and delivers to Town of South Prairie
   - Records easements and delivers copies to Town of South Prairie
   - Submits letters of approval from other agencies to Town of South Prairie
   - Pays connection charges
   - Pays all outstanding debts ~~to~~ with the Town of South Prairie
9. Town of South Prairie accepts project

- Pays all outstanding debts with the Town of South Prairie

9. Town of South Prairie accepts project

CONSTRUCTION CERTIFICATION AND FOLLOW-UP PROCEDURES

Upon award of contract or execution of a Developer Extension Agreement, the Town of South Prairie will require the following from the contractor:

1. Photocopy of all recorded easement agreements.
2. Acceptance from an authorized Town of South Prairie representative for all buried portions of projects other than transmission mains prior to backfill.
3. Disinfection testing in the presence of authorized Town of South Prairie representative with samples tested by a Town of South Prairie and DOH approved laboratory.
4. Hydrostatic testing in the presence of authorized Town of South Prairie representative.
5. Certified "as-built" drawings from the contractor utilizing the following standards:
    - Yellow marking or highlight - for items that are consistent with construction documents.
    - Red Markings - for new or modified items.
    - Green Markings - for deleted items.
6. Certified fixed line mylar "as-builts" of completed project from the design engineer showing:
    - Easement(s) with recording number(s).
    - All fittings, valves, hydrants and services.
    - Pipe lengths and number of joints on mainline sections.
    - Distance to mainline from property corner or right-of-way monument line.
    - Distance to services as measured from mainline valves.
    - Distance to hydrant tees as measured from mainline valves.
    - Distance to mainline fittings as measured from mainline valves.
    - Depth of bury at hydrants.
7. AutoCAD compatible "as-built" drawing files CD ROM.
8. Completion of DOH Construction Report form.

TOWN OF SOUTH PRAIRIE
DEVELOPER EXTENSION CHECKLIST

Development Name: _____

Development Address: _____

Owner Name: _____ Phone: _____

Owner Address: _____

Contact Person: _____ Phone: _____

Contact Address: _____

Development Engineer: _____

Contact: _____ Phone: _____

Engineer's Address: _____

Contractor: _____

Contact: _____ Phone: _____

Contractor Address: _____

Item	Description	Date	Received By	Comments (Receipt, Resolution, etc.)
1	**Preliminary**			
	Map of proposal delivered to Town of South Prairie			
	Conditions and Standards to Developer			
	Number of Single Family Connections			ERUs
	Number of Multi-Family Connections			ERUs
	Number of Commercial Connections			ERUs
2	**Application**			
	Deposit of Funds			
	Notarized Agreement			
	Resolution by Town of South Prairie Accepting Proposal			
3	**Preliminary Design**			
	Preliminary Submittal			
	Town of South Prairie Engineer Review			
	Return of Plans to Developer			
4	**Final Design**			
	Final Submittal			
	Town of South Prairie Engineer Review			
	Council Acceptance of Plans			

Item	Description	Date	Received By	Comments (Receipt, Resolution, etc.)
	Submittal to DOH			
5	**Permits**			
	Town of South Prairie Right-of-Way			
	Town of South Prairie Right-of-Entry			
	Town of South Prairie Fire Chief			
	WSDOT Right-of-Way			
	WSDOT Franchise			
	Pierce County Health			
	Pierce County Fire Marshall			
	Pierce County Right-of-Way			
	Performance Bond			
	SEPA Checklist			
6	**Preconstruction**			
	Conference			
	Copy of Preliminary Town of South Prairie or Pierce County Plat Approval			
	Material List			
	Photos			
	Construction Schedule			
	Insurance Certificates			
	Contractor and Subcontractor List			
7	**Construction**			
	Survey Control			
	Utility Notification			
8	**Close-out**			
	Restoration			
	Final Inspection			
	Bacteriological Test			
	Hydrostatic Test			
	Receipt of Mylar "As-Builts"			
	Receipt of AutoCAD "As-Builts"			
	Acceptance by Town of South Prairie Engineer			
9	**Transfer to Town of South Prairie**			
	Copies of all Recorded Easements			
	WSDOT Right-of-Way Approval			
	WSDOT Franchise Approval			
	Pierce County Health Approval			
	Pierce County Fire Marshall Approval			
	Pierce County Right-of-Way Approval			
	Receipt of Connection Charges			
	Receipt of Funds for Town of South Prairie Labor and Material			
	Bill of Sale			
	Maintenance Bond			
	Resolution by Council Accepting Extension			

TOWN OF SOUTH PRAIRIE
DEVELOPER EXTENSION AGREEMENT APPLICATION

1. Development Name: _____

   Development Address: _____

2. Owner Name: _____ Phone: _____

   Owner Address: _____

   Contact Person: _____ Phone: _____

   Contact Address: _____

3. Development Engineer: _____

   Contact: _____ Phone: _____

   Engineer's Address: _____

4. This project contains _____ lots.

   a. Type(s) of Lots:

   ☐ Single Family ☐ Duplex/Multiplex (No. Units_____)

   ☐ Commercial ☐ Other (No. Units_____)

   b. Type of Commercial Use:

   Would Commercial Use require sprinkler system? ☐ Yes ☐ No

5. Attached as Exhibit "A" is the legal description for this property.

6. Attached as Exhibit "B" is a diagram showing all properties that the developer would like to include in a latecomer reimbursement area.

7. A nonrefundable process fee of $_____ for review of the application and for initial services of the engineers for the Town of South Prairie to determine the feasibility of the proposed project (Basic Engineering and Administrative Fee) is attached.

8. Has this project been started before? ☐ Yes ☐ No

9. Enclosed with this application is a preliminary plan showing the proposed development, the proposed water system, the project boundaries, roads, and structures and, for each structure, the number of units.

10. The proposed project will be commenced on or before _____ and will be completed on or before _____.

11. Has an application for a building permit, rezone, approval of a plat, or short plat or planned residential development for the proposed project or any part thereof been submitted to the Town of South Prairie or Pierce County? Yes or No If so, list the name of the agency, the date of application, the type of action required:_____

12. Has an environmental checklist, and a determination of nonsignificance or an environmental impact statement been prepared for the proposed project or any part thereof? ☐ Yes ☐ No
If so, enclose copies of the documents with this application.

13. The developer understands that the Town of South Prairie will not approve the water system plans for the proposed project until a Developer Extension Agreement has been executed by the Town and the developer.

I have read and fully understanding conditions and agree to adhere to the procedures outlined in the Developer Extension Agreement and the ordinances, resolutions, rules, and regulations of the Town of South Prairie.

Date: _____

APPLICANT

_____
(Name of company or individual)

_____
(Signature)

By: _____
(Typed or printed name)

Its _____
(Title)

(Title)

TOWN OF SOUTH PRAIRIE
PLAN REVIEW CHECKLIST

Project Name: _____

Engineer: _____

Contact: _____ Phone: _____

Address: _____

Item	Description	Yes	No	Comments
1	**Agency Approval**			
	DOH for Project			
	WSDOT Right-of-Way			
	WSDOT Franchise			
	Pierce County Health			
	Pierce County Fire Marshall			
	Pierce County Right-of-Way			
	SEPA Checklist			
2	**General**			
	Title Block with Firm Name			
	Project Title			
	Design Engineer			
	Engineer Stamp (signed and dated)			
	Checker			
	Drafter			
3	**Cover and/or Note Sheet(s)**			
	Vicinity Map			
	Key Map or Location Map			
	Sheet Index			
	Section, Township, Range			
	Benchmark (Pierce County Datum)			
	North Arrow			
	Scale Bar			
	Town of South Prairie Notes			

Item	Description	Yes	No	Comments
4	**Plan (and Profiles)**			
	Scale (1"=50')			
	Rights-of Ways and Easements (Dimensioned)			
	Stationing at Centerline			
	North Arrow			
	Scale Bar			
	Existing Utilities			
	Matchlines			
	Location of All Appurtenances (Station and Offset or Dimensions from Property Lines)			
	Utility Crossing Callouts			
	Service to All Lots			
	Hydrants and Spacing			
	Blow-Offs and Location			
	Thrust Blocking			
	Valving			
	Detail References			
5	**Details**			
	Town of South Prairie Standard Details			
	Town of South Prairie Detail Notes			
	Pierce County Details			
	WSDOT Details			

TOWN OF SOUTH PRAIRIE

DEVELOPER EXTENSION AGREEMENT

THIS AGREEMENT is to be effective as of the _____ day of _____, 2_____, by and between _____ (the "Owner") and TOWN OF SOUTH PRAIRIE, a municipal corporation of the State of Washington (the "Town").

RECITALS

A. The Town operates a water system for supply and distribution of domestic water.

B. The Owner owns certain property legally described in Exhibit A, attached hereto and by this reference made a part hereof (the "Property"), which is located at _____.

C. The Owner is willing to construct a system of domestic water lines at Owner's expense, pursuant to the terms of this Agreement, in order to connect the Property to the Town's existing system of water at _____.

D. The construction of an internal system of water facilities for the distribution of domestic water on the Property is consistent with the Town's comprehensive plan.

E. As an initial step in providing water service to the Property, certain improvements to the Town's system must be constructed and installed.

The improvements consist generally of furnishing and constructing _____ water lines and all appurtenances necessary to comprise a complete system ready for operation (the "Project").

TERMS AND CONDITIONS

IN CONSIDERATION of the mutual promises and performances provided herein, the parties hereto for themselves, their assigns and successors in interest, agree as follows:

1. Permission to Construct Project. The Town shall permit the Owner to construct and install the Project.

2. Standards of Construction. Construction and installation of the Project shall be strictly in accordance with standards, rules and regulations of the Town as now in effect and as the same hereafter may be amended, and as directed by the Town's Consulting engineer (the "Engineers").

3. Submission of Schedule. Promptly after execution of this Agreement, the Owner shall submit to the Town a schedule regarding construction of the Project.

4. Authority of Developer Engineer. The Developer's Engineer shall only design the Plans for the extension to the Town's system. The Plans shall conform to Town specifications and must be approved by the Town Engineer and the Town before work begins. The Town shall approve,

modify or reject the Plans. Failure of the Town to require changes in the Plans prior to their approval shall not be a waiver of the Town's right to require changes in the Plans during work. The Developer shall ensure that the Plans designed by Developer's Engineer conform to Town Specifications. Failure of the Town to discover errors, omissions or discrepancies in the Plans shall not relieve the Developer of this responsibility.

5. Preparation of Plans by Developer's Engineer. If Developer retains an engineer, then the following requirements apply:

   a. Developer must obtain Town approval of Developer's Engineer;

   b. Before commencing preparation of the Plans, Developer must:

      i) Obtain official preliminary plat approval for Developer's project using a minimum scale of one (1) inch equals fifty (50) feet;

      ii) File with the Town Engineer the road and storm sewer plans and profiles for the project; and

      iii) File with the Town Engineer a contour map of the project with contour intervals of five (5) feet or less and using a scale of one (1) inch equals fifty (50) feet. All data to be based on USCGS data.

   c. The Town and the Developer and Developer's Engineer will hold a pre-design meeting approximately ten (10) working days after completion of 5b. The Developer shall arrange for the conference and the attendance of concerned parties.

   d. At the pre-design meeting, the Developer's Engineer shall submit to the Town a conceptual plan for the utility development of the project.

   e. After preliminary review of the conceptual plan, Developer's Engineer shall submit to the Town Engineer a preliminary design and Plan for review, modification and approval.

   f. After approval of the preliminary design and Plan by the Town Engineer, Developer's Engineer shall prepare a proposed final Plan and submit three (3) copies to the Town Engineer and two (2) copies to the Town for review, modification and approval by the Town.

   g. After completion of all required changes to the preliminary Plan, if any, the Town shall consider the final Plan for approval. The Town may approve, reject, or require changes to the final Plan.

   h. The Town's approval of the Plan shall be noted on the original mylar drawings.

   i. The Developer's Engineer shall submit copies of the approved Plan to the Town so that the Town can apply for necessary permits and approvals. The Developer's Engineer

shall notify the Town of any permits required. Should changes to the Plan be required to obtain permits and approvals, then Developer's Engineer shall make all required changes.

6. Easements. The Developer shall obtain all necessary easements in a form satisfactory to the Town without cost to the Town. Executed copies of off-site easements shall be delivered to the Town prior to the preconstruction conference. Other easements shall be delivered to the Town prior to the acceptance of the extension(s). The Developer shall provide the Town's Engineers with supporting data to verify the location of all easements. All easements shall be a minimum of fifteen feet in width. Easement documents shall be clearly written so that the easement can be plotted from the description. Developer shall provide the Town, upon request, satisfactory title insurance insuring without exception the Town's interest in all easements conveyed to the Town.

   Permanent easements shall be conveyed to the Town free of any permanent structures or other structures which interfere with Town maintenance and repair responsibilities. Developer further covenants and agrees not to construct or install such structures on the easement after Town has accepted the extension.

7. Liability Insurance. The Developer shall purchase commercial general liability and automobile liability insurance against liability to the developer, the Town, the Town Engineer and Town employees for negligent injury to person or property resulting from performance, supervision, or inspection of the Work. The insurance shall be purchased from a company which has an A.M. Best rating of "A VII" or better. The Town shall be named as an additional insured under such policy. Proof of the existence of such insurance shall be provided to the Town in a form acceptable to the Town. The minimum limits of coverage shall be as follows:

General Aggregate	$3,000,000.00
Products - Comp/OPS Aggregate	$1,000,000.00
Personal Injury	$3,000,000.00
Each Occurrence	$3,000,000.00
Commercial Automobile Liability	$1,000,000.00

   Policies shall be kept in force until the project is accepted by the Town. The Town shall be given at least 45 days written notice by "certified mail" of cancellation, non-renewal, material reduction or modification of coverage.

   The coverage provided by the Developer's insurance policies are to be primary to any insurance maintained by the Town, except with respect to losses attributable to the sole negligence of the Town. Any insurance that might cover this Agreement which is maintained by the Town shall be in excess of the Developer's insurance and shall not contribute with it.

   The Developer's insurance policy shall protect each insured in the same manner as though a separate policy had been issued to each. The inclusion of more than one insured shall not affect the rights of any insured with respect to any claim, suit or judgment made or brought by or for any other insured or by or for any employee of any other insured.

The general aggregate provisions of the Developer's insurance policy shall be amended to show that the general aggregate limit of the policies apply separately to this project.

The Developer's insurance policy shall not contain a deductible or self-insured retention in excess of $10,000 unless approved by the Town.

Providing coverage in the stated amounts shall not be construed to relieve the Developer from liability in excess of such limits.

8. Indemnity. The Developer shall indemnify, defend and hold the Town and all of its representatives harmless from and against all losses and claims, demands, payments, suits, actions, recoveries and judgments of every nature and description brought or recovered against the Town by reason of the act or omission of the Developer, its agents or employees, in the performance of the Work, and for any cost or expense incurred by the Town in connection therewith, including overhead expense, legal expense, reasonable attorney's fees and costs attributable thereto; and if suit in respect to the foregoing is filed, then Developer shall appear and defend the same at its own cost and expense, and if judgment is rendered or settlement made requiring payment of damages by the Town, then the Developer shall pay the same.

Developer shall indemnify, defend and hold Town harmless from any liability or expense, including reasonable attorney's fees incurred by Town by reason of Developer's (or Developer's employees or contractors) breach of any covenant contained in any franchise or permit granted by state, city, or public or private utility to Town for the purpose of enabling Developer to undertake construction within any right-of-way.

Developer further agrees that if any official complains to the Town that Developer is violating such franchise or permit in any respect, or if Developer damages any Town facilities, then the Developer upon reasonable notice shall comply with such franchise or permit or to make repairs or restoration. If the Town deems it necessary to make any repairs or restoration (emergency or otherwise), then the Developer shall reimburse the Town for the cost thereof.

In any claim against the Town, its agents or employees by any employees of the Developer, its contractor, or any subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation contained herein shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Developer, Contractor, or any subcontractor under Workmen's Compensation Acts, Disability Benefit Acts, or other employee benefit acts. THIS WAIVER HAS BEEN MUTUALLY NEGOTIATED BY THE PARTIES.

9. Warranties of Developer. The bill of sale provided by the Developer to the Town transferring ownership of the water system extension shall contain the following warranties with the Town as beneficiary:

a. That Developer owns the extension free and clear of all encumbrances and Developer has full authority to transfer title thereto to the Town and will defend the title of the Town against the claims of all third parties claiming to own the same or claiming any interest therein or encumbrance thereon; and

b. That all bills and taxes relating to the construction and installation of the extension and appurtenances have been paid in full and there are no lawsuits pending involving this project. If any lawsuit is filed as a result of, or involving, this project, then the Developer will undertake to defend the lawsuit and will accept responsibility for all costs of litigation, including costs on appeal, and will hold the Town harmless on any judgment rendered against the Town; and

c. That Developer complied with all laws and ordinances regarding construction of this project, and the extension is in proper working condition, order and repair, and is adequate and fit for the intended purpose of use as a water system and as an integral part of the water supply and distribution system of the Town, and the extension has been constructed in accordance with the conditions and standards of the Town; and

d. That for a period of two (2) years from the date of final acceptance of the extension by the Town, the extension and all parts thereof shall remain in proper working condition, order and repair; and Developer shall repair or replace, at its expense, any work or material which proves defective during the period of the warranty.

In addition, Developer shall obtain warranties and guaranties from its subcontractor and/or suppliers where such warranties or guaranties are specifically required in this Agreement. When corrections of defects occurring within the warranty period are made, Developer shall further warrant corrected work for two (2) years after acceptance of the corrected work by the Town.

10. Correction of Defects Occurring Within Warranty Period. When defects in the extension(s) are discovered within the warranty period, Developer shall start work to remedy any such defects within seven (7) calendar days of notice by the Town and shall complete such work within a reasonable time. In emergencies, where damages may result from delay or where loss of service may result, corrections may be made by the Town, and the cost thereof shall be paid by the Developer. If the Developer does not commence and/or accomplish corrections within the time specified, then the work may be accomplished by the Town, and the cost thereof shall be paid by the Developer.

Developer shall reimburse the Town for damages or expenses incurred by the Town resulting from defects in the Developer's work, including cost of materials and labor, the cost of engineering, and the cost of inspection and supervision by the Town or the Town's Engineer. If the Town incurs expenses greater than the amount collected from the Developer, then such additional expenses shall be deducted from any bonds referenced in Paragraph 11.

11. Performance Guarantee or Cash Bond.

a. **Performance Guarantee.** Developer shall, if requested, furnish to the Town prior to the pre-construction conference a performance guarantee of a type and in a form as determined by the Town in an amount equal to either the engineer's estimated cost of the extension(s) or the contractor bid price(s). The performance guarantee shall require completion of all Work in accordance with the Agreement, the Plans and Specifications and other requirements of the Town within a period of twelve (12) months from the date of acceptance of the plans by the Council. The Town may also require a payment

bond of a type and in a form as determined by the Town requiring the payment by the developer of all persons furnishing labor and materials in connection with the Work performed under the Agreement, and shall hold the Town harmless from any claims therefrom. Any payment bond required by the Town shall be provided to the Town prior to the pre-construction conference. No third person or party shall have any rights under any performance guarantee the Town may require from the developer and such is provided entirely for the benefit of the Town and the developer and their successors in interest.

b. **Cash Bond.** Prior to the release of engineering Plans by the Town, the Developer shall post with the Town a $_____ (minimum) Cash Bond for each extension as a performance guarantee for proper completion of the extension(s) and repair of any defective material and workmanship, including road settlement or pavement damage. The Town shall retain the Bond(s) for a period of two years following the date of final acceptance of the extension(s) by the Town. If the Developer terminates the project prior to construction of the extension(s), and the Town incurs expenses greater than the amount collected from the Developer, then such additional expenses shall be deducted from the Cash Bond before refunded to Developer.

12. Maintenance Bond. Acceptance of the extension(s) by the Town shall not relieve the Developer of the obligation to correct defects in labor and/or materials. Before acceptance of the extension(s) by the Town and the transfer of title thereto, the Developer shall furnish to the Town a maintenance bond (cash or surety) which shall continue in force from the date of acceptance of the extension(s) for two (2) years. The bond shall be in a form acceptable to the Town and shall require the Developer and/or the bonding company to correct the defects in labor and materials which arise in the system(s) for two years from the date of acceptance of the system(s) and transfer of title. The maintenance bond shall be in an amount equal to ten (10) percent of the cost of the extension(s), but not less than five thousand dollars ($5,000.00). A precondition of the Town's release of the maintenance bond shall be payment by the Developer of all outstanding expenses incurred by the Town. At the end of the two years and upon request of Developer, the Town will inspect the extension(s) and provide a written release of this Bond if the extension(s) is in satisfactory condition; otherwise the maintenance bond remains in effect until released in writing by the Town.

13. Completion Bond. If the Developer completes the extension(s) and desires service prior to the final paving of streets within the development, then at the Town's option and as a condition of service, a cash completion bond in a form and amount acceptable to the Town as established by the Town Engineer shall be deposited with the Town to cover the cost of work yet to be completed in conjunction with the final paving.

14. Liens and/or Claims. Prior to acceptance of the extension(s), the Developer shall deliver to the Town a complete release of all liens that arise out of the performance of the Work or other evidence acceptable to the Town establishing that there are no liens or claims against the Work. If any lien or claim arises or remains unsatisfied after acceptance of the Work, then the Developer shall reimburse the Town for any costs incurred on account thereof, including reasonable attorneys' fees.

15. Limitation of Period of Acceptance. The extension(s) shall be completed and accepted within twelve (12) months of the date of this Agreement; otherwise, this Agreement terminates and all of the Developer's rights shall expire, unless this Agreement is extended in accordance with Town policy. If the Agreement terminates, then the Developer must submit a new application for extension agreement to the Town. Any new agreement or any extension of a prior agreement shall be subject to any new or amended resolutions, policies, or standards and specifications adopted after the execution of the terminated or extended agreement.

16. Final Acceptance - Conditions Precedent. Compliance with all terms and conditions of this Agreement, the Plans and Specifications and other Town requirements is a condition precedent to the Town's obligation to allow connection to the Town's system, to accept the bill of sale to the extension(s), to maintain and operate the extension(s), and to provide service to the real property described in this Agreement.

The Town shall not be obligated to accept title to the extension(s) or to provide service to the property described in this Agreement if construction by third parties of facilities to be deeded to the Town is incomplete and those facilities are necessary to provide service to the property described in this Agreement.

17. Procedure for Acceptance. Acceptance of title to the extension(s) will be by the Town. Prior to acceptance, a bill of sale containing the warranties required by this Agreement shall be executed by the Developer and any additional owners and delivered to the Town. There will be no conditional acceptance or acceptance for use and operation.

18. Date of Final Acceptance. The two-year warranty period will not begin until the project is accepted by the Town.

19. Effect of Acceptance. Acceptance of the extension(s) by the Town transfers ownership of the extension(s) to the Town for operation as a public system subject to Town rules and regulations, conditions of service, and service charges.

20. Connection Charges and Fees. Before connection of any Project water lines to the Town's water system, the Owner shall pay all service, meter, connection, latecomer and permit fees which may be due for the Project and the Property. The fees and charges shall be calculated in accordance with the number of actual and planned building units at the time the Project is accepted by the Town.

If the Project is not completed and accepted pursuant to the terms of this Agreement, or any extension or renewal thereof, or if the Project is not connected to the Town's water system after completion and acceptance of the Project, the Town shall retain the Basic Engineering and Administrative Fee, plus 15 percent of the total amount of all other connection charges and fees paid up to a maximum of $500.00, and shall refund the remainder of all connection charges and fees paid without accrual and payment of interest.

No other property of the Owner in the vicinity of the Property shall be connected to the Town's water system until a contract providing for the connection has been entered into with the Town.

21. Subcontracting. Developer is responsible for the acts and omissions of subcontractors and persons employed, directly or indirectly, by subcontractors, as well as the acts and omissions of Developer's employees.

22. No Assignment Without Town Approval. This Agreement and Developer's rights and responsibilities may not be assigned without the prior written consent of the Town. Any Town approved assignment shall be in writing in a form approved by Town and filed with the Town by the Developer.

23. Laws to be Observed. The Developer and the Contractor shall comply with all federal, state, and local laws, ordinances and regulations that affect the Work that is the subject of this Agreement. The Developer shall pay all expenses incurred for complying with such laws, ordinances and regulations.

24. Town Resolutions and Fines. Town Resolutions may impose fines for violating their terms and conditions. Developer agrees to comply with all Town Resolutions and to ensure compliance with Town Resolutions by the Developer's agents. Developer agrees to pay any fine imposed pursuant to Town Resolutions.

25. No Third Person Shall Have any Rights Hereunder. This agreement is made only for the benefit of the Town and the Developer and successors in interest and no third person or party shall have any rights hereunder whether by agency or as a third-party beneficiary or otherwise.

26. Governing Law/Forum. This agreement shall be construed and enforced in accordance with the law of the State of Washington. Any suit to enforce the provisions of the agreement shall be brought in the Superior Court of Pierce County, Washington.

27. Remedies Available to Town. If the Developer fails to pay any fees and charges or fines when due as determined by the Town, then the charge or fine shall be delinquent and shall accrue interest at the highest legal rate per annum until paid. In addition to other remedies, the Town may file a lien against the Real Property referenced herein and commence foreclosure proceedings pursuant to RCW 57.08.080-090.

28. Costs of Litigation. If either the Town or the Developer commences any legal action relating to the provisions of this agreement, then the prevailing party shall be entitled, to recover all costs of litigation, including but not limited to costs, witness, expert and reasonable attorney's fees, including all such costs and fees incurred on appeal.

In any litigation arising out of this Agreement or related to this project to which the Town is not a party the Developer will reimburse the Town for all of its costs and expenses, including attorney's or engineer's fees, incurred as a result of such litigation.

29. Engineering, Legal and Administrative Costs. The Owner has paid to the Town a non-refundable Basic Engineering and Administrative Fee for review of the application for developer extension and initial services of the Engineers to determine the feasibility of the Project.

During the period of construction and installation of the Project, the Town shall submit monthly to the Owner a statement of charges for other services of the Town's Engineer pursuant to this Agreement, which statement shall be equal to the statement submitted by the Town's Engineer to the Town pursuant to the applicable fee arrangement for engineering services between the Town and the Engineer. The Town shall also submit monthly to the Owner during such period and until this Agreement has been fully performed and the Project has been constructed and conveyed to the Town, a statement of charges for legal services, which statement shall be equal to the statement submitted to the Town by the Town's attorneys (the "Attorneys"), pursuant to the applicable retainer resolution between the Town and the Attorneys, for all work performed by the Attorneys in connection with the preparation and performance of this Agreement, including, but not limited to, participation in any pertinent administrative or court proceedings to which the Town may become a party.

The statement of charges shall include an amount equal to 20 percent of the charges of the Engineers and the Attorneys for the administrative cost to the Town of handling such statement of charges and all out-of-pocket costs of the Town attributable to this Agreement. The Owner shall pay any statement of charges within ten days of receipt. Statements not paid in full within ten days shall be deemed delinquent and shall accrue interest at the rate of 12 percent per annum from the date of delinquency.

The Town shall have the right to commence, appear in or defend any action or proceeding affecting the rights of the parties, and shall have the right to pay necessary expenses, including the costs of engineering and legal services, subject to reimbursement by the Owner in the manner provided in this Agreement.

30. Commencement of the Project. In addition to any other requirements of this Agreement, and before construction of the Project is commenced, the Owner shall take the following action:

a. Obtain Town Approval of its contractor in accordance with the qualification requirements of applicable law.

b. Obtain and file evidence acceptable to the Town of a policy of comprehensive general liability insurance as outlined in item 7.

c. The Town and the Engineers shall be named as an additional insured under the policy, which shall be maintained in full force and effect during the period of construction and installation.

d. Obtain or cause to be obtained all applicable permits and approvals at Owner's expense from agencies of Pierce County and the State of Washington and other governing agencies.

e. File with the Town executed copies of any easements, in form acceptable to the Town, obtained for property located outside the boundaries of the Property but within the boundaries of the Town.

f. Give the Town one week's written notice before commencing construction of the Project.

g. If construction or installation of any part of the Project will occur in a public right-of-way under franchises or permits obtained by the Town or for which the Town is responsible, provide to the Town a restoration performance bond executed by the Owner and a surety company acceptable to the Town, substantially in the form of the restoration performance bond attached to this Agreement, in the sum of $10,000 or 50 percent of the estimated cost of that part of the Project to be constructed or installed in the right-of-way, whichever is greater. The restoration performance bond shall be conditioned upon the Owner's

i) replacing, repairing and restoring the public right-of-way in as good a condition as it was immediately before the right-of-way was entered upon for construction of the Project, and correcting and repairing any defects appearing or developing in the materials or workmanship provided in such replacement, repair and restoration within a period of one year after the date of acceptance of the Project by the Town; and

ii) indemnifying and holding harmless the Town from any damage or expense by reason of the failure of such performance.

31. Construction Observation. The Owner shall permit the Town and its Engineer to observe construction and installation of the Project, both visually before any pipe is covered, and by test upon final completion, before connection is made to the Town's water system. The Town and its Engineer shall have authority to reject any construction and installation not conforming to the approved design of the Project and the requirements of this Agreement. The determination of the Town and its Engineer shall be final.

32. Completion of the Project. Subject to any applicable state or local requirements, the Owner shall take the following action or receive the following approvals before the Project is connected to the Town's water system:

a. Obtain approval and acceptance of the construction and installation of the Project by the Town.

b. Pay for engineering and legal services and administrative, out-of-pocket and other applicable fees and charges, as provided herein.

c. Satisfy and release all liens and encumbrances for labor, materials and taxes relating to the Project.

d. Convey without cost to the Town fifteen-foot, minimum, easements and rights-of-way (five feet minimum on each side of the water lines), in form acceptable to the Town, for all Project water lines, with the right of ingress and egress for maintenance, operation, repair and replacement.

e. Obtain for the Town such other easements, in form acceptable to the Town, as are found by the Town to be necessary to gain access to the Project.

f. By warranty bill of sale, substantially in the form of the Warranty Bill of Sale attached to this Agreement, convey the Project to the Town free and clear of all liens or

encumbrances. The Owner's conveyance of the Project to the Town shall be completed before the Owner sells or contracts to sell the Property or any portion thereof.

g. Upon request of the Town, provide to the Town a title report concerning any easement or right-of-way that will be conveyed to the Town.

h. When the Project is accepted by the Town, provide to the Town a maintenance bond as outlined in Section 12.

i. Deliver to the Town an original mylar as-built set of plans for the Project, including all water meters and hydrants.

j. Deliver to the Town two copies of the final plat of the Property, if applicable.

33. Town Authority; Delinquencies. The Owner shall be subject to all standards, rules and regulations of the Town as now in effect and as the same hereafter may be amended. In the event of delinquency in the payment of any rates, charges or assessments imposed by the Town, the Owner shall be subject to the lien and foreclosure provisions of the laws of the State of Washington and the rules, regulations and resolutions of the Town pertaining to property served by the Town.

34. Contractual Relationships; Assignment. This Agreement does not constitute the Owner as the agent or legal representative of the Town for any purpose whatsoever. The Owner is not granted any express or implied right or authority to assume or create any obligation or responsibility on behalf of or in the name of the Town or to bind the Town in any manner or thing whatsoever. The Owner shall not assign this Agreement without the prior written consent of the Town.

35. Utility Local Improvement Towns; Connection of Additional Property. If any utility local improvement Town ("ULID") is proposed to pay all or a part of the cost of constructing water lines that serve or benefit all or a part of the Property, the Owner, its heirs, representatives, assigns and successors in interest agree that they will sign any petition to form the ULID and will not protest or object to the formation of the ULID. If the Town constructs additional water lines and facilities within or serving the Property, nothing in this Agreement shall prevent the Town from levying special assessments against any of the Property for the cost of the water lines and to the extent of the benefit therefrom. After conveyance to the Town of the Project, additional property may be permitted to connect to it under such terms and conditions as the Town in its sole discretion may determine.

36. Time of Essence; Termination for Nonpayment; Notices. Time is of the essence of this Agreement. If any payment is not timely made by the Owner, this Agreement, or any performance related to the payment, may be terminated by the Town at its option upon ten days' written notice to the Owner. All notices and payments shall be made at the following addresses, unless otherwise provided for in writing:

Town of South Prairie _____

P.O. Box F
South Prairie, Washington 98385

37. Recordation; Binding Effect. This Agreement shall be recorded in the Auditor's Office, Pierce County, Washington, and shall constitute an easement and servitude upon the Property, which the Owner warrants it now owns, and shall be binding upon the parties, their heirs, representatives, assigns and successors in interest. The cost of such recording shall be paid by the Owner.

38. Amendments. The parties expressly reserve the right to modify this Agreement, from time to time, by mutual agreement. No modification or amendment of the provisions of this Agreement shall be effective unless in writing and signed by authorized representatives of the parties.

39. Invalidity of Particular Provisions. Should any term, provision, condition or other portion of this Agreement or the application thereof be held to be inoperative, invalid or unenforceable, the remainder of this Agreement or the application of the term or provision to persons or circumstances other than those to which it is held invalid or unenforceable shall not be affected thereby and shall continue in full force and effect.

40. No Waiver. No waiver of full performance by either party shall be construed, or operate, as a waiver of any subsequent default or breach of any of the terms, covenants or conditions of this Agreement.

41. Previous Agreements Superseded. The terms and conditions of this Agreement supersede the terms, obligations and conditions of any existing or prior agreement between the parties regarding the subject matter of this Agreement.

42. Entire Agreement. This Agreement, including the attached exhibits, contains all of the covenants, promises, agreements, and conditions, either oral or written, between the parties.

43. (Optional) Latecomer Reimbursement. If any property within the area described in Exhibit B, attached hereto and by this reference made a part hereof, is connected to the Project within a period of fifteen years from the effective date of this Agreement, the owners of such property, prior to making such connection, shall pay to the Town a pro rata share of the costs of the Project, without adjustment for inflation or accrual of interest. Within sixty days after receipt, the Town shall reimburse such payments to the Owner, its assigns, or successors in interest. The costs of the Project shall be the total of the costs listed on the warranty bill of sale for the Project. Prior to submission of the warranty bill of sale, the Owner shall provide to the Town a summary of the costs of the Project, together with copies of invoices and documents verifying such costs. The amount of reimbursement for any connection shall be computed as follows:

The duty of the Town to reimburse the Owner for sums paid by the owners of such property shall be conditioned upon the Owner's or its assigns and successors in interest, notifying the Town of any changes in name and address of the Owner or its assigns and successors in interest.

44. Instructions.

a. If the Developer is a corporation, this Agreement must be executed by its duly authorized representative and the Developer hereby warrants same.

b. If the Developer is a partnership, at least one of the general partners must sign this Agreement and indicate his/her capacity as such.

c. If the Developer is a joint venture, each joint venturer shall sign. One may sign on behalf of the others pursuant to a power of attorney.

_____

TOWN OF SOUTH PRAIRIE

By_____

Title_____

By _____

Mayor

Dated this ___ day of _____, 2_____.

DEVELOPER, _____, a _____ corporation,
_____partnership, _____joint venture, _____sole proprietorship.

By_____

(print/type name)

By_____

(print/type name)

TOWN OF SOUTH PRAIRIE

By_____

Town Engineer

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Town Engineer of the TOWN OF SOUTH PRAIRIE, a municipal corporation, to be the free and voluntary act of such corporation for the uses and purposes mentioned in the instrument.

Dated_____

_____

Name:_____
(Print Name)

Notary Public in and for the State
of Washington, residing at _____
My Appointment Expires _____

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and who acknowledged that _____ signed this instrument and acknowledged it to be _____ free and voluntary act for the uses and purposes mentioned in the instrument.

Dated_____

_____

Name:_____
(Print Name)

Notary Public in and for the State
of Washington, residing at _____
My Appointment Expires _____

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and who acknowledged that _____ signed this instrument, on oath stated that _____ was authorized to execute the instrument and acknowledged it as the _____ of _____ to be the free and voluntary act of such corporation for the uses and purposes mentioned in the instrument.

Dated_____

_____

Name:_____
(Print Name)

Notary Public in and for the State of Washington.
Commission Expires: _____

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and who acknowledged that _____ was authorized to execute the instrument as a General Partner on behalf of _____ pursuant to the provisions of the partnership agreement of said general partnership and acknowledged said instrument to be the free and voluntary act of said general partnership for the uses and purposes mentioned in said instrument.

Dated_____

_____

NAME:_____
(Print Name)

Notary Public in and for the State of Washington.
Commission Expires: _____

TOWN OF SOUTH PRAIRIE
RESTORATION PERFORMANCE BOND

WHEREAS, TOWN OF SOUTH PRAIRIE, Owner, and Principal, have entered into a Developer Extension Agreement dated _____, 2____, for the construction of water facilities; and

WHEREAS, the Principal is required under the terms of the Developer Extension Agreement to furnish a bond for the replacement, repair and restoration of public right-of-way for purposes of constructing and installing the water facilities;

NOW, THEREFORE, the Principal and _____, Surety, are held and firmly bound unto the Owner in the penal sum of _____ dollars ($_____), for the payment of which sum the Principal and Surety bind themselves, their heirs, administrators, successors and assigns, jointly and severally.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Principal, its heirs, executors, administrators, successors or assigns shall replace, repair and restore the public right-of-way entered upon for construction of the water facilities to as good a condition as it was immediately before the entry, and shall correct and repair any defects in the materials or workmanship provided in the replacement, repair and restoration of the public right-of-way within a period of one year after the date of acceptance of the water facilities by the Owner, and shall indemnify and hold harmless the Owner from any damage or expense by reason of the failure of such performance, then this obligation shall become null and void; otherwise, it shall remain in full force and effect, and if suit is brought on this bond, the Principal and Surety will pay to the Owner such reasonable attorneys' fees as shall be fixed by the court.

SIGNED, SEALED AND DATED this _____ day of _____, 2_____.

_____	_____
Surety	Principal
_____	_____
Signature for Surety	Signature for Principal
_____	_____
Title of Signatory	Title of Signatory

TOWN OF SOUTH PRAIRIE

EASEMENT DEED

The Grantor, _____, grants, conveys and warrants to the Grantee, TOWN OF SOUTH PRAIRIE, Pierce County, Washington, a municipal corporation of the State of Washington, a perpetual right-of-way easement for a water main with necessary appurtenances ("water main") under, through, across and over the following described real property situated in Pierce County Washington, more particularly described as follows:

together with a temporary construction easement, more particularly described as follows:

The temporary construction easement shall remain in force during construction and until such time as the water main has been accepted for maintenance and operation by the Grantee.

Grantee shall have the right, without prior institution of any suit or proceeding at law, and at such times as may be necessary, to enter upon the above-described property for the purpose of constructing, repairing, altering, reconstructing, maintaining and operating the water main or making any connections thereto. The construction, repair, alteration, reconstruction, maintenance and operation of the water main shall be accomplished in such a manner that the property shall not be damaged or destroyed, or in the event that it is damaged or destroyed, it will be restored, as nearly as practicable, in as good a condition as it was immediately before it was entered upon by the Grantee.

The Grantor shall retain the right to use the surface of the property, so long as the use does not unduly interfere with the installation, maintenance and operation of the water main and so long as no building or other structures, except fences, are erected on the property.

This easement shall be a covenant running with the land and shall be binding on the successors, heirs and assigns of the Grantor.

Dated this _____ day of _____, 2____.

_____

STATE OF WASHINGTON)
) ss.
COUNTY OF _____)

I certify that I know or have satisfactory evidence that _____ signed this instrument and acknowledged it to be a free and voluntary act for the uses and purposes mentioned in the instrument.

Dated: _____

_____

Name: _____
(Print Name)

Notary Public in and for the State of Washington, residing at _____

My Appointment Expires _____

STATE OF WASHINGTON)
) ss.
COUNTY OF _____)

I certify that I know or have satisfactory evidence that _____ signed this instrument and acknowledged it to be a free and voluntary act for the uses and purposes mentioned in the instrument.

Dated: _____

_____

Name: _____
(Print Name)

Notary Public in and for the State of Washington, residing at _____

My Appointment Expires _____

TOWN OF SOUTH PRAIRIE
WARRANTY BILL OF SALE

_____ ("Owner") and TOWN OF SOUTH PRAIRIE ("Town") are parties to a Developer Extension Agreement dated _____, 2____, concerning the provision of domestic water service by the Town to the Owner. In consideration of the right to connect to the water system of the Town and other good and valuable consideration, the receipt of which is hereby acknowledged, the Owner does grant, sell, transfer and deliver to the Town all right and title to the water mains and appurtenances described in Exhibit A, attached hereto and incorporated herein by the reference (the "Water mains").

The Owner warrants that it is the lawful owner of the water mains, that it has complete right to convey the water mains to the Town, and that the water mains are free from all liens or encumbrances. The Owner shall hold harmless and indemnify the Town from any claims and demands relating to the construction and installation of the water mains and will promptly defend the right of the Owner to convey the water mains to the Town against the claims and demands of all persons.

The Owner guarantees that the water mains have been constructed and installed in accordance with conditions and standards of the Town and the Developer Extension Agreement, are in proper working condition, order and repair and are adequate and fit for use as a water distribution system. The Owner also guarantees that it will correct and repair any defects appearing or developing in the workmanship or materials furnished in respect to the water mains within a period of one year after the date of acceptance of the water mains by the Town, and will hold harmless and indemnify the Town from any damage and expense incurred by reason of failure of such performance.

DATED this _____ day of_____, 2____.

By:_____

By: _____

Title: _____

STATE OF WASHINGTON)
) ss.
COUNTY OF _____)

I certify that I know or have satisfactory evidence that _____ signed this instrument and acknowledged it to be a free and voluntary act for the uses and purposes mentioned in the instrument.

Dated: _____

_____

Name: _____
(Print Name)

Notary Public in and for the State of Washington, residing at _____
My Appointment Expires _____

STATE OF WASHINGTON)
) ss.
COUNTY OF _____)

I certify that I know or have satisfactory evidence that _____ signed this instrument and acknowledged it to be a free and voluntary act for the uses and purposes mentioned in the instrument.

Dated: _____

_____

Name: _____
(Print Name)

Notary Public in and for the State of Washington, residing at _____

My Appointment Expires _____

EXHIBIT A
TO
WARRANTY BILL OF SALE

On	From	To	Length	Size	Approved Cost, Including Tax
OTHER:					
TOTAL COST:					

APPENDIX F

Coliform Monitoring Plan

COLIFORM MONITORING PLAN 82300R
SYSTEM INFORMATION

NAME: TOWN OF SOUTH PRAIRIE
PWS ID # : 82300R
COUNTY : PIERCE

SOURCE # : S01 WELL # 1 130 ft Deep
Location : SE/NW 18 19N 06E

S02 WELL # 2 425 ft DEEP
Location : SE/NW 18 19N 06E

STORAGE : TWO TANKS of 100,000 Gallons Each
Total of 200,000 Gallons

One Pressure Zone no other stations

TREATMENT : At each well liquid Sodium Hypochlorate for disinfection

TOTAL POPULATION : 383 NON RESIDENTS 182
SERVICE CONNECTIONS : 135 NON RESIDENTIAL 16

Water is gravity fed from two (2) side by side storage tanks with essentially one pressure zone. 565 population is served by 151 connections from a single pressure zone.

SAMPLING INFORMATION

ROUTINE SAMPLES REQUIRED : ONE (1) Sample required per month from drinking water regulations Table 2.

SAMPLE COLLECTION SCHEDULING :

Since only one sample per month is required we usually collect the sample on first Wednesday of the Month to allow time if resampling is required.

ROUTINE SAMPLING SITES:

We selected three (3) routine Sampling sites in the distribution system as shown in the schematic location. These three (3) sites plus the First Service have a KUPFERLE # 93-WM Sampling station in the water Meter Box.

Station #1 - 606 Tubbs Rd.
Station #2 - 318 SW First St.
Station #3 - 25014 South Prairie Rd. E.
First Service - 726 Carriage Rd.

ROTATION :

Since we are only required to sample once per month, we will rotate our sampling sites according to the schedule below.

SAMPLE SITE

#1		#2	#3
NOVEMBER	/	DECEMBER	/ JANUARY
FEBRUARY	/	MARCH	/ APRIL
MAY	/	JUNE	/ JULY
AUGUST	/	SEPETEMBER	/ OCTOBER

REPEAT MONITORING SITES :

We are required to take four (4) repeat samples after a positive. We will use original site, Upstream, Downstream and First Service Sample Station.

	TYPE	SITE #		LOCATION
	ROUTINE	1	/	~~606 Tubbs Rd.~~ 510 Carriage Rd
SAMPLE	REPEAT	Upstream	/	610 Tubbs Rd.
SITE	REPEAT	Downstream	/	521 Prairie View Rd,
GROUP	REPEAT	First Service	/	726 Carriage Rd
	ROUTINE	2	/	318 SW First St.
SAMPLE	REPEAT	Upstream	/	310 SW First St.
SITE	REPEAT	Downstream	/	221 S.P. Carbon River Rd.
GROUP	REPEAT	First Service	/	726 Carriage Rd.
	ROUTINE	3	/	25014 South Prairie Rd. E.
SAMPLE	REPEAT	Upstream	/	12701 South Prairie Rd. E
SITE	REPEAT	Downstream	/	25027 South Prairie Rd. E.
GROUP	REPEAT	First Service	/	726 Carriage Rd.

FOLLOWING MONTH ROUTINE MONITORING:

For the five (5) routine Samples that are required after a positive Sample, We will use our three (3) normal sampling sites plus the upstream and the downstream site from a positive site.

PLAN PREPARATION INFORMATION

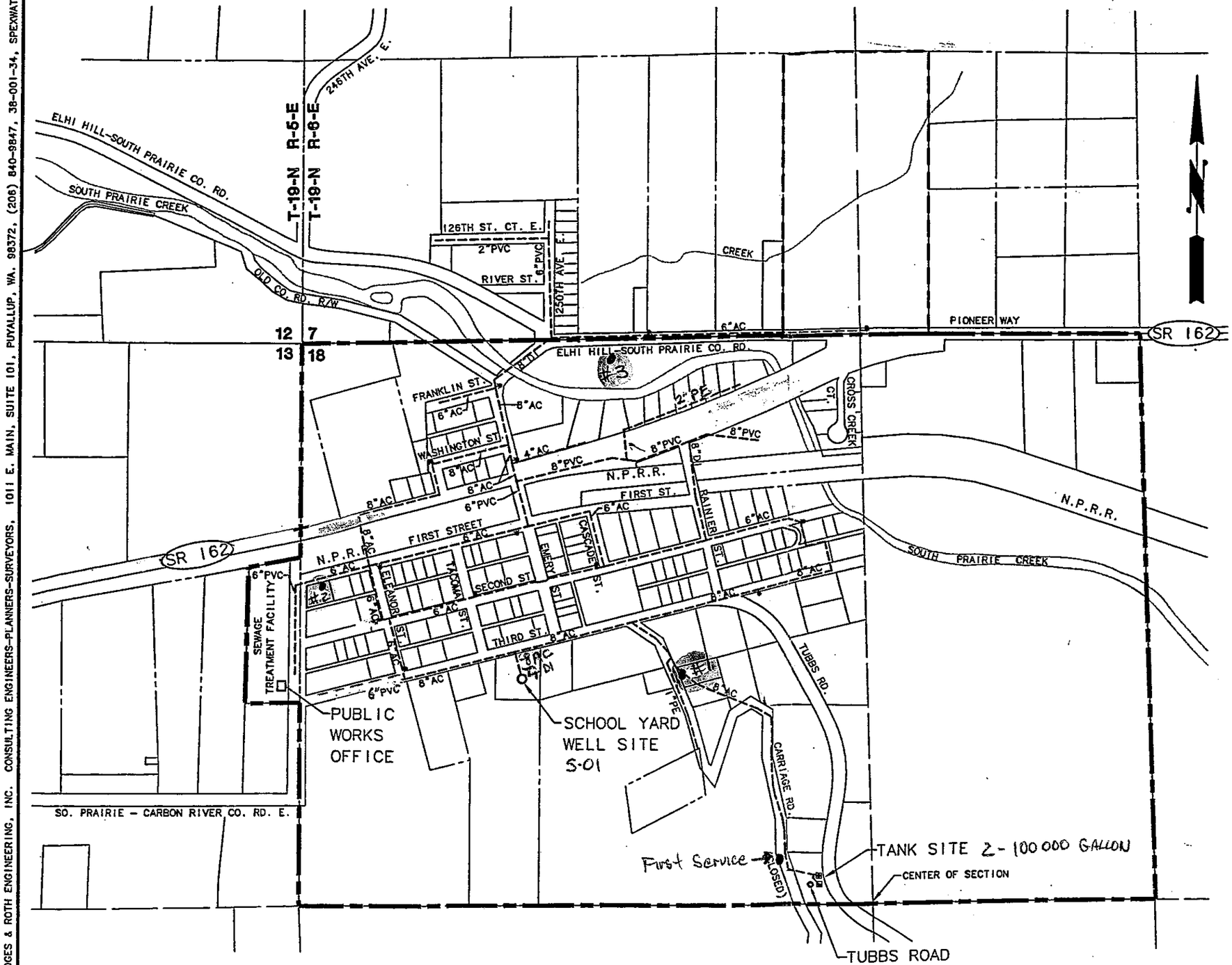
SYSTEM: TOWN OF SOUTH PRAIRIE ID # 82300R

Name of Plan Preparer: Larry Harter
WDM # 4583
(360) 897-8969

Prepared on : JULY 21, 1997
Updated on:
REVIEWED BY :_____

HEDGES & ROTH ENGINEERING, INC. CONSULTING ENGINEERS-PLANNERS-SURVEYORS, 1011 E. MAIN, SUITE 101, PUYALLUP, WA. 98372, (206) 840-9847, 38-001-34, SPEXWAT, 3/5/96

PORTIONS OF SECTIONS 12 & 13, TOWNSHIP 19 NORTH, RANGE 5 EAST, W.M.
PORTIONS OF SECTIONS 7 & 18, TOWNSHIP 19 NORTH, RANGE 6 EAST, W.M.



LEGEND

———	EXISTING TOWN LIMITS
- - - -	URBAN GROWTH AREA
--------	EXISTING WATER
*	EXISTING FIRE HYDRANT
AC	ASBESTOS CEMENT
DI	DUCTILE IRON
PE	POLYETHYLENE
PVC	POLYVINYLCHLORIDE
#	SAMPLING STATIONS

TOWN OF SOUTH PRAIRIE
EXISTING WATER

SCALE 1"=500' 3/5/96

TO # 82300R

MAP 4

©

APPENDIX G

Water Conservation Plan

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Parametrix Sumner Office

ATTACHMENT C

The following checklists are for use by Ecology and Health staff in their review of water conservation plans submitted as elements of water system plans, or separately in conjunction with water right permit applications. These checklists summarize the water conservation planning requirements for all size and location of public water systems as required by Ecology and Health. Please note that systems that will be pursuing water rights within the next 20 years must also comply with the source of supply requirements pursuant to chapter 246-290-100 WAC. All such systems must comply with both the source of supply analysis elements below and the conservation planning requirements for their particular sized system. These checklists will also be utilized as informational handouts for public water systems to assist them in completing conservation plans.

CONSERVATION PLANNING REQUIREMENTS FOR PUBLIC WATER SYSTEMS WITH FEWER THAN 1,000 SERVICE CONNECTIONS LOCATED IN CRITICAL WATER SUPPLY SERVICE AREAS

The checklists below are for use by public water systems in their efforts to develop a water conservation plan in accordance with the Guidelines and Requirements for Public Water Systems regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs (Conservation Planning Requirements). Ecology and Health staff in reviewing conservation plans required from public water systems will also use these checklists. Conservation plans consist of three elements: data collection and reporting; demand forecasting for future water needs, and; conservation program development and implementation. THESE CHECKLISTS IDENTIFY THE REQUIREMENTS FOR EACH OF THESE THREE COMPONENTS OF A CONSERVATION PLAN FOR PUBLIC WATER SYSTEMS WITH FEWER THAN 1,000 SERVICES LOCATED IN AREAS COVERED BY A COORDINATED WATER SYSTEM PLAN DEVELOPED PURSUANT TO CHAPTER 70.116 RCW. Please note that systems that will be pursuing water rights within the next 20 years must also comply with the source of supply analysis requirements pursuant to chapter 246-290-100 WAC. An additional checklist defining the source of supply requirements is included as attachment H. Please refer to the Conservation Planning Requirements and the Water System Planning Handbook for additional details.

CONSERVATION PLANS ARE REQUIRED COMPONENTS OF WATER SYSTEM PLANS REQUIRED BY THE DEPARTMENT OF HEALTH (HEALTH), AND ARE REQUIRED BY THE DEPARTMENT OF ECOLOGY (ECOLOGY) PRIOR TO THE ISSUANCE OF WATER RIGHTS TO PUBLIC WATER SYSTEMS. Implementation of conservation plans may be conditions of approval of water system plans and for water right permits. Where water system plans are required, Health will be the lead agency in reviewing conservation plans. Health will coordinate review of conservation plans with Ecology. If you have any questions about the Conservation Planning Requirements contact the Health Regional Office Planner for your area, or if your system is not required to complete a water system plan, the Ecology Regional Office for your area. The cost-benefit analysis that is required for evaluating various conservation measures should be commensurate to the water system size and water supply status of the individual water system and the area watershed.

For additional resources to assist in the development of your conservation plan, please refer to the Water Conservation Handbook for Public Water Systems developed by Ecology and Health. Additionally, the Planning Handbook - A Guide for Preparing Water System Plans is available from Health to assist in the development of your overall water system plan. Finally, the Water Conservation Bibliography for Public Water Systems published by Health provides references to additional water conservation information and literature which can be obtained from the library and other sources. All of these documents are available from Ecology or Health.

NOTE: The information in this handout provides an overview of the specific requirements in the Conservation Planning Requirements. You should not rely on this handout exclusively to prepare your conservation plan. Please refer to the Conservation Planning Requirements to determine the specific guidelines and requirements for your conservation plan.

WATER USE DATA COLLECTION REQUIREMENTS CHECKLIST

This checklist summarizes the water use data reporting requirements in the Conservation Planning Requirements. Unless otherwise noted, data should be reported in cubic feet. The Conservation Planning Requirements establish 1991 as the initial year for water use data collection and reporting. If available, data should be shown for the past 5 years. Systems are encouraged to collect more than the minimum required data.

To meet the minimum requirements of the Conservation Planning Requirements, plans must contain currently available data on water usage for the categories of use listed below. If the data has not been collected for any of the categories below, you will be required to make a commitment in your conservation plan to begin collecting the data as required. This commitment must include a schedule for when the data will begin to be collected, and what improvements if any will be made to ensure the data is collectable. Systems which make this commitment to collect data, but do not follow through and collect the information, may be unable to receive subsequent water system plan approval or approval for additional water rights, until data consistent with the checklist below is collected.

All data elements must be reported or a commitment must be made (for each data element not collected) to collect and report the data prior to the next water system plan update. Where available, daily, monthly and annual totals must be reported, not averages. Please read the footnotes to obtain additional information.

A. Are you a new public water system which has not yet collected any water use data? Yes _____ No X

If yes, skip to number 14.

Water Use Data	Data Collected		
1. Source of Supply Meter (monthly totals from each source)[1]	Yes X	No _____	See Section 2.1.3.
2. Total Annual Use - Each source (annual totals)	Yes X	No _____	See Section 2.1.4.
3. Emergency Interties - Amount Imported (monthly totals from each intertie)	Yes _____	No _____	None Imported X
4. Wholesale - Amount Purchased (annual totals from each wholesaler)	Yes _____	No _____	None Purchased X
5. Peak Month Usage (peak monthly totals)	Yes X	No _____	See Section 2.1.5.
6. Unaccounted for Water (annual totals)	Yes X	No _____	See Table 2-2 in Section 2.
7. Accounted for Non-Revenue Water annual totals)[2]	Yes X	No _____	None _____

8. Service Meter Usage (monthly totals)[3]	See Section 2.1.4.		
Single-Family	Yes X	No ____	None Served ____
Multi-Family	Yes ____	No ____	None Served X
Commercial/Governmental/Industrial	Yes X	No ____	None Served ____
Agricultural	Yes ____	No ____	None Served X
9. Emergency Interties - Amount Exported (monthly totals provided to each intertie)	Yes ____	No ____	None Exported X
10. Wholesale - Amount Sold (monthly totals provided to each wholesale customer)	Yes ____	No ____	None Sold X
11. Population Served. (required to be reported - annual totals)[4]	Yes X	No ____	See Section 2.1 and Table 2-1.
12. Conservation Data (report the type of measure, level of implementation, duration and date begun - to be included in conservation plan, not reported with other data).[5]	Yes X	No ____	See Section 5.1.3 of the Water System Plan for selected conservation activities.
13. Existing Rate Schedules	Yes X	No ____	See Ordinance 401 in Appendix A or Table 10-2 in Section 10.

Data Collection Commitment

14. Unreported Data Elements (for all data elements where data was not collected, the system is required to make a commitment to initiate and continue to collect data)[6]	Yes ____	No ____	All Reported X

1. Those systems *which do* not have source meters will be required to estimate source production.

2. Accounted for non-revenue water *includes* uses which can be accounted for, but *where* revenue is not collected. Examples include fire, protection, system flushing and other designated uses.

3. Those systems required to collect data which do not have service meters, will be required to estimate how much each of these users has consumed. Include the number of connections in each category of user. Data may be collected through normal billing procedures. Monthly data may be estimated if customers are billed *less* frequently.

4. Report the number of connections and customers in the residential class; and number of connections for the other customer classes. Population served must be reported, a commitment to include the information in the next water system plan update is inadequate. Data on population per household is available from the State Office of Financial Management.

5. If no previous conservation efforts have been undertaken, development of a conservation plan consistent with the Conservation Planning Requirements will be acceptable.

6. System must either have collected all data or made a written commitment to initiate and continue data collection or the conservation plan cannot be approved.

DEMAND FORECASTING REQUIREMENTS CHECKLIST

This checklist summarizes the demand forecasting factors that must be considered when forecasting future water needs. Demand forecasts must include demands from wholesale customers. To meet the minimum requirements of the Conservation Planning Requirements demand forecasts must incorporate the four factors, listed below. Other factors determined to be appropriate by the system may be included as is appropriate. Demand forecasts must show demand for 6 and 20 year projections for both average daily demand and peak day demand, which depict future usage with and without conservation savings obtained from the conservation program (i.e. that factor in target water saving projections identified in the conservation program).

Factors Required to be Included	Included		
1. Projected Population (based on information from local government and/or Office of Financial Management)	Yes X	No ____	See Section 2.2.1.
2. Land Use/Zoning/Capacity (adopted land use and zoning regulations)	Yes X	No ____	See Section 2.2.1.
3. Conservation Savings (water projected to be saved through the water conservation program must be factored into demand projection)	Yes X	No ____	See Section 2.2.5.
4. Per Capita Water Use and Other Non-Residential Water Use (based on documented water usage - when available)	Yes X	No ____	See Section 2.1.4.

WATER CONSERVATION PROGRAM REQUIREMENTS CHECKLIST

Conservation programs must include conservation objectives, evaluation of conservation measures, identification of selected conservation activities, and target water saving projections as discussed below. Please refer to the Conservation Planning Requirements for additional details.

Conservation Objectives. Goals and objectives of the conservation program shall be identified. These objectives should be designed to meet the needs of the specific water system (e.g., attain maximum utilization of current supplies, reduce peak daily consumption, reduce peak monthly consumption, reduce total annual consumption, promote long term efficiency with accelerated conservation on a short term basis, reduce usage from a specific customer class, develop public education and awareness, etc.). EACH WATER SYSTEM WILL NEED TO DEVELOP CONSERVATION OBJECTIVES WHICH LOGICALLY MEET ITS NEEDS.

Evaluation of Conservation Measures. Public water systems must evaluate all recommended conservation measures identified in the Conservation Planning Requirements and implement those that are required and those that meet the public water systems' needs. The specific measures to be evaluated depend upon the size of the system. However, systems are encouraged to evaluate measures above the minimum requirements. The system must explain decisions not to implement measures it is required to evaluate.

Identification of Selected Conservation Activities

Description. Description of conservation measures being implemented. (including required measures).

Schedule. Schedule of when the conservation measures will be implemented (emphasis on 6-year implementation schedule).

Budget. Projected budget for each selected conservation measure. Schedule and budget information should be shown together.

Monitoring Requirements. Description of how the system will monitor the success of its conservation measures (e.g., documented reduction in water usage, distribution of conservation materials, implementation of specific measures).

Target Water Savings Projections. Each system will identify a percentage savings goal, based on the measures chosen for implementation, which the entire water conservation program will attempt to save. Because different systems may have already implemented different levels of conservation, and the conservation needs of each system are different, no percentage savings goal has been established in the Conservation Planning Requirements. This percentage savings goal must be factored into the demand forecast.

To meet the minimum requirements of the Conservation Planning Requirements, all required measures must be planned to be implemented within six years, and all recommended measures must be evaluated and implemented if cost effective.

The following checklist summarizes the water conservation measures which are required to be implemented, and measures which are required to be evaluated and implemented where cost effective. In the absence of clear evidence to the contrary, estimates on the costs and benefits of

conservation measures (i.e. selection of non-mandatory measures for implementation) will not be challenged. Please refer to the footnotes for additional information.

Required Conservation Measures[1]	Measure Implemented		
1. Program Promotion	Yes X	No ____	Initiated with adoption of 2005 Water System Plan.
2. Install Source Meters	Yes X	No ____	Already implemented.
3. Unaccounted Water/Leak Detection	Yes X	No ____	Initiated with adoption of 2005 Water System Plan.

All recommended measures listed below must be evaluated for implementation in the conservation plan to meet the minimum requirements in the Conservation Planning Requirements.

Recommended Conservation Measures	Measure Evaluated		
3. Install Service Meters	Yes X	No ____	Already implemented.
4. Conservation Pricing	Yes X	No ____	Already implemented.

OTHER - REQUIREMENTS CONTAINED IN THE CONSERVATION - PLANNING REQUIREMENTS

In addition to developing a conservation plan as delineated above, the Conservation Planning Requirements also require that all public water systems preparing a water system plan identify existing rate schedules (include schedules for various customers classes if they are different), and inventory major potential sources and uses for reclaimed water.

Other Requirements	Information Included		
1. Inventory of Sources and Uses for Reclaimed Water.[2]	Yes ____	No X	Not applicable to Town of South Prairie with fewer than 25,000 service connections.

[1] Program promotion is required to be implemented for all public water systems. Source metering is required to be implemented by all system prior to receiving additional water rights. If additional water rights are not being sought, this measure must be evaluated and implemented if cost effective. If unaccounted for water is greater than 20 percent a leak detection and repair program must be initiated.

[2] A list of potential sources and uses of reclaimed water is contained in the Conservation Planning Requirements. Only those system with more than 25,000 service connections will be required *to evaluate water reuse as a conservation measure.*

APPENDIX H

Well Logs

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

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

Dif # 60134
Appli. #8787

WELL LOG
Record by Driller
Source Driller's record

Location: State of WASHINGTON
County Pierce
Area
Map

SW ¼ NW ¼ sec. 18 T. 19 N., R. 6 E. W.M.

Diagram of Section

Drilling Co. Rainier Well Drilling Co.
Address 13605 Waller Rd. E. Tacoma Wash.
Method of Drilling Cable Date 19
Owner Town of South Prairie
Address South Prairie, Washington
Land surface, datum ft. above below
SWL: flowing Date April 25, 19 67 Dims. 12" x 140'

Correlation	Material	From (feet)	To (feet)
	Domestic	0	2
	Topsoil, black	2	12
	Sand, brown, silt and gravel	12	28
	Sand, gray, cemented and gravel		
	Sand, black and gravel, hard		
	packed with water	28	34
	Clay, green, blue and gray	34	128
	Sand and gravel with rotten wood	128	140
	and thin layers of clay with		
	thin lenses of peat 30% of the sand		
	and gravel is very light weight pumice		
	Casing: 12" from 0-128'		
	Screened from 120-140'		
	Yield: 100 gpm with 41' DD after 4 hrs.		
	150 gpm with 98' DD after 111 hrs.		
	Test made April 21, 1967		

(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.)

Sheet ____ of ____ sheets

Turn up

RECEIVED
MAR 27 1979
DEPARTMENT OF ECOLOGY
SOUTHWEST REGIONAL OFFICE

FIRST OF TWO PAGES

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....
Permit No. .....

(1) **OWNER:** Name Town of South Prairie Address c/o J. J. Sleavin and Assoc., Tacoma, Wn

(2) **LOCATION OF WELL:** County Pierce — SE ¼ NW ¼ Sec 18 T. 19 N., R. 6E W.M.

Bearing and distance from section or subdivision corner

(3) **PROPOSED USE:** Domestic ☒ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) **TYPE OF WORK:** Owner's number of well (if more than one) .....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) **DIMENSIONS:** Diameter of well 12 inches.
Drilled 425 ft. Depth of completed well 425 ft.

(6) **CONSTRUCTION DETAILS:**

Casing installed: 12 " Diam. from 0 ft. to 425 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 ☐
Manufacturer's Name Johnson
Type stainless steel Model No. .....
Diam. 10" Slot size 60 from 404 ft. to ____ ft.
Diam. ____ Slot size 40 60 from ____ ft. to 425 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: .....
Gravel placed from ____ ft. to ____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal 250 lbs. 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 79 ft. below top of well Date 2-5-79
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? H.P.&D.
Yield: 415 gal./min. with 123'2" ft. drawdown after 4 hrs.
(complete detailed report on separate sheet)

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
1 min.	121'5"			2 hr.	89'4"
45 min.	83'10"			3 hr.	88'
1 hr.	82'6"				

Date of test 2-7-79
Bailer test 80 gal./min. with 10 ft. drawdown after 1 hrs.
Artesian flow ____ g.p.m. Date ____
Temperature of water ____ 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
Brown clay, hardpan w/rocks	0	45
More of a gravel h.p. (less clay) still w/lge. cobbles	45	64
More of a rusty color here	64	72
A little more clay binder, drilling somewhat faster	72	78
Gray clay hardpan	78	84
Brown hardpan	84	91
Brown sand & gravel some water	91	96
Brown clay hard pan	96	98
Sand gravel, seepage, big rocks	98	102
Brown hardpan	102	124
Gray clay hardpan	124	129
Greenish-brown clay hardpan	129	142
Darker gray clay with sand & gravel	142	170
Green clay	170	182
Brown clay with gravel	182	197
Gray clay	197	229
Some sand in clay	229	233
Pink (pumice with water)	233	235
Clay mixed in here	235	248
Change to gray clay hardpan	248	274
Solid gray clay	274	306
Greenish colored clay, hardpan	306	316
Clean sand - some gravel - some water	316	317
Immediate change to much finer sand w/green clay color in the water	317	331
Somewhat coarser, still not the cleanest	331	334
Mostly a sandy clay hardpan	334	344
Sticky gray clay w/vegatation and pumice	344	349
Green hard clay	349	356
Gray silty looking clay	356	359
Coarse sand & gravel, some water	359	362

Work started Dec. 11, 19 78 Completed ____, 19 ____

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 HARBOR PUMP & DRILLING CO., INC.
(Person, firm, or corporation) (Type or print)

Address 11302 Burnham Dr. N.W., Gig Harbor, Wn. 98335

[Signed] .....
(Well Driller)

License No. ____ Date Feb. 8, 19 79

CONTINUED ON PAGE #2.

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

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

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

PAGE TWO OF TWO PAGES

WATER WELL REPORT

STATE OF WASHINGTON

RECEIVED
MAR 27 19

Application No. .....
Permit No. .....

(1) OWNER: Name Town of South Prairie Address [illegible]

(2) LOCATION OF WELL: County Pierce SE 1/4 SE 1/4 1/4 Sec. [illegible] T. [illegible] N., R. [illegible] W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) .....
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well ..... inches.
Drilled ..... ft. Depth of completed well ..... ft.

(6) CONSTRUCTION DETAILS:

Casing installed: ....." Diam. from ..... ft. to ..... 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 ☐
Manufacturer's Name .....
Type ..... Model No. .....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☐ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☐ No ☐ To what depth? ..... ft.
Material used in seal .....
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 ..... 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: ..... 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 .....
Bailer test ..... 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:

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
cont. hard packed		362
Mostly coarse sand but has some clay balls.	362	366
Thin layer hard packed sand and gravel then into hard clay	367	386
Coarse gravel, some water, hard packed	386	393'6"
Thin streak of loose (mostly sand) material then back into hard packed sand and gravel	393'6"	399
Gray clay showing on gravel here	399	400'6"
More hard packed sand & gravel	400'6"	411
Brown color here, some peat seams	411	412
More hard sand & gravel	412	416
Loose streak of sand gravel with clay mixed in	416	417
Somewhat cleaner sand & gravel, some water	417	421
Hard packed gravel again	421	425'6"
Gray and brown clay mixed in here	425'6"	

Work started Dec. 11, 19 78 Completed Feb. 5, 19 79

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 HARBOR PUMP & DRILLING CO., INC.
(Person, firm, or corporation) (Type or print)

Address 11302 Burnham Dr. N.W., Gig Harbor, Wn. 98335

[Signed] Jim Miller by: M. Butler
(Well Driller)
0311

License No. 223 01 8455 Date February 8, 19 79

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

APPENDIX I

Water Right Certificates

G. P. No. 1361—3-51—3M. 37193.

CERTIFICATE RECORD NO. 2 PAGE NO. 768-A

STATE OF WASHINGTON, COUNTY OF Pierce

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* J. C. CLARKE

of South Prairie, Washington, *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 Lot 9, Block 4 of South Prairie Addition, Sec. 18, Twp. 19 N., Rge. 6 E.W.M.

for the purpose of municipal supply

under and subject to provisions contained in Ground Water Permit No. 1682 *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 herby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume* 2 *at page* 768-A; *that the right hereby confirmed dates from* July 13, 1950; *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* 100 gallons per minute; 60 acre-feet per year.

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 South Prairie, Pierce County, State of 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 1929.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this 28th *day of* September, *19* 51.

State Supervisor of Water Resources

ENGINEERING DATA

S. F. No. 378-B—12-45—2M. 10782

$5.00 examination fee should accompany each application.

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION AND DEVELOPMENT
Division of Hydraulics

RECEIVED JUL 12 1955 DIVISION OF HYDRAULICS

APPLICATION FOR A PERMIT
To Appropriate Public Ground Waters
OF THE STATE OF WASHINGTON

Application No. G. W. 1585

I, J. C. Clarke South Prairie Water Co (Name of applicant)

of South Prairie Wash Box 54 (Complete postoffice address)

do hereby make application for a permit to appropriate the following described public ground waters of the State of Washington, subject to existing rights. This application is made under the provisions of Chap. 203 of the Session Laws of 1945 of the State of Washington and subject to the rules and regulations of the Department of Conservation and Development, Division of Hydraulics.

1. The source of the proposed appropriation is Well (Well, tunnel, infiltration trench)

located South Prairie Wash (Give approximate distance and direction from nearest city or town)

Area ..... (Leave blank) Sub-area ..... (Leave blank)

Zone ..... (Leave blank)

Applicant's name or number of well or other works, if any South Prairie Water Co

2. The quantity of water which applicant intends to apply to beneficial use is ~~1000 Pr Hr~~ 100

gallons per minute; 2000 acre feet per year.

3. The use or uses to which water is to be applied ~~Public use~~

Municipal (Domestic supply, irrigation, municipal, manufacturing, industrial use, etc.)

4. The time during which water will be required each year July to Dec

5. Location of well or other works for withdrawal of water: In county of Pierce

(a) 150' So ~~300'~~ 560' W from NE Corner ~~NE¼ + SW¼~~ SW¼ NW¼ ~~Town of South Prairie~~ Sec 18 (Give distance and bearing to nearest corner of section or legal subdivision)

being within the ~~Rosson Pt Ad~~ (Give smallest legal subdivision) of Sec 18, Twp. 19 N., Rge. 6E (E. or W.)

or (b) If within limits of recorded platted property, town or city: Lot ~~[illegible]~~ 9 Block 4,

of ~~Rosson 1st Addition~~ (Give name of plat or addition) South Prairie Addition (If within town or city, give name)

(c) Show this location on accompanying section plat, in triplicate. Other adequate maps or drawings will be acceptable.

6. Name and address of owner of land on which well or works are located:

J. C. Clarke (Name)

South Prairie Wash. Box 54 (Address)

7. DESCRIPTION OF WORKS:

(a) Well will be Drilled (Dug or drilled) and have a diameter of 6 inches and an estimated depth of 503 feet.

(b) Tunnels or trenches to be described: (Attach additional sheets if needed for full description.)

(c) Distribution system to be described: Pipe

(d) If pumps are to be used, give size and type: Layne & Bowler Pump

(e) Give capacity and type of motor or engine to be used: Electric 1 Horse

(f) If the location of the well, tunnel, or other works is less than one-fourth mile from a natural stream or stream channel, give the distance to the nearest point on each of such channels and the difference in elevation between the stream bed and the ground surface at the source of development:

¼ mile South of South Prairie Creek

(g) Ownership of each existing well or other works from which ground water is withdrawn within a radius of one-quarter mile and the distance and direction from well or other works being reported herein:

(Name)	(Direction)	(Distance)
Casper Battig	1 Block	North
Sid Hodder	2 Blocks	North
Newell Bisson	4 Blocks	North E
Mrs Dubenski	3 Blocks	East

(On accompanying plat show location of the existing wells or works.)

8. SUPPLY THE FOLLOWING INFORMATION ACCORDING TO USE PROPOSED:

(a) For Municipal Supply: To supply the city, town, or community of South Prairie in the county of Pierce, having a present population of 250, and an estimated population of 250 in 1956

(b) For Irrigation: The land to be irrigated has a total area of ..... acres.

(c) Legal Description of Property on which water is to be used for all purposes other than municipal supply: (If more space is required, attach separate sheet.)

9. Construction work will begin on or before I don't Know

10. Construction work will be completed on or before .....

11. Water will be put to complete beneficial use on or before .....

J. C. Clarke
(Signature of applicant)

Signed in the presence of us as witnesses:

Mrs Jean Flynn (Name) South Prairie, Wash (Address of witness)

W W Flynn (Name) South Prairie Wash (Address of witness)

STATE OF WASHINGTON, }
COUNTY OF THURSTON, } ss.

This is to certify that I have examined the foregoing application, together with the accompanying maps and data, and return the same for correction or completion as follows:

Indicate on enclosed section plat the location of proposed well.

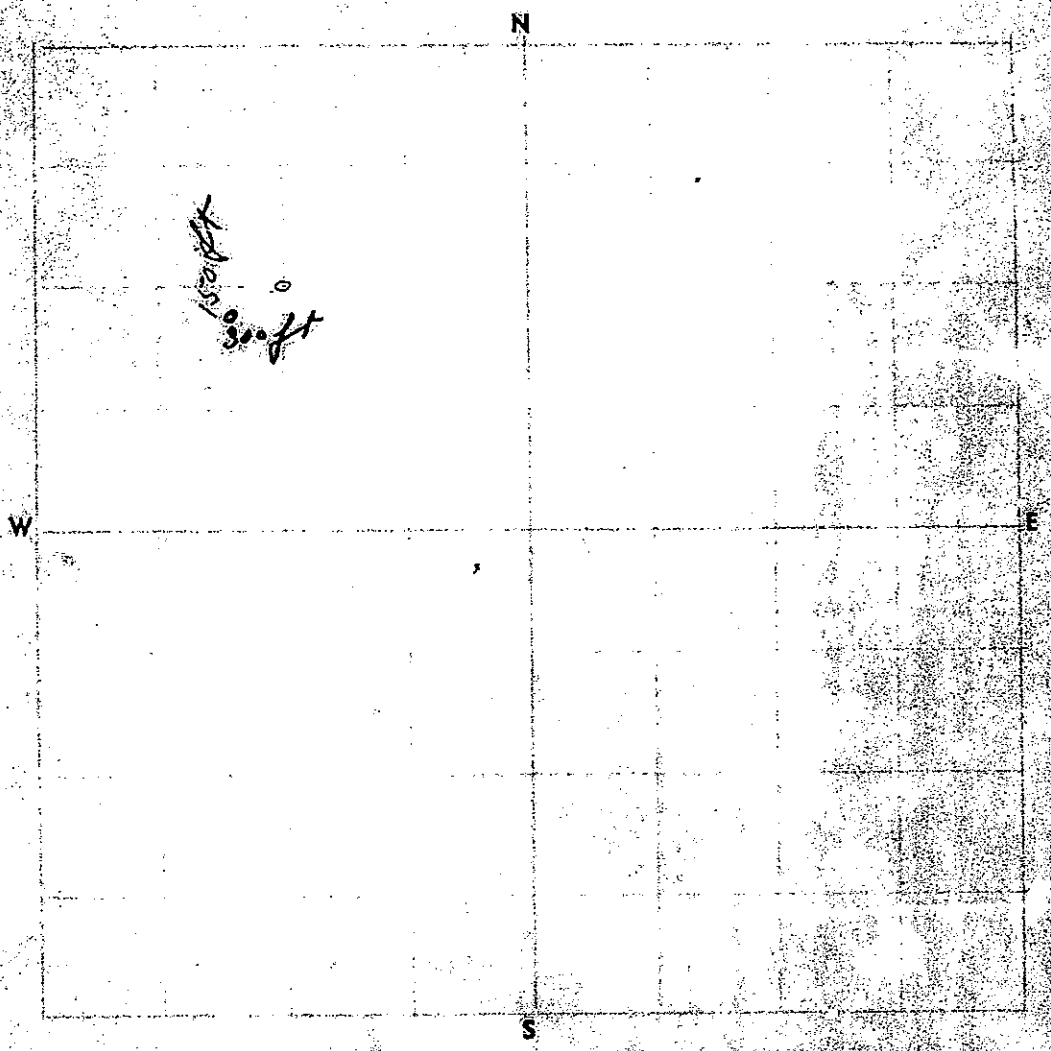
In order to retain its priority, this application must be returned to the State Supervisor of Hydraulics, with corrections, on or before August 15, 1950

WITNESS my hand this 27th day of July, 1950

Deputy State Supervisor of Hydraulics.

G. P. No. 1884-A—1-48—12M. 17531. SECTION PLAT

Sec. 18 Twp. 19 N. R. 6 E. W. M.



Be sure to show distance and bearing of point of diversion from nearest 40-acre corner. Also traveling directions from nearest town on main highway.

Scale: 1 inch = 800 feet.

AFFIDAVIT OF PUBLICATION

RECEIVED
OCT 25 1950
DEPARTMENT OF
CONSERVATION & DEVELOPMENT

STATE OF WASHINGTON }
County of Pierce } *ss.*

R. E. Albers, *being first duly sworn, on oath,*

says: that he is the Bookkeeper *of THE TACOMA NEWS TRIBUNE, a daily newspaper published in Tacoma, Pierce County, Washington, and of general circulation in said State, and having a daily circulation of over 78,000 copies. That said newspaper is now and at all of the times hereinafter mentioned was a legal newspaper as defined by the laws of this State, duly approved by the Superior Court of Pierce County, Washington.*

That the advertisement, of which the attached is a printed copy as it was published in the regular issues (and not in supplement form) of said newspaper, was published once each week for two *consecutive weeks commencing on the* 9th *day of* October, *19*50, *and ending on the* 16th *day of* October, *19* 50, *both dates inclusive.*

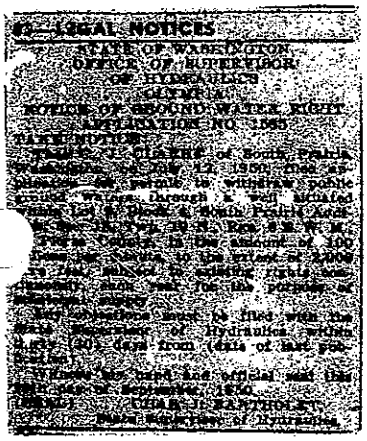
That the full amount of the fee charged for said publication was the sum of $10.40

R. E. Albers

Subscribed and sworn to before me on this Seventeenth *day of* October, *19*50

James E. Macpherson
Notary Public in and for the State of Washington, Residing at Tacoma, Pierce County, Washington.

Form 63



63—LEGAL NOTICES

STATE OF WASHINGTON
OFFICE OF SUPERVISOR
OF HYDRAULICS
OLYMPIA
NOTICE OF GROUND WATER RIGHT
APPLICATION NO. 1565

TAKE NOTICE:

[illegible] of South Prairie, Washington, on July 12, 1950, filed application for permit to withdraw public ground waters through a well situated within Lot 8, Block 4, South Prairie Addition, Sec. 15, Twp. 19 N., Rge. 6 E. W. M., Pierce County, in the amount of 100 [illegible] per minute, to the extent of 2,000 [illegible] feet, subject to existing rights [illegible], such rear for the purpose of [illegible] supply.

Any objections must be filed with the State Supervisor of Hydraulics within thirty (30) days from (date of last publication).

Witness my hand and official seal this [illegible] day of September, 1950.

(SEAL) CHAS. J. BARTHOLET,
State Supervisor of Hydraulics.

REPORT OF F INGS ON GROUND WATER Ap. #1565

NAME J. O. Clarke ADDRESS Box 54, South Prairie, Wash.

TYPE OF WORKS: well Date of Examination 1-25-51

Dimensions: 6" x 37' Progress of Works drilling completed

QUANTITY ~~claimed~~ Applied for: 100 g.p.m. 2000 acre-feet per year

LEGAL SUB. Block 4, So. Prairie Addn. Lots 8 & 9/ Sec. 18 Twp. 19 N. Rge. 6 E. County Pierce

USE: municipal

Irrigation - acreage: Present Planned Feasible

Municipal: Population 250 as of 1950

Industrial:

Time Pump Will be Operated: continuously

Other Water Rights of Applicant: none

Proximity to existing works, springs or streams: Casper Battig 1 block N.; Sid Hodder 3 blocks N.; Newell Risson 4 block NE; Mrs. Duberiski 5 blocks E.

Area Sub-Area Zone

RECOMMENDATIONS

Approved for 100 g.p.m. 60 acre-feet per year, subject to existing water rights. (1 acre-foot = 325,850 gallons)

The water requirement of this community is calculated on the basis of each person requiring 200 gallons per day or a total of 60 acre-feet a year for 250 persons, less that amount which is supplied by springs.
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.
The installation of an access port to well, as described in attached Ground Water Bulletin No. 1, is recommended.

Signed this 16 day of February, 1951.

RHR

ROBERT H. RUSSELL
Ground Water Geologist

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION AND DEVELOPMENT
DIVISION OF HYDRAULICS

Permit to Appropriate Public Ground Waters of the State of Washington

Book No. 4 of Ground Water Permits, on page 1621 under Application No. 1585

J. C. CLARKE

of South Prairie, Washington

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 July 12, 1950

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 100 gallons per minute; 60 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 150 feet South and 560 feet West from Northeast corner of the SW¼ of NW¼ of Sec. 18

being within Lot 9, Block 4 of South Prairie Addition, Sec. 18, Twp. 19 N., Rge. 6 E.W.M.
county of Pierce

Use, or uses to which water is to be applied:

For municipal supply: 100 gallons per minute; 60 acre-feet per year, to supply the town of South Prairie

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

Town of South Prairie, Pierce County, State of Washington.

DESCRIPTION OF WORKS FROM WHICH WATER IS TO BE WITHDRAWN

The well will be drilled (Dug or drilled) and have a diameter of 6 inches, and depth of 37 feet.

Description of tunnel or infiltration trench:

(Please read carefully provisions below)

Particular specifications required by the Supervisor of Hydraulics 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 October 1, 1952

and complete application of water to proposed use shall be made on or before October 1, 1953

Given under my hand and the seal of this office at Olympia, Washington, this 13th day of April, 1951.

Thos. J. Cochran

State Supervisor of Hydraulics.

RETURN TO
DIV. OF HYDRAULICS
P.O. BOX 207, OLYMPIA

RECEIVED
JUN 5 1951
DEPARTMENT OF
CONSERVATION & DEVELOPMENT

S. F. No. 7356—2-50—2M. 24168.

RECORD BY WELL DRILLER OR OTHER CONSTRUCTOR OF WORKS FOR WITHDRAWAL OF GROUND WATER

Under Permit No. G. W.

("The well driller or other constructor of works for the withdrawal of public ground waters shall be obligated to furnish the permittee a certified record of the factual information necessary to show compliance with the provisions of this section." Sec. 8, Chap. 263, Laws of 1945.)

1. J. M. Clarke, P.O. Box 54 South Prairie Wash.
(Name and address of owner of well or other works for withdrawal of water)

2. Type; name or number of works where water is taken NW Well
(Well, tunnel or infiltration trench)

3. Date on which work on well or other structure was started Oct 27/50

4. Date on which work was completed June 1/51

5. If work on well or other structure was abandoned, give date

and reason for abandonment

6. DESCRIPTION OF WORKS:

(a) WELL: Depth 37 ft. Diameter 6 in. or ft. Dug or drilled Drilled

Flowing or pump well Pump

IF PUMP WELL: Type and size of pump is

Type and size of motor or engine is

Depth from ground surface to water level before pumping 9 feet

After continuous operation 4 four hours, the measured discharge of the pump is
(At least four)
100 g.p.m., and the drawdown of water level is 16 feet

Recovery data (taken after pump has been shut off) (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level
4'	16	10 min	9

Date of test June 1/51

IF FLOWING WELL: Measured discharge 100 g.p.m., on June 1/51
(Date)

Shut-in pressure at ground surface lbs. per sq. in. on
(Date)

Water is controlled by Pump
(Cap, valve, etc.)

CASING: (Give diameter, commercial specifications and depth below ground surface of each casing size.)

6 in. diameter from 0 to 37 ft.

in. diameter from to ft.

in. diameter from to ft.

in. diameter from to ft.

Describe and show depth of shoe, plug, adapter, liner or other details: Shoe 37

Perforated casing or scr

..... from ..... to ..... ft.
(Number per foot and size of perforations, or describe screen)

..... from ..... to ..... ft.

..... from ..... to ..... ft.

..... from ..... to ..... ft.

..... from ..... to ..... ft.

LOG OF WELL OR TUNNEL:* (Describe each stratum or formation clearly, indicate if water bearing, and give thickness and depth as indicated.)

MATERIAL	Thickness (Feet)	Depth to Bottom (Feet)
Sand and clay	20	20
Gravel	17	37

(b) INFILTRATION TRENCH OR TUNNEL: Type .....

Dimensions: ..... (Tunnel—length, course, and cross-sectional size) (Trench—minimum and maximum depths)

Bottom width ..... ft. Discharge ..... g.p.m. Date of test .....

Position of water bearing stratum with reference to portal of tunnel .....

Ralph R Charleton
(Signature of well driller or other constructor)

Rt 4 Box 466A Puy
(Address)

STATE OF WASHINGTON,
County of Pierce } ss.

I, Ralph R Charleton, being first duly sworn, do hereby certify that I am the driller or constructor of the aforesaid well or tunnel or trench who furnished the foregoing statement of facts; that I have read said statement and each and all of the items therein contained are true to the best of my knowledge and belief.

Ralph R Charleton
(Signature)

Subscribed and sworn to before me this 20th day of August, 195

..... Notary Public

S. F. No. 376—12-47—1M. 17236.

Notice of Beginning of Construction

RECEIVED
SEP 5 1951
DEPARTMENT OF
CONSERVATION & DEVELOPMENT

I, J. C. Clark, the holder of Ground Water Permit No. 1621 issued by the Supervisor of Hydraulics of the State of Washington for the appropriation of ground waters withdrawn from Well
(Well, tunnel or infiltration trench)
in accordance with the tenor of such permit and the limitations endorsed thereon by the Supervisor of Hydraulics, began the actual construction of the works described therein on the 27th day of October, 1950

The nature and the amount of construction work already done is as follows:

PER CENT COMPLETED:

Material in place None %; Structure None %.

Any additional information which may tend to show good faith in the prosecution of the work:

IN WITNESS WHEREOF, I have hereunto set my hand this 27 day of Sept, 1950

J. C. Clark
(Signature of applicant)

Box 54 South Prairie Wash.
(Present address)

Notice of Completion of Construction

RECEIVED
SEP 5 1951
DEPARTMENT OF
CONSERVATION & DEVELOPMENT

I, J. C. Clarke, the holder of Ground Water Permit No. 1621 issued by the State Supervisor of Hydraulics of the State of Washington for the appropriation of ground waters withdrawn from a well (Well, tunnel or infiltration trench), in accordance with the tenor of such permits and the limitations endorsed therein by the State Supervisor of Hydraulics, have completed the construction of the works described therein, on the 1st day of June, 1951

If construction has been abandoned: Date ..... Reason .....

Remarks: .....

IN WITNESS WHEREOF, I have hereunto set my hand this 1st day of June, 1951

J. C. Clarke
(Signature of applicant)

Box 54 South Prairie Wash.
(Present address)

S. F. No. 173—8-16—1M. 12604.

S. F. No. 7355—4-49—1M. 21030.

RECEIVED
SEP 14 1951
DEPARTMENT OF
CONSERVATION & DEVELOPMENT

Proof of Appropriation of Ground Water

Application No. G.W. 1585 Permit No. G.W. 1621

1. Name of Permittee J. C. Clarke
2. Postoffice address South Prairie Wash
3. Source of appropriation Well
4. Name or number of works (if any) South Prairie Water Co
5. For what purpose or purposes is water used? Public
6. Give date of beginning of construction Oct 27-1950
7. Give date of completion of construction work, including water distribution system June 1-1951
8. Give date when ground water was completely applied to proposed use June 1-1951
9. If used for irrigation:

   Give number of acres described in permit

   Give number of acres actually irrigated
10. LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS USED:

11. During what months is water used? June-July-August-Sept-Oct
12. Does map filed with your application show correctly the location of well or other works for withdrawal of water, and area of land where water is used? Yes
13. If the dimensions, location or type of structure does not correspond to those described in your permit, state what changes have been made, giving dimensions, etc.
14. Certified record by well driller or other constructor must be attached hereto, as provided by the Ground Water Code.

(Sign certification on reverse side)

STATE OF WASHINGTON,
County of Grant } ss.

I, J. C. Clarke, being first duly sworn, depose and say that I have read the above and foregoing proof of appropriation of ground water; that I know the contents thereof; and that the facts therein stated are true.

IN WITNESS WHEREOF, I have hereunto set my hand this 21 day of Sept, 19 51

J. C. Clarke

Subscribed and sworn to before me this 21 day of Sept, 19 51

L. H. Raley

Notary Public.

STATE OF WASHINGTON

Department of Conservation and Development

W. A. GALBRAITH, DIRECTOR

TRANSPORTATION BUILDING
OLYMPIA

ARTHUR B. LANGLIE
GOVERNOR

DIVISIONS:
FORESTRY
RECLAMATION
FLOOD CONTROL
WATER RESOURCES
MINES AND GEOLOGY
COLUMBIA BASIN PROJECT
PROGRESS AND INDUSTRY DEVELOPMENT

September 26, 1951

County Auditor
Pierce County
Tacoma, Washington

Dear Sir:

Enclosed is Certificate of Water Right No. 768-A and a check or money order in the amount of $1.25 to cover the cost of recording in your office.

When this has been done, please forward the certificate to: J. C. Clarke, P. O. Box 54, South Prairie, Washington.

Yours very truly,

Chas J Bartholet

CHAS. J. BARTHOLET, Supervisor
Division of Water Resources.

CJB: jw
Enc.

October 5, 1951

Mr. J. C. Clarke
P. O. Box 54
South Prairie, Washington

Dear Sir:

Re: Certificate No. 768-A

We are enclosing herewith 25¢ which was refunded to this office from the Pierce County Auditor for recording the above numbered water right certificate.

Yours very truly,

CHAS. J. BARTHOLET, Supervisor
Division of Water Resources

By:
M. G. WALKER, Acting
Assistant Supervisor

MGW:cle
Enc.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ 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
May 5, 1977	G 2-24542	G 2-24542 P	G 2-24542 C

NAME
TOWN OF SOUTH PRAIRIE

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box F	South Prairie	Washington	98385

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	350	250

QUANTITY, TYPE OF USE, PERIOD OF USE		
250 acre-feet per year	municipal supply	continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
300 feet north and 150 feet west of the center of Section 18.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
	18	19	6 E	10	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
G		Bisson's 5th Addition

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by the Town of South Prairie.

PROVISIONS

"The total annual withdrawal under this certificate and Ground Water Certificate No. 6013 - A shall not exceed 250 acre-feet per year."

The access port shall be maintained at all times on the well (s).

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia *Washington, this* 5th *day of* June, *19* 81

DONALD W. MOOS, Director
Department of Ecology

by E.W. Asselstine, Regional Manager

ENGINEERING DATA
OK 5/28/81 WP
5/26/81 955

FOR COUNTY USE ONLY

TOWN OF SOUTH PRAIRIE

PIERCE COUNTY
P.O. BOX F
SOUTH PRAIRIE, WASHINGTON 98385

May 8, 1981

Department of Ecology
7272 Cleanwater Lane
Olympia, Washington 98504

Mr. Walter Bergstrom:

Enclosed please find the necessary information requested by your office per your letter dated April 1, 1981.

1. Proof of Appropriation
2. Fee for filing and recording the final certificate of water right - Warrant #544 - $5.00 - payable to Department of Ecology
3. Fee for filing and recording the final certificate of water right - Warrant #543 - $4.00 - payable to Pierce County Auditor
4. Copy of Well Driller's Report (Two Pages)

Please feel free to contact us if there are any further questions.

Sincerely,

Patricia L. Leitner

Patricia L. Leitner
Clerk-treasurer

Enclosures

OK for Cert
Ltr Permit
5/11/81
WB

RECEIVED
MAY 11 1981
DEPARTMENT OF ECOLOGY
SOUTHWEST REGIONAL OFFICE

RECEIVED
MAY 1 1 1981
DEPARTMENT OF ECOLOGY
SOUTHWEST REGIONAL OFFICE

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PROOF OF APPROPRIATION OF WATER

APPLICATION NUMBER: G 2-24542

PERMIT NUMBER: 2-24542

NAME OF PERMITTEE: Town of South Prairie

POST OFFICE ADDRESS: P.O. Box F (CITY): South Prairie (STATE): Washington (ZIP CODE): 98385

ACTUAL SOURCE OF APPROPRIATION: Well

PURPOSE OR PURPOSES WATER IS USED FOR: Municipal Supply

DATE WATER WAS COMPLETELY APPLIED TO PERMITTED USE: March 4, 1980

IF USED FOR IRRIGATION NUMBER OF ACRES ACTUALLY IRRIGATED: N/A

IF SOURCE IS A WELL, IS AN ACCESS PORT NOW INSTALLED: [x] YES [ ] NO

MONTHS DURING WHICH WATER IS USED: 12 months

PUMP SIZE: 30 horse power

ACTUAL AMOUNT WITHDRAWN OR DIVERTED FROM PERMANENT SYSTEM: 350 [x] GPM [ ] CFS

HAVE ALL PROVISIONS AS REQUIRED BY PERMIT BEEN ACCOMPLISHED: [x] YES [ ] NO

IF NO, EXPLAIN:

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS USED (USE ADDITIONAL SHEET IF NECESSARY)

Bisson's 3th Addition
Lot G
Section 18, Township N. 19, Range 6 E, W.R.I.A. 10, County Pierce

STATE OF WASHINGTON, } ss.
County of Pierce

I, Layne Ross, being first duly sworn, depose and say that I have read the above and foregoing proof of appropriation; that I know the contents thereof; and that the facts therein stated are true.

IN WITNESS WHEREOF, I have hereunto set my hand this 6 day of May, 1981

Layne Ross Mayor
Signature

Subscribed and sworn to before me this 6th day of May, 1981

M. EARL HILL
COMMISSION EXPIRES
NOTARY PUBLIC
MAR. 1981
STATE OF WASHINGTON

[signature]
Notary Public

P/A

ECY 0040-1-26

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CONSTRUCTION NOTICE

☐ BEGINNING OF CONSTRUCTION

☒ COMPLETION OF CONSTRUCTION

NAME	SURFACE WATER PERMIT NO	GROUND WATER PERMIT NO
Town of South Prairie		2-24542
DATE CONSTRUCTION BEGAN	DATE CONSTRUCTION COMPLETED	DATE COMPLETION EXPECTED
December 12, 1978	March 4, 1980	

IF CONSTRUCTION NOT COMPLETE, SHOW % COMPLETED AS OF THIS DATE

% EQUIPMENT IN PLACE	% MATERIAL IN PLACE	% EXCAVATED	% STRUCTURE

IF CONSTRUCTION HAS BEEN ABANDONED

DATE ABANDONED	REASON ABANDONED

REMARKS OR ANY ADDITIONAL INFORMATION WHICH MAY TEND TO SHOW GOOD FAITH IN THE PROSECUTION OF THE WORK

OK C.C.
Send PA
WB
3/25/81

I certify I am the holder of the above permit issued by the Department of Ecology for the State of Washington, and in accordance with the terms of such permit and the limitations endorsed by the Department of Ecology have ☐ begun ☒ completed the actual construction of the work described in the permit.

[signature] Clerk-Treasurer
Signature of Applicant
Town of South Prairie
P.O. Box "F"
Present Address
South Prairie, Washington 98385
City, State, Zip Code

RECEIVED
MAR 25 1981
DEPARTMENT OF ECOLOGY
SOUTHWEST REGIONAL OFFICE

ECY 040-1-50
Rev 6/78

STATE OF WASHINGTON
John Spellman
Governor

DEPARTMENT OF ECOLOGY
7272 Cleanwater Lane, Olympia, Washington 98504 206/753-2353

April 1, 1981

Town of South Prairie
P.O. Box "F"
South Prairie, Washington 98385

Gentlemen:

Re: Ground Water Permit No. 2-24542

We have received your Notice of Completion of Construction in connection with the above-numbered permit.

Enclosed is a Proof of Appropriation form which is to be filed when the water has actually been put to full beneficial use. This form is not to be filed until the water has been put to full use. If you cannot put the water to full beneficial use by April 1, 1983, you must contact this office.

The fees for filing and recording your final certificate of water right are $5.00 payable to the Department of Ecology and $ 4.00 payable to the Pierce County Auditor. Please send two separate remittances and the completed Proof of Appropriation form (with notarized signature) to this office.

Sincerely,

WALTER BERGSTROM
Resource Management
SOUTHWEST REGIONAL OFFICE

WB:vw

Enclosure

P.S. The Well Driller's Report must be completed and returned to this office before the Certificate of Water Right can issue.

NOTE: PLEASE ADVISE OF ANY ADDRESS CHANGE

ECY 040-1-69(a)
Rev. 6/78

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PERMIT

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
May 5, 1977	G 2-24542	G 2-24542 P	

NAME
TOWN OF SOUTH PRAIRIE

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box F	South Prairie	Washington	98385

The applicant is, pursuant to the Report of Examination which has been accepted by the applicant, hereby granted a permit to appropriate the following described public waters of the State of Washington, subject to existing rights and to the limitations and provisions set out herein.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	350	250

QUANTITY, TYPE OF USE, PERIOD OF USE
250 acre-feet per year municipal supply continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL
300 feet north and 150 feet west of the center of Section 18.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
	18	19	6 E	10	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
G		Bisson's 5th Addition

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by the Town of South Prairie.

DESCRIPTION OF PROPOSED WORKS

well 10" x 250' with deep well turbine pump and pumphouse to connect to existing system.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
April 1, 1981	April 1, 1982	April 1, 1983

PROVISIONS

"The total annual withdrawal under both rights shall not exceed 250 acre-feet per year."

The installation of an access port as described in attached Ground Water Bulletin No. 1 shall be required prior to issuance of final certificate of water right. The permittee may for his own convenience, wish to install an airline and gage in addition to the access port.

Owing to the proximity of neighboring wells, the permittee is reminded of his responsibility toward same and advised that he may be required to regulate his withdrawal and pumping rate if existing rights are injuriously affected.

Permittee is advised that notice of proof of appropriation of water (under which final certificate of water right issues) should not be filed until the permanent diversion facilities have been installed together with a mainline system capable of delivering the recommended quantity of water to an existing or proposed distribution system within the area to be served.

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or fail to give notice to the Department of Ecology on forms provided by that Department documenting such compliance.

Given under my hand and the seal of this office at *Washington, this* 29th *day*

of June, *19*78

Department of Ecology

ENGINEER NO DATA

OK [signature]

by [signature]

PERMIT LETTER - BEGINNING OF CONSTRUCTION

July 3, 1978

State of Washington Department of Ecology

Town of South Prairie
P.O. Box F
South Prairie, Washington 98385

Gentlemen:

Enclosed is Permit No. G 2-24542 for your water right application with the same number, together with a form for filing Notice of Beginning of Construction when the work is started.

Please read carefully the instruction sheet as well as both sides of your permit.

Sincerely,

SAMUEL W. BAILEY
RESOURCES MANAGEMENT

SWB:vw
Enclosures

NOTE: PLEASE ADVISE OF ANY ADDRESS CHANGE.

RECEIPT

WASHINGTON STATE
DEPARTMENT OF ECOLOGY

No. 81281

5-10, 19 78

RECEIVED FROM Town of So Prairie

Twenty and no/100 DOLLARS 20.00

FUND: General ✓ Rec. Rev. Basic Data Other

SOURCE: Water Code ✓ Publications Adjudications Refunds
Per. and Lic. Investments Registration Other

Cash
Check ✓
M.O.

Permit fee

gw app 2-24542

By Teresa Dayer

Thank You

ECY 010-144

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
May 5, 1977	G 2-24542		

NAME
TOWN OF SOUTH PRAIRIE

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box F	South Prairie	Washington	98385

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	350	250

QUANTITY, TYPE OF USE, PERIOD OF USE		
250 acre-feet per year	municipal supply	continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
300 feet north and 150 feet west of the center of Section 18.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
	18	19	6 E	10	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
C		Bisson's 5th Addition

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by the Town of South Prairie.

DESCRIPTION OF PROPOSED WORKS

well 10" x 250' with deep well turbine pump and pumphouse to connect to existing system.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
April 1, 1981	April 1, 1982	April 1, 1983

PROVISIONS

Recommend this application be approved for 350 gallons per minute and 250 acre-feet per year for a municipal supply for the town of South Prairie.

The annual quantity is determined by the requirement for a projected 750 residents by the year 1997 at 200 gallons per day each or 150 acre-feet per year. Also 100 acre-feet per year for area irrigation, dairy use and projected commercial use.

Ground water Certificate No. 6013 A for 100 gallons per minute and 99 acre-feet per year is appurtenant to the same lands described in this application.

Permit when issued will be subject to the following provisions "The total annual withdrawal under both rights shall not exceed 250 acre-feet per year."

The installation of an access port as described in attached Ground Water Bulletin No. 1 shall be required prior to issuance of final certificate of water right. The applicant may for his own convenience, wish to install an airline and gage in addition to the access port.

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 Water Supply and Waste Section, Department of Social and Health Services, Mail Stop LD 11, Building 4, Olympia, Washington, 98504, prior to any new construction or alterations of a public water supply.

Owing to the proximity of neighboring wells, the applicant is reminded of his responsibility toward same and advised that he may be required to regulate his withdrawal and pumping rate if existing rights are injuriously affected.

Applicant is advised that notice of proof of appropriation of water (under which final certificate of water right issues) should not be filed until the permanent diversion facilities have been installed together with a mainline system capable of delivering the recommended quantity of water to an existing or proposed distribution system within the area to be served.

Signed at Olympia, Washington,
this 12 day of April, 1978.

Robert F. Burrell
Robert F. Burrell
Department of Ecology

Affidavit of Publication

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

Joy Pults, being first duly sworn, on oath deposes and says that he is the publisher of the N E W S R E V I E W , a weekly newspaper. That said newspaper is a legal newspaper and is now and has been for more than six months prior to the date of publication hereinafter referred to published in the English Language continuously as a weekly newspaper in Pierce County, Washington, and is now and during all of said time was printed in office maintained at the aforesaid place of publication of said newspaper.

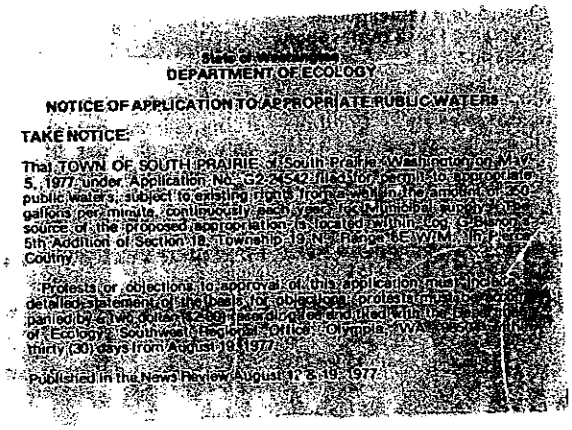
That the annexed is a true copy of notice of application to appropriate public waters as it was published in regular issues (and not in supplemental form) of said newspaper once each week for a period of two consecutive weeks, commencing on the 12th day of August, 19 77 and ending on the 19th day of August, 1977, both days inclusive, and that such newspaper has regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication in the sum of $ 17.20

Joy Pults

Subscribed and sworn to before me this 19th day of August, 19 77.

Eleanor C Opsith

Notary Public in and for the State of Washington
Residing at Sumner.



State of Washington
DEPARTMENT OF ECOLOGY

NOTICE OF APPLICATION TO APPROPRIATE PUBLIC WATERS

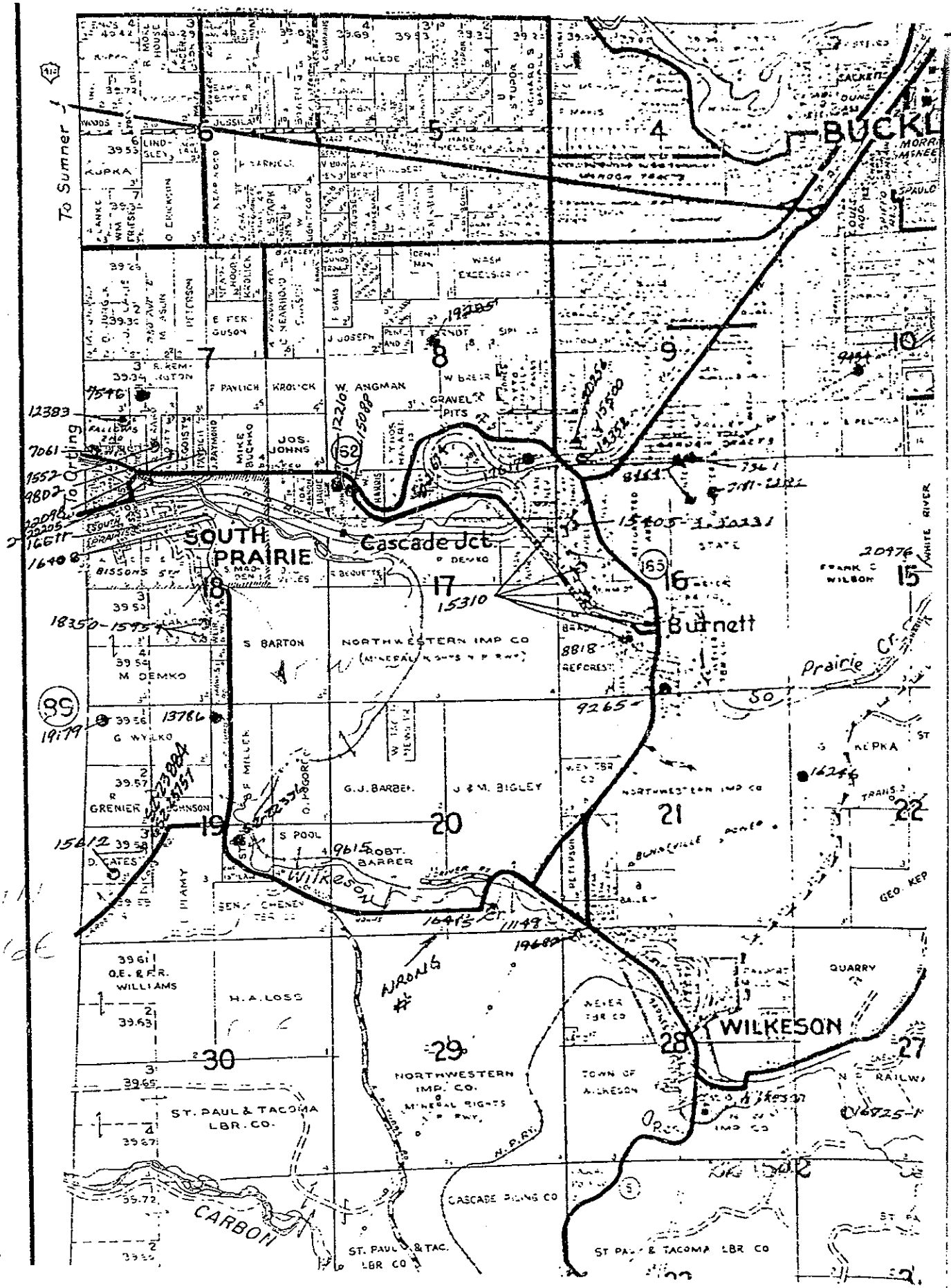
TAKE NOTICE:

That TOWN OF SOUTH PRAIRIE of South Prairie, Washington on May 5, 1977 under Application No. G2-24542 filed for permit to appropriate public waters, subject to existing rights from a well in the amount of 350 gallons per minute, continuously each year, for Municipal supply. The source of the proposed appropriation is located within Log G Bishop's 5th Addition of Section 18, Township 19 N., Range 6E W.M., in Pierce County.

Protests or objections to approval of this application must include detailed statement of the basis for objections; protests must be accompanied by a two dollar ($2.00) recording fee and filed with the Department of Ecology, Southwest Regional Office, Olympia, WA 98504 within thirty (30) days from August 19, 1977.

Published in the News Review August 12 & 19, 1977.

RECEIVED
AUG 24 1977
DEPARTMENT OF ECOLOGY
SOUTHWEST REGIONAL OFFICE



To Sumner
To Orting
BUCKL
SOUTH PRAIRIE
Cascade Jct.
Burnett
WILKESON
NORTHWESTERN IMP CO
(MINERAL RIGHTS N P RWY)
S BARTON
M DEMKO
G WYLKO
R GRENIER
D. CATES
G.J. BARBER
J & M. BIGLEY
S POOL
ROBT. BARBER
SEN. CHENEY
O.E. & F.R. WILLIAMS
H.A. LOSS
ST. PAUL & TACOMA LBR. CO.
CARBON
CASCADE PILING CO
ST. PAUL & TAC. LBR CO
ST PAUL & TACOMA LBR CO
TOWN OF WILKESON
QUARRY
WEYER TBR CO
NORTHWESTERN IMP CO
NORTHWESTERN IMP. CO.
MINERAL RIGHTS N P RWY
W. ANGMAN
JOS. JOHNS
GRAVEL PITS
F PAVLICH
KROLICK
E FERGUSON
J JOSEPH
WASH EXCELSIOR
HLEDE
KUPKA
LINDSLEY
WOODS
JUSSILA
STUPOR
RICHARD S BACHALL
F MAHIS
SACKETT
MORRIS MINEE
PAULO
WHITE RIVER
FRANK C WILSON
STATE
REFOREST
Prairie Cr.
So
WILKESON
Wilkeson
Cr.
NRONG #
N.P.RY.
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13786
15612
9615
16415
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8818
9265
16246
20976
19285
12210
15088
15405
13352
7361
9434

June 9, 1977

State of Washington
Department of Ecology

Town of South Prairie
P. O. Box P
South Prairie, WA 98385

Gentlemen:

RE: Ground Water Application No. G 2-24542

Your application for the appropriation of Water has been given the above number for our records. You will help us by referring to this number in future correspondence.

Since your application is for service of more than one residence, which constitutes a public water supply, approval is required from the Department of Social and Health Services (DSHS). Before you have your notice published, we suggest you contact DSHS for preliminary review of your system. You should contact Mr. Ken Merry, at PO Box 1788, Olympia, WA 98504 or by telephone at 753-5953.

Your notice of application is enclosed. This notice must be published once a week for two consecutive weeks in a qualified legal newspaper of general circulation in Pierce County. A list of these newspapers in your county is attached for your convenience.

Please read the notice carefully to make sure it is correct. Should you find an error, please return the notice to our office for correction.

Your publication should begin within 30 days from the date of this letter. When you receive the affidavit from the newspaper, please forward it to us.

By having your notice published and sending in your affidavit as soon as possible it will reduce the time involved in our action on your application.

Sincerely,

Jon Pace

JON PACE
Resources Management

JP:sa

Enclosures

cc Ken Merry, DSHS

J. J. SLEAVIN & ASSOCIATES, INC. Professional Engineers
Research Consulting Planning Engineering Professional Land Surveying Land Development
J. J. SLEAVIN, President
& Chairman of the Board

May 4, 1977
#4329

Department of Ecology
Southwest Regional Office
7272 Clearwater Lane
Olympia, Washington 98504

Gentlemen:

Forwarded herewith is an application from the Town of South Prairie to appropriate ground water for municipal supply.

Accompanying the application is a check in the amount of $10.00 from the Town of South Prairie payable to the Department of Ecology.

Very truly yours,

Richard C. Talcott

Richard C. Talcott

RCT:dlt

Enclosures

cc: Town of South Prairie

RECEIVED
MAY 5 1977
DEPARTMENT OF ECOLOGY
SOUTHWEST REGIONAL OFFICE

901 Tacoma Avenue South • Tacoma, Washington 98402 • Telephone: Tacoma (206) 383-4491 or Seattle (206) 623-5736

State of Washington Department of Ecology

APPLICATION FOR PERMIT
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ SURFACE WATER ☒ GROUND WATER

$10.00 MINIMUM STATUTORY EXAMINATION FEE REQUIRED WITH APPLICATION

(GRAY BOXES FOR OFFICE USE ONLY)

APPLICATION NO.	W.R.I.A.	COUNTY	PRIORITY DATE	TIME	ACCEPTED
G224542	10	27-PIERCE	5-5-77	2:00	[illegible]

APPLICANT'S NAME: Town of South Prairie, Washington

BUSINESS TEL.
HOME TEL.

ADDRESS (STREET): P. O. Box F (CITY): South Prairie (STATE): Washington (ZIP CODE): 98385

DATE & PLACE OF INCORPORATION IF APPLICANT IS A CORPORATION

1. SOURCE OF SUPPLY

IF SURFACE WATER	IF GROUND WATER
SOURCE (NAME OF STREAM, LAKE, SPRING, ETC.) (IF UNNAMED, SO STATE)	SOURCE (WELL, TUNNEL, INFILTRATION TRENCH, ETC.) Well
TRIBUTARY	SIZE AND DEPTH 10" Approx. 250 feet

2. USE

USE TO WHICH WATER IS TO BE APPLIED (DOMESTIC SUPPLY, IRRIGATION, MINING, MANUFACTURING, ETC.)

Municipal Supply

ENTER QUANTITY OF WATER REQUESTED USING UNITS OF: CUBIC FEET PER SECOND CFS **OR** GALLONS PER MINUTE 350 GPM ACRE FEET PER YEAR 565

I have examined this application as required by SEPA and find that it is: ☐ [illegible] ☒ categorically exempt.

6-9-77 DATE

TIMES DURING YEAR WATER WILL BE REQUIRED: Continuous ~~year round~~

IF IRRIGATION, NUMBER OF ACRES: ---

IF DOMESTIC USE, NUMBER OF UNITS BY TYPE, E.G. 1-HOME, 1-MOBILE HOME, 2-CAMPSITES, ETC: ---

IF MUNICIPAL USE, ESTIMATED POPULATION 20 YEARS FROM TODAY: 750

DATE PROJECT WAS OR WILL BE STARTED: 7-1-77

DATE PROJECT WAS OR WILL BE COMPLETED: 10-1-77

3. LOCATION OF POINT OF DIVERSION/WITHDRAWAL

3A. IF IN PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)	SECTION	TOWN	RANGE
G	—	BISSON'S 5th ADDITION	18	19	6E

ALSO, PLEASE ENCLOSE A COPY OF THE PLAT AND MARK THE POINT(S) OF WITHDRAWAL OR DIVERSION

3B. IF NOT IN PLATTED PROPERTY

ON ACCOMPANYING SECTION MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION. SHOW NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER OR PROPERTY CORNER.

ALSO, ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL.

300 N. + 150' west of center of Sec. 18

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
~~South 250', Lot G, Bisson's Fifth Addition~~	18	19	6 E.	Pierce

4. DO YOU OWN THE LAND ON WHICH THIS SOURCE IS LOCATED. IF NOT, INSERT NAME & ADDRESS OF OWNER

Yes

5. LEGAL DESCRIPTION OF PROPERTY *ON WHICH WATER IS TO BE USED*

ATTACH A COPY OF THE LEGAL DESCRIPTION OF THE PROPERTY (ON WHICH THE WATER WILL BE USED) TAKEN FROM A REAL ESTATE CONTRACT, PROPERTY DEED OR TITLE INSURANCE POLICY, OR, COPY CAREFULLY IN THE SPACE BELOW.

~~The south 250.0 feet of Lot G, Bisson's Fifth Addition according to plat recorded in Pierce County Auditor and filed in Volume 9 of Plats at Page 52 lying westerly of Tubb's Revision County Road, situated in Pierce County, State of Washington.~~

AREA SERVED BY THE TOWN OF SOUTH PRAIRIE.

DSHS

APPLICATION

G224542

ECY 040-1-14(1)
Rev. 7-75

WHAT IS YOUR INTEREST IN THE PROPERTY ON WHICH THE WATER IS TO BE USED (PROPERTY OWNER, LESSEE, CONTRACT PURCHASER, ETC.)

Property Owner

ARE THERE ANY EXISTING WATER RIGHTS RELATED TO THE LAND ON WHICH THE WATER IS TO BE USED (INCLUDING WATER PROVIDED BY IRRIGATION DISTRICTS OR DITCH COMPANIES.) [X] YES [ ] NO

IF YES, FROM WHAT SOURCE (i.e. SURFACE OR GROUND WATER) AND UNDER WHAT AUTHORITY

Ground Water - Existing Well for Municipal Purposes - Certificate No. 6013

municipal supply 100 gpm / 90 acre-feet

6. DESCRIPTION OF SYSTEM PROPOSED OR INSTALLED

(FOR EXAMPLE, SIZE OF PUMP, CAPACITY OF PUMP, PUMP MOTOR HORSE POWER, PIPE DIAMETER, NUMBER OF SPRINKLERS, ETC.)

New well with 10 inch casing approximately 250 feet deep.

Construct deep well turbine pump and pumphouse.

7. REMARKS

Well to be constructed prior to sizing of pump and design of pumphouse.

IF 10 ACRE-FEET OR MORE OF WATER IS TO BE STORED AND/OR IF THE WATER DEPTH WILL BE 10 FEET OR MORE AT THE DEEPEST POINT, A STORAGE PERMIT MUST BE FILED IN ADDITION TO THIS PERMIT. THESE FORMS CAN BE SECURED, TOGETHER WITH INSTRUCTIONS, FROM THE DEPARTMENT OF ECOLOGY.

SIGNATURES

Raymond H. Cutshaw
APPLICANT'S SIGNATURE

Town of South Prairie WN
LEGAL LANDOWNER'S SIGNATURE

P.O. Box F South Prairie WN 98385
LEGAL LANDOWNER'S ADDRESS

FOR OFFICE USE ONLY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY } ss.

This is to certify that I have examined this application together with the accompanying maps and data, and am returning it for correction or completion as follows: .....

.....

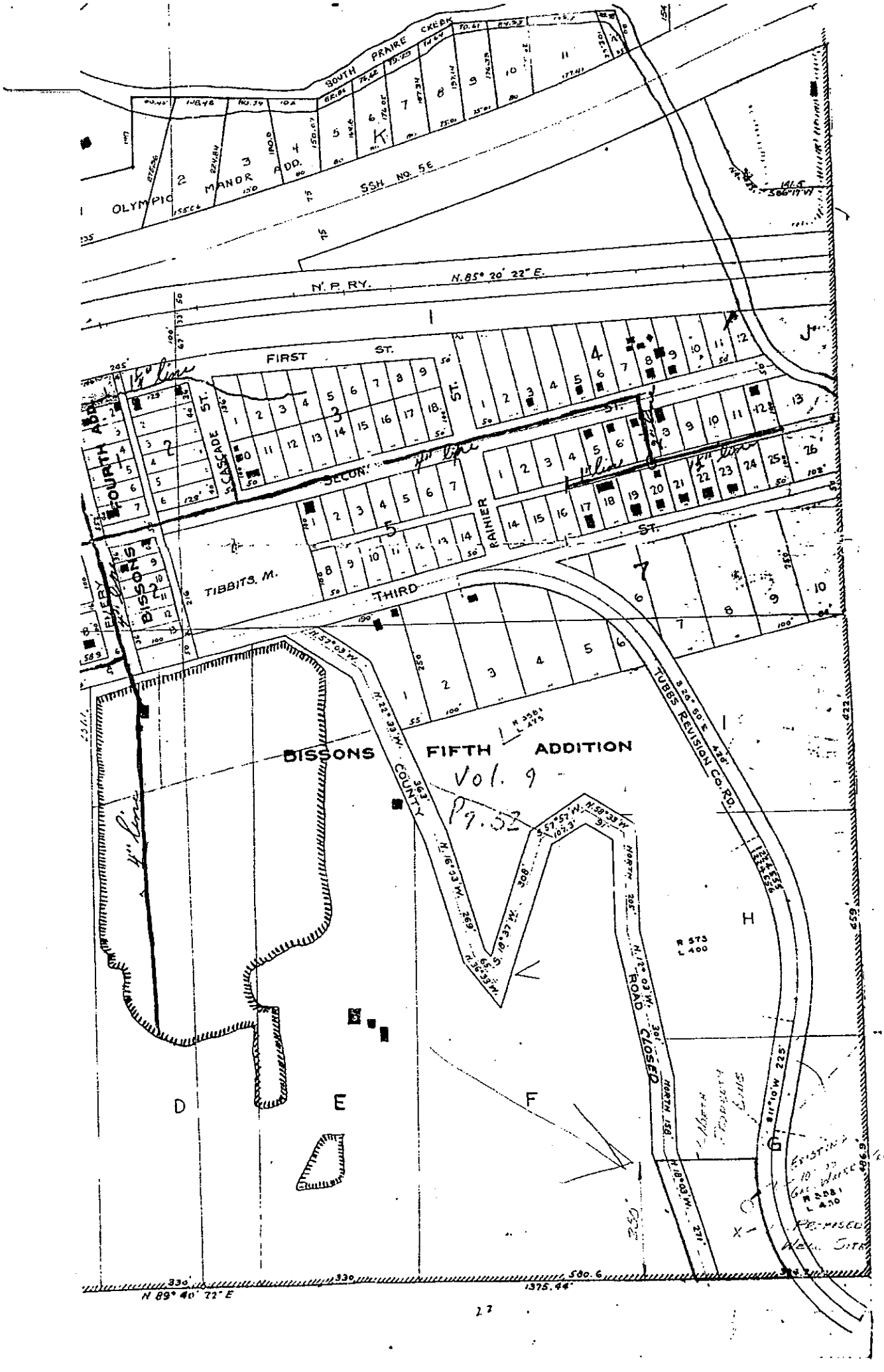
.....

In order to retain its priority date, this application must be returned to the Department of Ecology, with correction, on or before ..... 19.....

Witness my hand this .....*day of* ..... 19.....

.....
Department of Ecology

EGY 040-1-14(1)
Rev 7-75


SOUTH PRAIRIE CREEK
OLYMPIC MANOR ADD.
SSH NO. 5E
N. P. RY.
N. 85° 20' 22" E.
FIRST ST.
SECOND ST.
THIRD ST.
CASCADE ST.
RAINIER
FOURTH ADD.
BISSONS
TIBBITS, M.
BISSONS FIFTH ADDITION
Vol. 9
Pg. 52
COUNTY ROAD CLOSED
TUBBS REVISION CO. RD.
N 89° 40' 22" E
1375.44'
580.6
330

December 4, 1968

Bonanza Investment Co.
18207-74th E
Sumner, WA. 98390

ATTENTION: Kenneth Simmons

Dear Sir:

In response to your inquiry of water rights within the NE¼ SW¼ of Sec. 18, T. 19 N., R. 6 E., please be advised that the above-referenced certificate was issued on a group of springs located within the said NE¼SE¼ for 0.15 cubic foot per second, 90 acre-feet per year, for municipal supply. The certificate was issued in the name of Grant L. Sauer and, according to a note in the file, the system was sold by Mr. Sauer to a Kenneth Flink.

We wish to point out that this certificate was not appurtenant to the NE¼SW¼ but was issued for the benefit of the Community of South Prairie.

If you have any further questions, please advise.

Very truly yours,

DEPARTMENT OF WATER RESOURCES

DEAN WOOD,
Water Resources Inspector
Division of Water Management

DW/ab

BONANZA INVESTMENT CO.

REAL ESTATE-OPTIONS-CONTRACTS-MORTGAGES

Mailing Address
12207 74th East
Sumner Washington 98390

Telephone
UN 3-7878
UN 3-8863

Nov. 28, 1962

State of Washington
Hydraulic Div. of Water Resources
Olympia, Washington

Gentlemen:

Will you please advise me as to what water rights are in existance on the N.E. of the S.E. of Sec. 18, T. 19 N., Range 6 East W.M.

Who are they issued to and what footage. Our interests are that we have purchased the Properties and water right assignments by Quit Claim were made and we wish to ascertain the amount.

Yours truly,

Bonanza Investment Co.
Kenneth Simons

July 15, 1966

Mr. Grant L. Sauer
3744 North 31st Street
Tacoma, Washington

Re: Surface Water Permit No. 13607

Dear Mr. Sauer:

We have your check in the amount of $1.00 dated July 11. However, we are unable to identify the purpose for which it was submitted. Therefore, it is returned herewith for identity.

A review of your permit did not indicate any fees that are due at this time.

Very truly yours,

DEPARTMENT OF CONSERVATION

ROBERT E. RUSSELL, Asst. Supervisor
Division of Water Resources

RER:sj

Enclosure

Tacoma Wash.
Re. 97HH-No. 31 at
Permit July-11-1966
13407

State of Washington, Dept of Water Conservation
Olympia Washington.

Dear Sir,
Inclosed please find check No. 10
in the amount of one dollar and
no/100 for our water permit No. 13407
for the year of 1966.
If this is not correct please
let us know.

Please send any mail Re
97HH No. 31 at
Tacoma Wash

Thank you,
Frank L. Power

RECEIVED
DEPARTMENT OF CONSERVATION
JUL 13 1966

STATE OF WASHINGTON
Department of Conservation
EARL COE, DIRECTOR
335 GENERAL ADMINISTRATION BUILDING
OLYMPIA

ALBERT D. ROSELLINI
GOVERNOR

DIVISIONS:
RECLAMATION
FLOOD CONTROL
WATER RESOURCES
MINES AND GEOLOGY
COLUMBIA BASIN PROJECT
POWER RESOURCES
WEATHER MODIFICATION

July 21, 1965

Mr. Jack W. Saxtag
Pierce County Auditor
140 County-City Bldg.
Tacoma, Washington

Dear Sir:

Enclosed is Certificate of Water Right No. 9394
and a check or money order in the amount of
$ 2.00 to cover the cost of recording in your
office.

When this has been done, please forward the certificate to: Herbert H. Kaiser, Jr.
Eisenhower and Carlson
Puget Sound Bank Building
Tacoma, Washington 98402

Very truly yours,

DEPARTMENT OF CONSERVATION

EARL COE, DIRECTOR

M. G. WALKER, Supervisor
Division of Water Resources

MGW:ja

Enc: 2

S. F. No. 368—1-57—3M 175.9 G.S.

CERTIFICATE RECORD NO. 19 , PAGE NO. 9334

STATE OF WASHINGTON, COUNTY OF Pierce

CERTIFICATE OF SURFACE WATER RIGHT

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.)

This is to certify that ERNEST L. KAISER *of* Tacoma, *State of* Washington, *has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the waters of* group of unnamed springs *a tributary of* South Prairie Creek, *with point or points of diversion within the* NW¼SW¼ *Sec.* 18 *Twp.* 19 *N., R.* 6 *E., W. M., under and subject to provisions contained in* appropriation *Permit No.* 13607 *issued by the State Supervisor of Water Resources, and that said right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume* 19 *at Page* 9334 *on the* 19 *day of* July, 1965 *that the priority date of the right hereby confirmed is* February 21, 1964; *that the amount of water under the right hereby confirmed, for the following purposes is limited to an amount actually beneficially used and shall not exceed* 0.15 cubic feet per second, 93 acre-feet per year during entire year to supply the community of South Prairie.

A description of the lands under such right to which the water right is appurtenant, and the place where such water is put to beneficial use, is as follows. The community of South Prairie.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this 19 *day of* July, 1965

State Supervisor of Water Resources.

Herbert H. Kaiser, Jr.
Eisenhower and Carlson
Puget Sound Bank Building
Tacoma, Washington 98402

S. F. No. 7355—7-57—5M. 46757. O.S.

Proof of Appropriation of Water

13407

Application No. 18350 Permit No. ~~[illegible]~~

1. Name of Permittee Grant L. Sauer
2. Postoffice address ~~South Pow~~ 7108 Interlaken Dr. S.W. Tacoma Wash
3. Source of appropriation Unnamed Springs tributary of South Prairie Creek
4. Name or number of works (if any) One (1)
5. For what purpose or purposes is water used? Water Supply (municipal)
6. Give date of beginning of construction many years ago - exact date not known
7. Give date of completion of construction work, including water distribution system about 1960.
8. Give date when water was completely applied to proposed use. Many years ago - exact date not known, probably 1918
9. If used for irrigation:

   Give number of acres described in permit Not applicable

   Give number of acres actually irrigated None
10. If used for power: HP actually developed Not application
11. LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS USED:

Community of South Prairie, Washington

12. During what months is water used? Continuously
13. Does map filed with your application show correctly the location of well or point of diversion for withdrawal of water, and area of land where water is used? Yes
14. If the dimensions, location or type of structure do not correspond to those described in your permit, state what changes have been made, giving dimensions, etc. None
15. Actual measured discharge or diversion of permanent system: 0.15 cfs (gpm or cfs)

(Sign certification on reverse side)

ok for certificate issue like permit
H.

STATE PRINTING PLANT OLYMPIA, WASHINGTON

STATE OF WASHINGTON,
County of Pierce } ss.

I, Grant L. SAUER, being first duly sworn, depose and say that I have read the above and foregoing proof of appropriation; that I know the contents thereof; and that the facts therein stated are true.

IN WITNESS WHEREOF, I have hereunto set my hand this 2nd day of July, 1965

Grant L. Sauer

Subscribed and sworn to before me this 2nd day of July 1965

Herbert W. Kauer Jr.
Notary Public
Residing at Tacoma

Form 10. S. F. No. 376—7-57—5M. 42898. O.S.

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
Division of Water Resources

Permit to Appropriate Public Waters of the State of Washington

Book No. 24 of Permits, on Page 13497 Under Application No. 18390

GRANT L. SMITH

of Tacoma, Washington

is hereby granted a permit to appropriate the following described public waters of the State of Washington, subject to existing rights and to the following limitations and provisions: Permittee shall construct and maintain at his own expense a weir, or other suitable device, for measuring any water granted herein for irrigation purposes and such appropriation shall be subject to a reasonable rotation system if ordered by the State Supervisor of Water Resources. Diversion intake shall be screened at all times with wire having a mesh opening not greater than 0.125 (1/8) inch.

Priority date of this permit is February 21, 1964

Source of the proposed appropriation is group of unnamed springs

tributary of South Prairie Creek

The quantity of water appropriated shall be limited to the amount which can be beneficially applied and not to exceed 0.15 cubic feet per second, or its equivalent in case of rotation, to be used for the following purposes: Municipal supply

as more definitely set out below.

The approximate point of diversion is located springs in a semi-circular pattern from the northeast corner of the SE¼NW¼ Sec. 18 southerly & westerly to southwest corner of said SE¼NW¼,

being within SE¼NW¼ Sec. 18, Twp. 19 N., Rge. 6 E. W. M.,

county of Pierce

The use, or uses, to which water is to be applied:

FOR DOMESTIC SUPPLY AND MISCELLANEOUS USES: cubic feet per second during entire year for to be used within Sec., Twp. N., Rge. W. M.,

FOR IRRIGATION: cubic feet per second acre-feet per year, from to each year, for irrigation of acres, described as follows:

REPORT OF EXAMINATION

Date of application Feb. 21, 1964 Date of examination March 19, 1964 Application No. 18350

Name Grant L. Sauer Address 4119 N. 22nd, Tacoma

Quantity applied for 0.15 c.f.s. Use Municipal supply

Source of appropriation Group of unnamed springs Tributary of South Prairie Creek

Legal sub. Unsurveyed of SW¼ of Sec. 18 Twp. 19 N. Rge. 6 E. County Pierce

Measured or estimated quantity Not measured Probable low flow

Quantity previously appropriated: W.T. 0 CWT. 0 E.T. 0

Other use made of water None

Diversion works ~~contemplated~~ observed A large concrete cistern built into bank to capture spring flows; 4" gravity-flow pipeline to town

Other equipment

Irrigable acreage: Planned Present Feasible

Other water rights appurtenant to this land. Ground Water Certificate No. 768

Progress of project Completed and in use

Protests None

Quantity recommended (total) 0.15 c.f.s.- 90 acre-feet per year Irrig. Dom. 0.15 c.f.s.- 90 acre-feet per year Municipal

Power Municipal Other uses

Department of Fisheries and Game report See below

Special remarks and provisions: In accordance with the recommendations of the Departments of Fisheries and Game, permit shall be subject to the following provisions: The diversion intake shall be tightly screened at all times with wire having a mesh opening not greater than .125 (1/8) inch.

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 Dept. of Health, 4th Floor, Public Health Bldg., Olympia, with regard to the need for compliance.

The water requirement for municipal supply is calculated on each home requiring 0.9 acre-feet per year, or 90 acre-feet annually for 100 homes.

The Town of South Prairie also has Ground Water Certificate #768 which is supplemental to the source of water under this application.

In accordance with R.C.W. 90.03.290, I find that there is water available for appropriation from the source in question and that the diversion proposed in the application will not impair existing rights or be detrimental to the public welfare. Therefore, permit should issue as recommended above, subject to existing rights and indicated provisions.

Signed this 20 day of April, 1964

Dean Wood

DEAN WOOD, Engineer

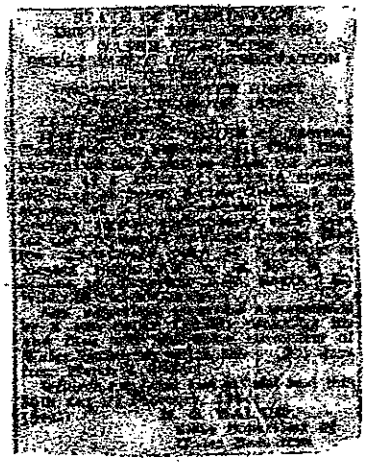
Form 110

AFFIDAVIT OF PUBLICATION

STATE OF WASHINGTON } *ss.*
County of Pierce

Kenneth L. Chappius, *being first duly sworn, on oath,*

says: that he is the Chief Clerk *of THE TACOMA NEWS TRIBUNE, a daily newspaper published in Tacoma, Pierce County, Washington, and of general circulation in said State, and having a daily circulation of over 80,000 copies. That said newspaper is now and at all of the times hereinafter mentioned was a legal newspaper as defined by the laws of this State, duly approved by the Superior Court of Pierce County, Washington.*



That the advertisement, of which the attached is a printed copy as it was published in the regular issues (and not in supplement form) of said newspaper, was published once each week for 2 *consecutive weeks commencing on the* 26th *day of* February *19*64 *, and ending on the* 4th *day of* March *, 19*64 *, both dates inclusive.*

That the full amount of the fee charged for said publication was the sum of $ 14.40

Kenneth L. Chappius

Subscribed and sworn to before me on this 16th *day of* March *, 19*64.

Hiemar J. Field

Notary Public in and for the State of Washington, Residing at Tacoma, Pierce County, Washington.

TIMBER-R-R LAND

On the Majestic Slopes of Mt. Rainier

700 Acres for
Trailer and Overnight Camping

Via
South Prairie, Washington

3822 So. Ainsworth
Tacoma 8 Wash.
March 13th 1964

RECEIVED
MAR 16 1964
7 8 9 10 11 12 1 2 3 4 5 6 P.M.

Supervisor of Water Resources
State of Washington
Olympia, Washington

Dear Sirs:-

Re: Surface Water application by Mr Grant L. Sauer #18350, and your letter to me of March 10th 1964.

It is agreed and stipulated in this application that no waters, springs, etcetra originating on the properties owned by Frank J. Demko or Mike D. Demko on Section #18 TWP 19 Range 6 E, is involved.

Therefor our objection is withdrawn.

Yours truly,

Frank J. Demko

Frank J. Demko

March 10, 1964

Frank J. Dasco
3822 South Ainsworth
Tacoma 6, Washington

Dear Sir:

Re: Surface Water Application #18350
Grant L. Sauer

Receipt is acknowledged of your letter of March 7, 1964 enclosing your postal money order in the amount of $2.00 as protest fee to approval of the above-numbered application. However, since we note that your objections are qualified in that you are concerned only if these springs originate from your property, we wish to draw the following circumstances to your attention before recording the protest.

The unnamed springs in question in Application #18350 are the same sources upon which Mr. Sauer filed in 1960 under Application #15934. Although you objected to the 1960 filing, approval of the application was granted as is evidenced by the enclosed Report of Examination of Mr. Don Holcomar. Evidently you were not opposed to this appropriation at that time since the springs in question had been developed for many years. Unfortunately, permit never issued under the 1960 application since interest in same was assigned to Mr. Joe Wald and he failed to comply with certain requirements of this office.

Under the circumstances, we question as to whether you are opposed to Mr. Sauer's most recent application since it essentially replaces the cancelled filing. We are therefore returning your postal money order. Should you still wish for your objections to be made a matter of record, please so advise and return the recording fee.

Very truly yours,

DEPARTMENT OF CONSERVATION

EARL COE, DIRECTOR

GLEN H. FIEDLER, Deputy Supervisor
Division of Water Resources

GHF:mm
Encl.

TIMBER-R-R LAND

On the Majestic Slopes of Mt. Rainier

700 Acres for
Trailer and Overnight Camping

Via
South Prairie, Washington

3822 South Ainsworth
Tacoma 8, Washington
March 7, 1964

RECEIVED
DEPARTMENT OF CONSERVATION
MAR 9
P.M

Supervisor of Water Resources
State of Washington
Olympia, Washington

18350

Dear Sir:

A Grant S. Sauer of Tacoma, Washington on February 21, 1964 filed application for permit to divert the public waters of a group of unnamed springs tributary of South Prairie Creek located on Sect. 18, twp. 19, range 6 E W. M., Pierce County

Please be advised that if any of these springs originate from any property owned by Frank J. Demko or Mike Demko on this notice, we take exception. Under no circumstances do we wish any water to be diverted from our property. A certified check is enclosed for $2.00.

Very truly yours,

Frank J. Demko

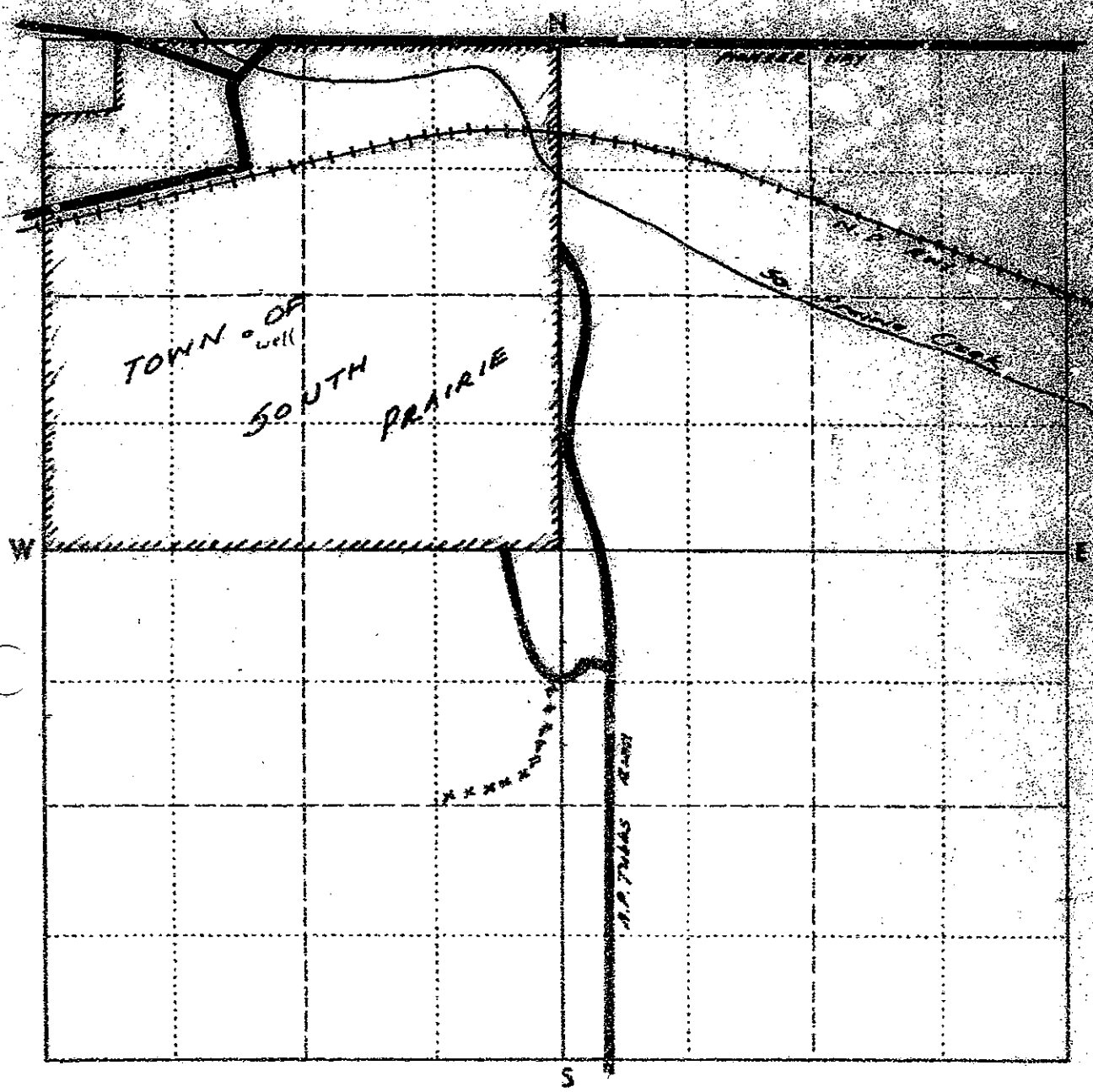
Frank J. Demko

MV/FJD
cc:

Grant S. Sauer

S. F. No. 1854-A—OS—5-62—5M. SECTION PLAT 18347

Sec. 18 Twp. 19 N. R. 6 EWM



1. Outline property described in application.
2. Show by a cross (X) the location of point of diversion (surface water source) or point of withdrawal (ground water source). For ground water applications, show by a circle (O) the locations of other wells or works within a quarter of a mile.
3. Indicate traveling directions from nearest town.

OFFICE Scale: 1 inch = 800 feet (each small square = 10 acres)

Pls. determine who owns land upon which PDs are located: if appl. does not pls. advise him of right of access responsibility.

Applicant buying on Contract

DK

Form 10. S. F. No. 376-A—7-57—5M. [redacted]

Please send $10.00 minimum statutory examination fee with application.

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
Division of Water Resources

DEPARTMENT OF CONSERVATION
FEB 21 1964
A. M. 7 8 9 10 11 12 1 2 3 4 5 6 P. M.

APPLICATION FOR A PERMIT
To Appropriate Public Waters of the State of Washington

(Read directions on last page carefully before filling out this form)

Application No. [redacted] 18350

18350

I, Grant L. Sauer
(Name of applicant)

of ~~South Prairie~~, ~~Wash~~ 4119 N. 22d Tacoma, Wash.
(Complete postoffice address)

do hereby make application for a permit to appropriate the following described public waters of the State of Washington subject to existing rights:

If the applicant is a corporation, give date and place of incorporation

1. *The source of the proposed appropriation is* group of unnamed springs
(Name of stream)

tributary of South Prairie Creek

2. *The amount of water which the applicant intends to apply to beneficial use is* 0.15 *cubic feet per second,* ..... *acre-feet per year.*

3. *The use to which the water is to be applied is* municipal supply
(Irrigation, power, mining, manufacturing, domestic supplies, etc.)

4. *Time during which water will be required each year* continuously

5. *The approximate point of diversion is located* springs in a semi-circular
(Give distance and bearing to section corner)

pattern from the NE corner of the SE¼ NE¼ SW¼ Sec. 18 southerly & westerly to Sd corner of said SE¼ NE¼ SW¼

being within the NE¼ SW¼ *of Sec.* 18, *Tp.* 19 *N., R.* 6E *W. M.,*
(Give smallest legal subdivision) (E. or W.)

in the county of Pierce

6. *The* ..... *to be* ..... *ft. or miles in length, terminating*
(Main ditch, canal, or pipe line)

in the ..... *of Sec.* ....., *Tp.* ..... *N., R.* ..... *W. M.,*
(Smallest legal subdivision) (E. or W.)

the proposed location being shown on the accompanying map.

7. *Estimated cost of development necessary to utilize fully the appropriation herein asked for* $.....

8. *Does the stream from which you wish to appropriate water flow through the tract of land on which the water is to be used?* Yes

9. **DESCRIPTION OF WORKS:**

(a) DIVERSION WORKS— 4 reservoir tanks

(1) *Height of diversion dam* .....; *length on top* ..... *feet; length on bottom* ..... *feet; material to be used and character of construction* .....
(Loose rock, concrete, masonry, rock and brush, timber crib, etc., wasteway over or around dam)

(2) *Description of headgate* .....
(Timber, concrete, etc., number and size of openings)

When storage works are contemplated a storage permit must be filed in addition to the above. These forms can be secured, together with instructions, by addressing the State Supervisor of Water Resources, Olympia, Washington.

(b) *Description of Ditch or Pipeline System*_____

10. **IRRIGATION:** *Number of acres to be irrigated*_____

11. **MUNICIPAL OR COMMUNITY WATER SUPPLY:**

To supply the city or community of South Prairie (Name), Pierce (Name) *County, having a present population of* 350 *and an estimated population of* — *in 19*____

(a) *Estimated present requirement*_____

12. **LEGAL DESCRIPTION OF PROPERTY** *on which water is to be used, for all purposes other than Municipal Supply or Power (Copy legal description from deed)*_____

(a) *What interest do you have in the above described property* Supplies water

(b) *Are there any existing water rights appurtenant to the above described property* Yes

If so, from what source Ground Water Certificate 768

13. **POWER:**

(a) *Total amount of power to be developed*_____ H. P. (Theoretical horsepower)

(b) *Total fall to be utilized*_____ *feet.* (Head)

(c) *The nature of the works by means of which the power is to be developed*_____

(d) *Such works to be located in*_____ (Legal subdivision) *of Sec*_____, *Tp.*_____ *N., Rge*_____ (E. or W.) *W. M.*

(e) *To what stream is the water to be returned?*_____

(f) *Locate point of return*_____ *Sec*_____, *Tp.*_____ *N., Rge*_____ (E. or W.) *W. M.*

(g) *The use to which power is to be applied is*_____

14. WORK SCHEDULE:

(a) *Construction work will begin on or before*_____

(b) *Construction work will be completed on or before*_____

Triplicate maps of the proposed ditch or other work, prepared in accordance with the rules of the State Supervisor of Water Resources, accompany this application.

(SIGN HERE) Ernest L. Sauer Address
(Applicant)

(SIGN HERE) [redacted] Address
(Owner of Land in Item 12)

Signed in the presence of us as witnesses:

(1) Eugene F. Wallace
(Name) (Address of witness)

(2)
(Name) (Address of witness)

Remarks: To serve 100 Townsite

STATE OF WASHINGTON,
COUNTY OF THURSTON. } ss.

This is to certify that I have examined the foregoing application together with the accompanying maps and data, and return the same for correction or completion, as follows:

In order to retain its priority, this application must be returned to the State Supervisor of Water Resources, with corrections, on or before _____, 19____

WITNESS my hand this _____ day of _____, 19____

State Supervisor of Water Resources.

S. F. No. 378-B—OS—2-67.

$10.00 examination fee should accompany each application.

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
Division of Water Resources

Priority
Date 6-12-67
Time 10:45 AM
Accepted WRC

APPLICATION FOR A PERMIT

To Appropriate Public Ground Waters
OF THE STATE OF WASHINGTON

Application No. G. W. 8787

I, TOWN OF SOUTH PRAIRIE (Name of applicant)

of TOWN HALL, SOUTH PRAIRIE, WASHINGTON (Complete post office address)

do hereby make application for a permit to appropriate the following described public ground waters of the State of Washington, subject to existing rights. This application is made under the provisions of Chap. 263 of the Session Laws of 1945, and amendments thereto of the State of Washington and subject to the rules and regulations of the Department of Conservation, Division of Water Resources.

1. *The proposed appropriation will be from* WELL (Well, tunnel, infiltration trench)

located ON LOT C, BISSON'S 5TH ADDITION, SOUTH PRAIRIE, WASHINGTON (Give approximate distance and direction from nearest city or town)

Area (Leave blank) *Sub-area* (Leave blank)

Zone (Leave blank)

Applicant's name or number of well or other works, if any WELL NUMBER 1

2. *The quantity of water which applicant intends to withdraw for beneficial use is* 100 *gallons per minute;* 77 *acre feet per year.* (350 GPM PER PERSON PER DAY AVERAGE USAGE WITH NO METERS)

3. *The use or uses to which water is to be applied* municipal ~~DOMESTIC~~ SUPPLY

(Domestic supply, irrigation, municipal, manufacturing, industrial use, etc.)

4. *The time during which water will be required each year* ~~ALL YEAR~~ Continuously

5. *Location of well or other works for withdrawal of water: In county of* PIERCE

(a) ~~(SW¼ NW¼)~~ 1810' W & 650' N from center of Sec. 18 (Give distance and bearing from nearest corner of section or legal subdivision)

being within the (Give smallest legal subdivision) *of Sec.* 18, *Twp.* 19 *N., Rge.* 6E (E. or W.)

or (b) *If within limits of recorded platted property, town or city:* Lot C, Block

of part of BISSON'S 5TH ADDITION (Give name of plat or addition) within Town of SOUTH PRAIRIE (If within town or city, give name)

(c) *Show this location on accompanying section plat. Other adequate maps or drawings will be acceptable.*

6. DESCRIPTION OF WORKS:

(a) Well will be DRILLED (Dug or drilled) have a diameter of 12 inches and an estimated depth of 140 feet.

(b) Tunnels or trenches to be described: (Attach additional sheets if needed for full description.)

(c) Distribution system to be described:
EXISTING DOMESTIC WATER DISTRIBUTION SYSTEM WITHIN THE TOWN OF SOUTH PRAIRIE.

(d) If pumps are to be used, give size and type:
100 GPM SUBMERSIBLE

(e) Give capacity and type of motor or engine to be used:
10 H.P. SUBMERSIBLE

(f) If the location of the well, tunnel, or other works is less than one-fourth mile from a natural stream or stream channel, give the distance to the nearest point on each of such channels and the difference in elevation between the stream bed and the ground surface at the source of development.

(g) Ownership of each existing well or other works from which ground water is withdrawn within a radius of one-quarter mile and the distance and direction from well or other works being reported herein:

Cert # 768

(Name)	(Direction)	(Distance)
J.C. Clark	N	1000 ±

SUPPLY THE FOLLOWING INFORMATION ACCORDING TO USE PROPOSED:

7. For Municipal Supply: To supply the city, town, or community of SOUTH PRAIRIE in the county of PIERCE having a present population of 200 and an estimated population of 400 in 1975.

8. For Irrigation: Number of acres to be irrigated ..... acres.

9. *Legal Description of Property on which water is to be used for all purposes other than municipal supply:*

(Copy legal description from deed)
(If more space is required, attach separate sheet)

Town of South Prairie

(On accompanying plat show location of the existing wells or works)

10. *What interest do you have in the above described property?* LESSEE

(Owner, lessee, contract buyer, etc.)

11. *Do you have any other water rights appurtenant to the above described property?* NO

If so, from what source?

12. *Construction work will begin on or before* APRIL 1, 1967

13. *Construction work will be completed on or before* AUGUST 1, 1967

14. *Water will be put to complete beneficial use on or before* AUGUST 1, 1967

Clyton Oles Mayor x
(Signature of applicant)

15. *Name and address of owner of land on which well or works are located:*

PIERCE COUNTY SCHOOL DISTRICT NUMBER 416, BUCKLEY, WASHINGTON.
(Name) (Address)

White River Sch Dist 416
John O Ireland Lost x
(Signature of legal landowner)

Signed in the presence of us as witnesses:

Ray Justice (Name) — P O Box 11 South Prairie Wash (Address of witness)

Mary Beangardner (Name) — Buckley Wash (Address of witness)

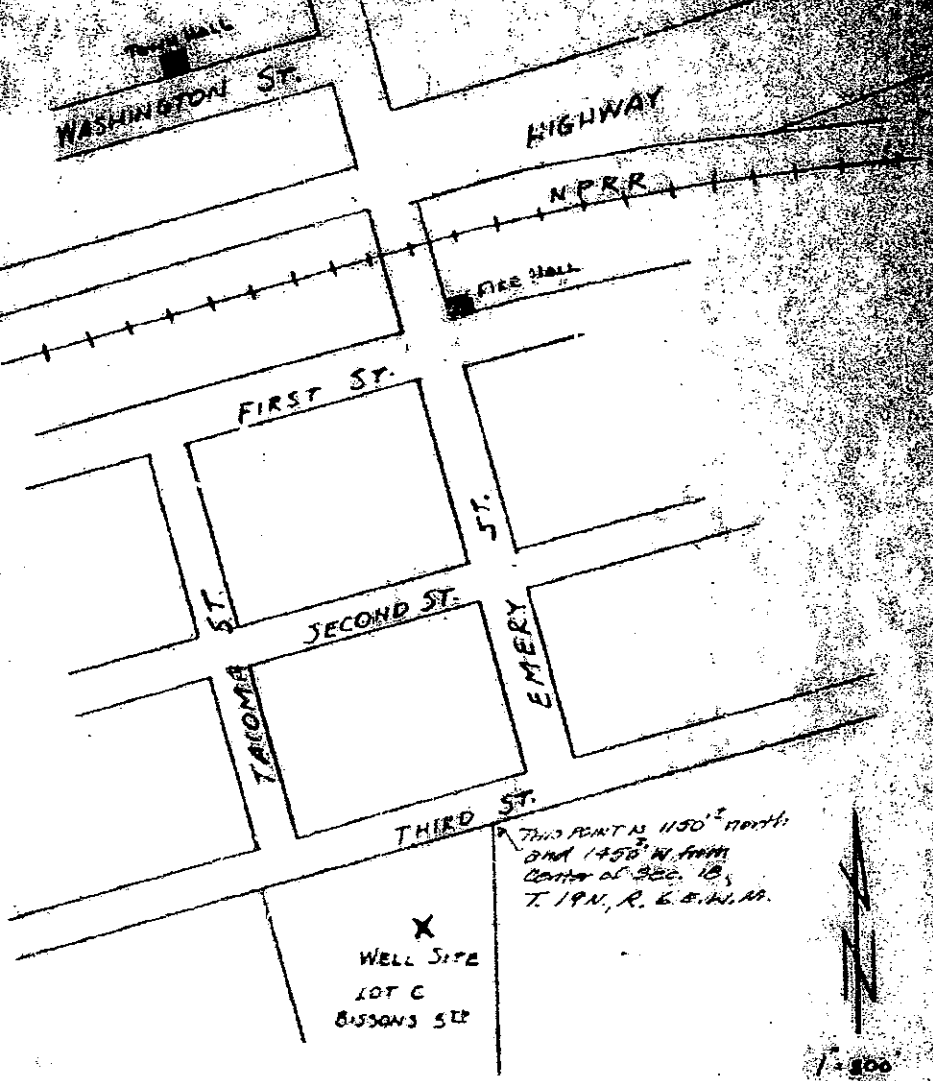
STATE OF WASHINGTON,
COUNTY OF THURSTON. } ss.

This is to certify that I have examined the foregoing application, together with the accompanying maps and data, and return the same for correction or completion as follows:

In order to retain its priority, this application must be returned to the State Supervisor of Water Resources, with corrections, on or before ....., 19....

WITNESS my hand this ..... *day of* ....., 19....

State Supervisor of Water Resources.



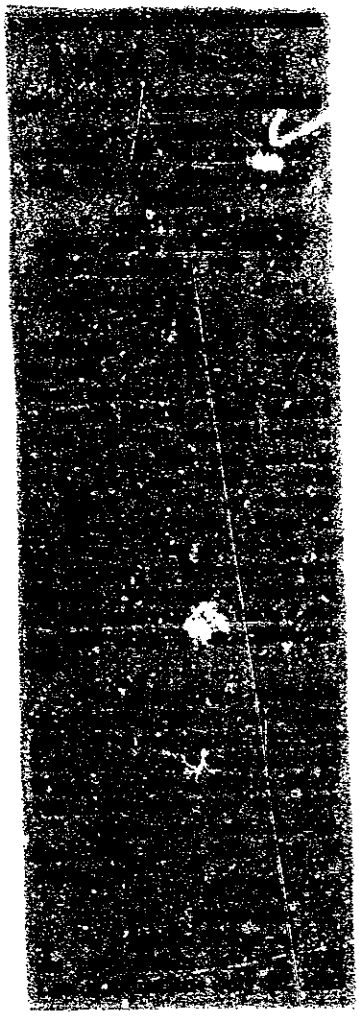
SOUTH PRAIRIE
WELL SITE
LOCATION MAP

GW 8787

OFFICE

Affidavit of Publication

STATE OF WASHINGTON)
COUNTY OF PIERCE) ss



RECEIVED
DEPARTMENT OF WATER RESOURCES

SEP 21 1967

A. M. 7 8 9 10 11 12 1 2 3 4 5 6 P. M.

Robert G. Dalton

being first duly sworn on oath deposes and says that he is the manager and publisher of the BUCKLEY NEWS-BANNER, a weekly newspaper, and is duly authorized to make this affidavit on behalf of said newspaper. That said newspaper is a newspaper of general circulation in Pierce County, Washington, and is now and has been for more than six months prior to the date of publication hereinafter referred to, published in the English language continuously as a weekly newspaper in Buckley, Pierce County, Washington, and is now and during all of said time was printed in an office maintained at the aforesaid place of publication of said newspaper, and that said BUCKLEY NEWS-BANNER was on the 4th day of August, 1941, approved as a legal newspaper by the Superior Court of Pierce County. That the annexed is a true copy of a

Ground Water Right
Application no. 8787

as it was published in regular issues (and not in supplement form) of said newspaper once each week for a period of 2 consecutive weeks, commencing on the 13th day of July, 1967 and ending on the 20th day of July, 1967 both dates inclusive, and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is the sum of $ 9.34 which amount has been paid in full at the rate of $2.40 a hundred words for the first insertion and $1.80 a hundred words for each subsequent insertion.

Signed: Robert G. Dalton

Subscribed and sworn to before me this 24th day of July, 1967

Notary Public in and for the State of Washington, residing at Buckley, Pierce County, Washington.

Report of Examination on Ground Water

Received date June 12, 1967 Date of exam. July 25, 1967 Appli. No. 8787

Name Town of South Prairie Address Town Hall, South Prairie, Washington

Type of works a well Dimensions 12" x 140'

Progress of works Complete

Quantity applied for 100 g.p.m. acre-feet per year

Legal sub. / Sec. 18 Twp. 19 N. Rge. 6 E. County Pierce

Lot C, of Plat of Bisson's Fifth Addition, within Town of South Prairie

Use Municipal supply

Irrigation-acreage: Present Planned Feasible

Municipal: Population 400 as of 1975

Industrial

Time pump will be operated Continuously

Other water rights appurtenant to this land Surface Water Cert. No. 9394; Ground Water Cert. No. 768

Proximity to existing works, springs, wells, or streams

J. C. Clark, Ground Water Cert. No. 768, north 1000 feet +

Area Sub-area Zone

RECOMMENDATIONS

Approved for 100 g.p.m. 90 acre-feet per year, subject to existing water rights. (1 acre-foot 325,850 gallons.)

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, 304 Public Health Building, Olympia, with regard to the need for compliance.

The water requirement for municipal supply is based on a maximum average need of 200 gallons per capita per day, or 90 acre-feet annually for 400 persons.

Applicants have Surface Water Certificate No. 9394 for 0.15 cubic foot per second, 90 acre-feet per year, and Ground Water Certificate No. 768 for 100 gallons per minute, 6 acre-feet per year (supplemental). Therefore, permit will issue as follows: "Issued as a supplemental supply, the total annual withdrawal shall not exceed 90 acre-feet less any amount withdrawn or diverted under existing rights."

The artesian flow of the subject well was being discharged into an open ditch. Applicants' attention is invited to RCW 90.44.110. Therefore, permit shall carry the following provision: "The well authorized by this permit shall be so capped or equipped with valves such that the flow of water can be completely stopped when the well is not in use under the terms of said permit."

(over)

As provided under RCW 43.21.130, 90.03.360, 90.44.250 and 90.44.020, a master meter shall be installed in this system to measure the total amount of the withdrawal.

Signed at Olympia, Washington
this 10 day of January, 1968

DEAN WOOD, Water Resources Inspector
Division of Water Management

File Original and First Copy with the Division of Water Resources
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. 8787
Permit No. ....

(1) OWNER: Name TOWN OF SOUTH PRAIRIE Address SOUTH PRAIRIE, WASHINGTON

(2) LOCATION OF WELL: County PIERCE SW ¼ NW ¼ Sec. 18 T. 19 N., R. 6E W.M.

Bearing and distance from section or subdivision corner LOT C BISSON'S 5TH ADDITION

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) .... #1
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 12" inches.
Drilled 140' ft. Depth of completed well 140' ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 12" Diam. from 0 ft. to 128 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 ☐
Manufacturer's Name Johnson
Type cont. slot Model No. stainless
Diam. 10" Slot size 50 from 128 ft. to 140 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☐ No ☒ To what depth? ft.
Material used in seal
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 flowing ft. below top of well Date 4/25/57
Artesian pressure 10-12 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: 100 gal/min. with 81 ft. drawdown after 4 hrs.
150 " 98 " 120 "

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
8:10	98	9	56		
2	52	15	34		
8	43	20	31		

Date of test 4/21/57
Bailer test gal/min. with ft. drawdown after hrs.
Artesian flow 35 g.p.m. Date 4/25/57
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

OK PE

(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
Black top soil	0	2
Brown silt sand & gravel	2	12
Grey cemented sand & gravel	12	28
Black sand & gravel hard packed with water	28	34
Clay green, blue & gray	34	128
Sand & gravel with rotton wood & thin layers of clay with thin lenses of peat 30% of the sand & gravel is very light weight pumice	128	140
15' of 10" #50 slot screen		
10' of 9⅝" tube riser		
1 12"X 10" packer		

Work started ..... 19 ..... Completed ..... 19 .....

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 Rainier Well Drilling Co.
(Person, firm, or corporation) (Type or print)

Address 13606 Waller Rd. E. Tacoma Wn.

[Signed] Duane Kilson
(Well Driller)

License No. 223 02 4385 Date 5/4/62, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7386—(Rev. 3-60)—3-60—5M. 4516.

B. F. No. 7284---,8—6-67.

STATE OF WASHINGTON
DEPARTMENT OF WATER RESOURCES
DIVISION OF WATER MANAGEMENT

Permit to Appropriate Public Ground Waters of the State of Washington

Book No. 17 of Ground Water Permits, on page 8138 under Application No. 6787

TOWN OF SOUTH PRAIRIE

of South Prairie, Washington

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 June 12, 1967

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 100 gallons per minute; 90 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 1810 feet west and 650 feet north from center of Sec. 18

being within Lot C, Plat of Bisson's 5th Addition, within Town of South Prairie, of Sec. 18, T. 19 N., R. 6 E.W.M.

county of Pierce

Use, or uses to which water is to be applied:

For municipal supply: 100 gallons per minute; 90 acre-feet per year, to supply 400 persons within the town of South Prairie continuously during entire year

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

Town of South Prairie

DESCRIPTION OF WORKS FROM WHICH WATER IS TO BE WITHDRAWN

The well will be drilled (Dug or drilled) and have a diameter of 12 inches, and depth of 140 feet.

Description of tunnel or infiltration trench:

Please read carefully provisions below)

Particular specifications required by the Department of Water Resources for the purpose of preventing waste of public waters: 1) This permit is issued as a supplemental supply, the total annual withdrawal shall not exceed 90 acre-feet less any amount withdrawn or diverted under existing rights. 2) The well authorized by this permit shall be so capped or equipped with valves such that the flow of water can be completely stopped when the well is not in use under the terms of said permit. 3) As provided under RCW 43.21.130, 90.03.360, 90.44.250 and 90.44.020, a meter meter shall be installed in this system to measure the total amount of the withdrawal.

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 February 1, 1969

Given under my hand and the seal of this office at Olympia, Washington, this 13th day of February, 19 68

Glen H. Sindler

Assistant Director
Division of Water Management
Department of Water Resources

S. F. No. 7335—7-57—5M. 49757. O.S.

Proof of Appropriation of Water

Application No. 8787 Permit No. 8338

1. Name of Permittee Town of South Prairie
2. Postoffice address South Prairie, Wn.
3. Source of appropriation well
4. Name or number of works (if any) Well No. 1
5. For what purpose or purposes is water used? Domestic
6. Give date of beginning of construction March 1st 1967
7. Give date of completion of construction work, including water distribution system July 1st 1967
8. Give date when water was completely applied to proposed use July 1st 1967
9. If used for irrigation:

   Give number of acres described in permit

   Give number of acres actually irrigated
10. If used for power: HP actually developed
11. LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS USED:

    Town of South Prairie, Wn.

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Has Access Port or Air Line been installed? yes

12. During what months is water used? entire year
13. Does map filed with your application show correctly the location of well or point of diversion for withdrawal of water, and area of land where water is used? yes
14. If the dimensions, location or type of structure do not correspond to those described in your permit, state what changes have been made, giving dimensions, etc.
15. Actual measured discharge or diversion of permanent system: 100 (gpm ~~or cfs~~)

Issue the permit
WRL

(Sign certification on reverse side)

STATE PRINTING PLANT OLYMPIA, WASHINGTON

STATE OF WASHINGTON,
County of PIERCE } ss.

I, CLIFTON OLES, being first duly sworn, depose and say that I have read the above and foregoing proof of appropriation; that I know the contents thereof; and that the facts therein stated are true.

IN W[illegible]S WHEREOF, I have hereunto set my hand this 19 day of MARCH, 1968

Clifton Oles

Subscribed and sworn to before me this 19 day of March, 1968

Janet M. Cook
Notary Public.

CERTIFICATE RECORD NO. 13 PAGE NO. 6013-A

STATE OF WASHINGTON, COUNTY OF Pierce

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 Department of Water Resources thereunder.

THIS IS TO CERTIFY *That* TOWN OF SOUTH PRAIRIE

of South Prairie, Washington, *has made proof to the satisfaction of the Department of Water Resources of Washington, of a right to the use of the ground waters of a* well

located within Lot C, Plat of Bisson's 5th Addition within Town of South Prairie

Sec. 18, *Twp.* 19 *N., R.* 6 E. *W.M.,*

for the purpose of municipal supply

under and subject to provisions contained in Ground Water Permit No. 8338 *issued by the Department 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 Department of Water Resources of Washington and entered of record in Volume* 13 *at page* 6013-A; *that the right hereby confirmed dates from* June 12, 1967; *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* 100 gallons per minute; 90 acre-feet per year, to supply 400 persons within the town of South Prairie continuously during entire year

Special provisions required by the Department of Water Resources: This Certificate is issued as a supplemental supply, the total annual withdrawal shall not exceed 90 acre-feet less any amount withdrawn or diverted under existing rights.

A description of the lands to which such ground water right is appurtenant:

Town of South Prairie

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

This certificate of ground water right is specifically subject to relinquishment for nonuse of water as provided in Section 18, Chapter 233, Laws of 1967.

WITNESS the seal and signature of the Assistant Director, Division of Water Management, Department of Water Resources affixed this 2nd *day of* April, *19* 68

Glen H. Sudlow

Assistant Director
Division of Water Management
Department of Water Resources

Washington State

DANIEL J. EVANS, GOVERNOR

H. MAURICE AHLQUIST, DIRECTOR

DEPARTMENT OF WATER RESOURCES

335 GENERAL ADMINISTRATION BUILDING
OLYMPIA 98501

PHONE 753-6100
AREA CODE 206

April 2, 1968

County Auditor
Pierce County
Tacoma, Washington

Dear Sir:

Enclosed is Certificate of Water Right No. 6013-A and a check or money order in the amount of $ 2.00 to cover the cost of recording in your office.

When this has been done, please forward the certificate to:

Town of South Prairie
Town Hall
South Prairie, Washington 98385

Very truly yours,

DEPARTMENT OF WATER RESOURCES

Glen H. Fiedler

GLEN H. FIEDLER, Assistant Director
Division of Water Management

GHF: vw

Enc.

S.F. 8510

APPENDIX J

Wellhead Protection Plan and 2006 Update

Town of South Prairie

Addendum: Wellhead Protection Plan

February, 2006

Developed by:

Larry Harter
Town of South Prairie
Water Operator

In cooperation with:

Daniel J. Cappellini
Wellhead Protection Specialist

I. Introduction

This document is an addendum to the existing Town of South Prairie Wellhead Protection Plan. Its purpose is to update the WHP Plan completed in 1997 to reflect current 2006 water system operating conditions.

II. Well System Changes

No major changes have occurred to the Town of South Prairie well system. The source wells operate the same with regards to individual well capacity and total water system production. The pumping regime for the two wells, however, has reversed. S02 is now the primary production well, with S01 providing the remainder of supply. Metered water use for 2005 was 15,482,100 GPY with production divided among the two wells; 3,110,000 for S01 and 12,372,100 for S02.

III. Wellhead Protection Area Changes

The following changes in WHP Area Calculated Fixed Radii reflect the changes in pumping regime described above in Section II. Figure 1 depicts current WHP Area.

Current Pumping Regime: The Calculated Fixed Radius (CFR) utilizes the following volumetric flow equation to determine the WHPA radii: $r = \sqrt{Q t / \Pi n H}$

Parameter	WHP Zone	SO1	S02
r = calculated radius of protection zone (ft)	6 month 1 year 5 year 10 year	123 174 388 549	239 338 755 1068
Q = pumping rate of well per year (cuft/yr)		415,807	1,654,150
t = time of travel (years)		1,5,10	1,5,10
Π = Pi		3.14	3.14
n = estimated porosity (if unknown - 0.22)		.22	.22
H = Open interval or length of well screen (ft)		20	21

IV. Potential Contaminant Source Inventory Update

A field survey was conducted in the WHP area in order to update the inventory of potential sources of contamination and identify new land use activities that may pose threats to groundwater quality. The only change to the potential contaminant source list is the cabinet fabricator listed in the 1997 plan no longer operates in the WHP Area.

TOWN OF SOUTH PRAIRIE

Wellhead Protection Plan

verbally approved by
Stacy Patterson
DOH on 2-3-98

Greg Caron
Groundwater Specialist
Evergreen Rural Water of Washington

Larry Harter • Water Operator
South Prairie

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NW DRINKING WATER

1997

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INTRODUCTION

Background

Congress enacted the Safe Drinking Water Act (SDWA) in 1974 with the goal of providing safe drinking water to all users of public water supplies. The SDWA gave the U.S. Environmental Protection Agency (EPA) the authority to develop a uniform national drinking water program, and to establish national standards for known or suspected drinking water contaminants. The 1986 SDWA amendments authorized two new provisions for groundwater protection. One of these was the Wellhead Protection (WHP) program. The SDWA allows each state to design its own WHP program in order to maximize program effectiveness at the local level. Each state's WHP activities are designed to protect land areas surrounding public water supply wells in order to prevent groundwater contamination.

The State of Washington requires that all Group A water systems (those serving fifteen or more connections or twenty-five or more people) develop WHP plans, as stated in the Washington Administrative Code (WAC 246-290). The Washington Department of Health (DOH) has established requirements, guidelines and materials to aid water systems in the development of their WHP plans. In order to help systems comply with WHP requirements, Evergreen Rural Water of Washington provides on-site assistance to small water systems. This assistance is provided at no cost to systems through funding provided by the DOH and EPA.

Purpose

The purpose of WHP is to provide an organized approach to effectively protect drinking water supplies from contamination. The program seeks to identify and manage potential contaminant sources near public water supply wells in order to prevent future pollution problems. WHP safeguards the health of community residents and avoids negative financial impacts associated with contamination. The costs of contamination typically include the investigation of sites, installing treatment facilities, and/or locating new water sources, to name just a few. In fact, Washington State health officials have identified nearly twenty different direct and indirect costs associated with well contamination. To avoid these costs and ensure a safe, quality water supply, we need to protect groundwater at its source. WHP is a straightforward and cost effective method of accomplishing this goal.

South Prairie's Plan

This WHP report includes the following elements:

- A completed susceptibility assessment
- Identification of the WHP zones;
- An inventory of potential contaminant sources and land use activities;

- A discussion of the management strategy;
- Contingency and emergency response planning; and
- Supporting information and documentation.

Upon completion of these elements, South Prairie's water system is expected to meet or exceed the requirements of Washington State's WHP program.

HYDROGEOLOGY

Location

South Prairie is located about 25 miles east of Tacoma on State Route 162, in north-central Pierce County (fig. 1). The community is situated upon floodplain deposits on the south side of South Prairie Creek and lies at ~400 ft. elevation. Immediately south of town the topography abruptly rises approximately 350 ft. to an uneven, localized plateau.

Well System

South Prairie withdraws water from two wells (fig. 2) in order to provide water to 150 connections which serve approximately 533 residents. The lower well (SO1) lies on the southern edge of town along SW 3rd St., between Tacoma Ave. and Emery Ave. According to the well report (circa 1967) casing exists from the ground surface to a depth of 128 ft. and the well is screened from 120 to 140 ft. The Water Facilities Inventory (WFI) report indicates that this well is 130 ft. deep. The reason for the discrepancy is not apparent at this time. Additionally, no details pertaining to the existence or depth of a surface seal is available. This well withdraws ~13,500,000 gallons per year, or about 85% of South Prairie's annual groundwater usage.

The upper well (SO2) is located in the southeast corner of the city limits, along Tubbs Road. This well lies ~1700 ft. southeast of, and ~150 vertical ft. above the lower well, near the community's water storage tanks. The upper well is reported to be 425 ft. deep and was constructed in 1979. It has an 18 ft. surface seal and 425 ft. of casing, of which the lower 21ft. is screened. The upper well withdraws about 2,575,000 gallons per year, but has the capacity for greater withdrawal. Well reports (well logs) are available for both wells, and are included with this report (Appendix A).

Aquifer Susceptibility

Both of South Prairie's wells withdraw water from layers of sand and gravel that are overlain by a thick sequence of clay and other sediments. This lithology reflects the highly varied geologic history of the area. The sand and gravels were deposited within a fluvial (river) environment (much like that which exists along South Prairie Creek today. Pumice is indicative of volcanic eruptions associated with the town's neighbor 20 miles to the south; Mt. Rainier.

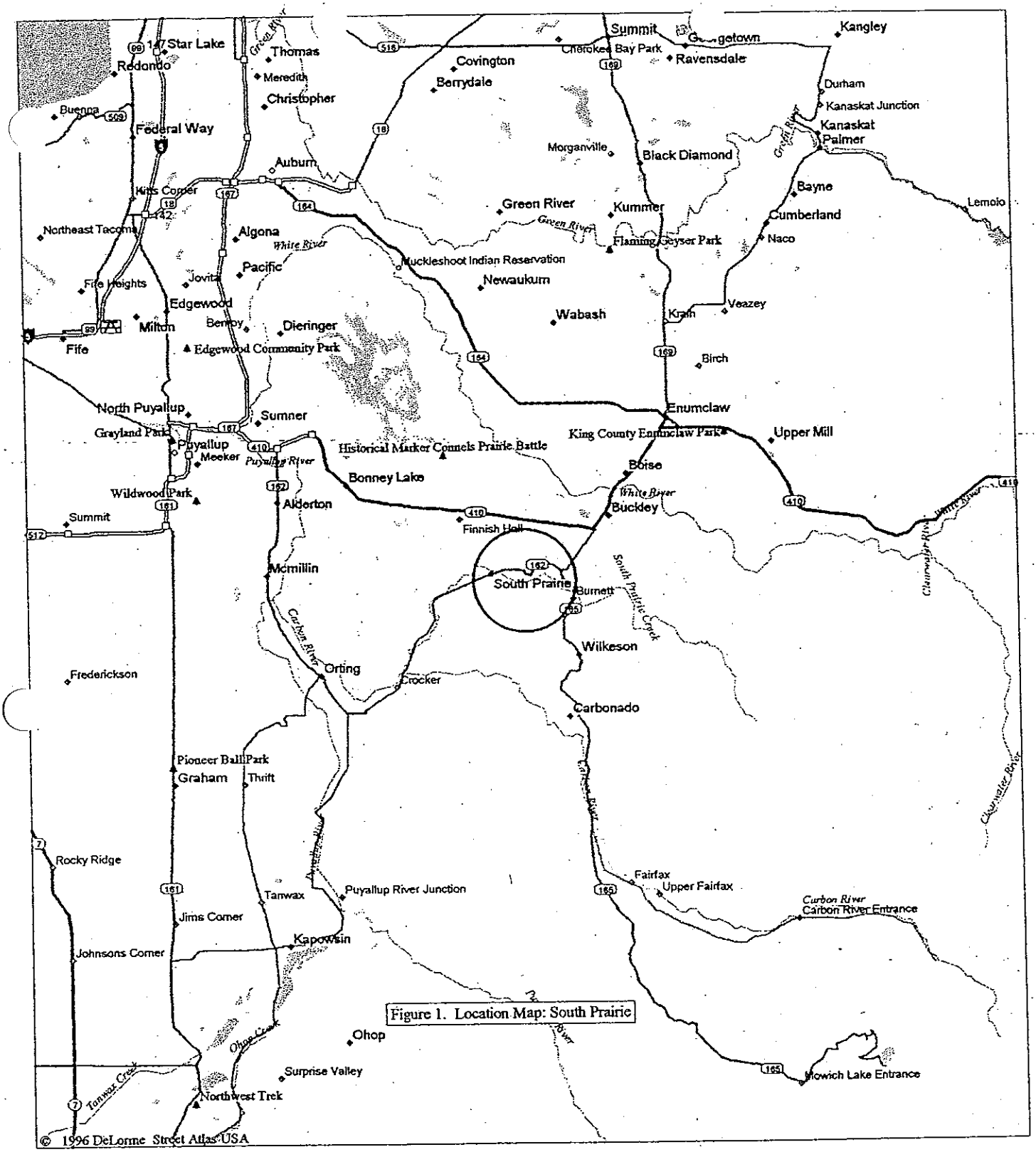
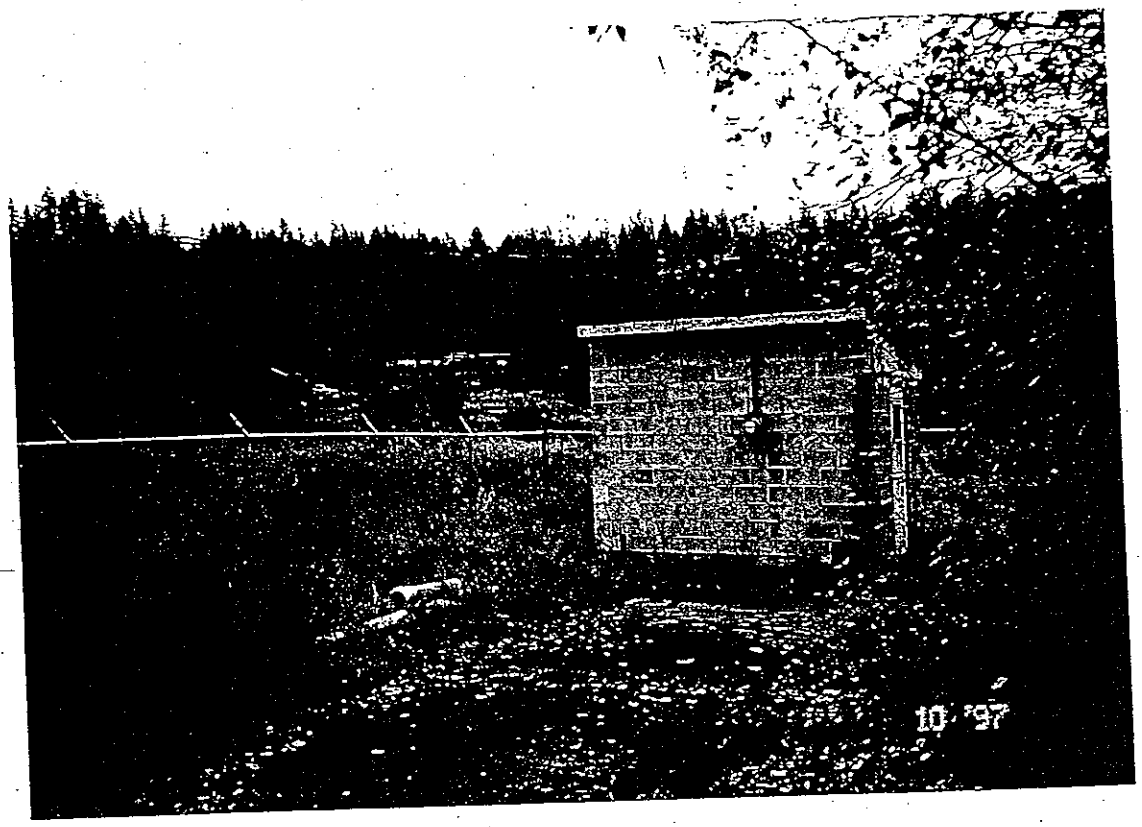


Figure 1. Location Map: South Prairie

Mag 11.00
Mon Oct 27 07:07 1997

Scale 1:250,000 (at center)
5 Miles
5 KM

Major Connector
Major Forest Road
State Route



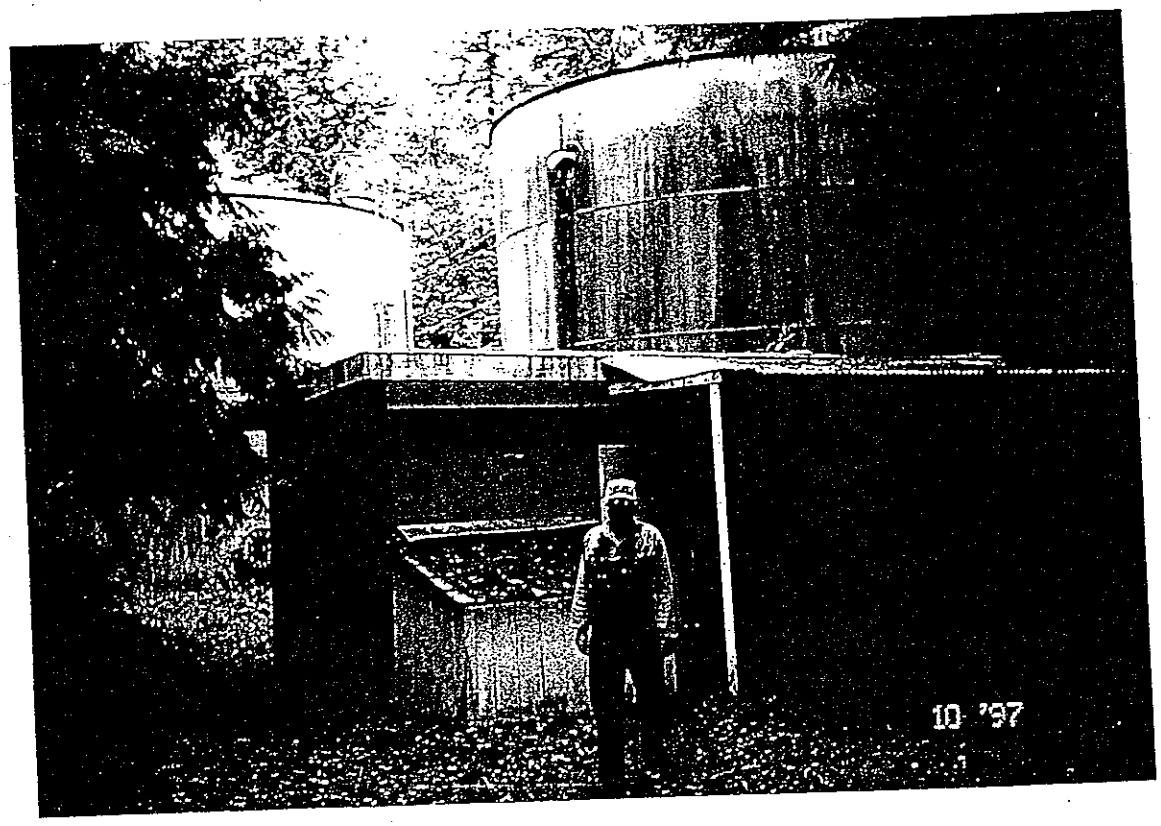


Figure 2a (top): Lower well (S01) inside wellhouse. View is to south. 2b (bottom): Upper well (S02) inside wellhouse. Larry Harter, water operator, in foreground. View is to east.

Clays are fine-grained sediments that are associated with geologically recent glaciation of the Puget lowlands.

Specifically, the lower well withdraws water from a relatively thin layer of sand and gravel with pumice that is immediately overlain by a thick sequence (94 ft.) of clay. When the lower well is not in use, it has a static water level above ground surface. This indicates artesian conditions are present within the aquifer.

The upper well withdraws water from layers of densely packed sand and gravel that are ~63 ft. thick. Above this level is an extensive sequence of sand, gravel, and clay. The thickest sequence of clay above the water-bearing zone occurs from 102 to 316 ft. in depth. Because it has a static water level ~79 ft. below ground (far above the top of the aquifer from which water is being withdrawn) and due to the thick sequence of clay, confining conditions are also present in this well.

The upper well's surface seal and full length casing are likely to provide a significant level of protection from contaminants originating at the land surface. Though no information is provided about a grout seal in the lower well, it is also fully cased. More importantly, both wells withdraw groundwater from confined aquifers. The confining conditions within the aquifer result in strong pressure gradients that inhibit percolation of local groundwater into the aquifers. Therefore, it is unlikely that any contaminants originating at the land surface near the wells would enter the aquifers serving South Prairie's wells.

Based upon information provided in the Ground Water Contamination Susceptibility Assessment Survey Form (Appendix B), the State has classified both of the wells as MODERATELY susceptible to contamination. *Susceptibility* is determined by conditions that affect the movement of contaminants from the land surface into a water supply. The *vulnerability* (the water source's overall potential for contamination) has been classified as LOW for both sources.

IDENTIFICATION OF THE WELLHEAD PROTECTION AREAS

Background

Recharge of aquifers occurs through infiltration of precipitation in areas where the aquifer lies at or near the surface, or where confining units are absent or thin enough to allow groundwater to 'leak' through the confining layer(s) into the aquifer. Ideally, all land areas that contribute recharge to the aquifer would be targeted for WHP. Unfortunately, the identification of precise recharge areas for wells can be a technical and time-consuming process. Further, once identified, they often cover vast areas of land and thus become difficult to manage. In South Prairie's case, the aquifers do not lie near the surface and the confining layers are quite thick.

These factors combine to make the identification of recharge areas an unrealistic expectation within South Prairie's plan.

Methods

Several different methods may be used to determine the WHP areas. The most straightforward method accepted by the State is a calculated fixed radius (CFR). This method is also used within the Susceptibility Assessment, which is used to grant source water monitoring waivers. The CFR serves as a good 'first cut' WHP delineation because it is easy to apply and inexpensive. Unfortunately, the CFR can over-simplify groundwater flow conditions and may or may not be very accurate depending upon site-specific circumstances. Therefore, other more complex delineation methods such as computer modeling and hydrogeologic mapping are encouraged, but not always required for small systems.

Regardless of the method used, the state requires that the WHP areas include the one, five, and ten year time of travel zones for groundwater. 'Time of travel' refers to the amount of time it takes for a particle of groundwater entering the aquifer at the boundary of the WHP zone to reach the well after one, five, or ten years of pumping.

Results

The CFR utilizes a volumetric flow equation to determine the WHP area radius:

$$r = \sqrt{Q t / \Pi n H}$$

Where:

Parameter		S01	S02
r = calculated radius of protection zone (ft)	1 year:	360	150
	5 year:	810	340
	10 year:	1140	490
Q = pumping rate of well (gal/year)		13,500,000	2,575,000
t = time of travel (years)		1,5,10	1,5,10
Π = Pi		3.14	3.14
n = porosity (estimated)		0.22	0.22
H= Open interval or length of well screen (ft)		20	21

Using the information above, South Prairie's one, five, and ten year time of travel radius' were calculated, and the corresponding WHP zones appear on fig. 3. Once again, it is important to emphasize that the WHP areas demonstrated here are useful planning tools, but do not represent precise groundwater capture zones for the wells. A more accurate WHP area depiction would require more information and resources than are currently available. Further, developing an awareness of the system's contamination potential is a higher priority at this time.

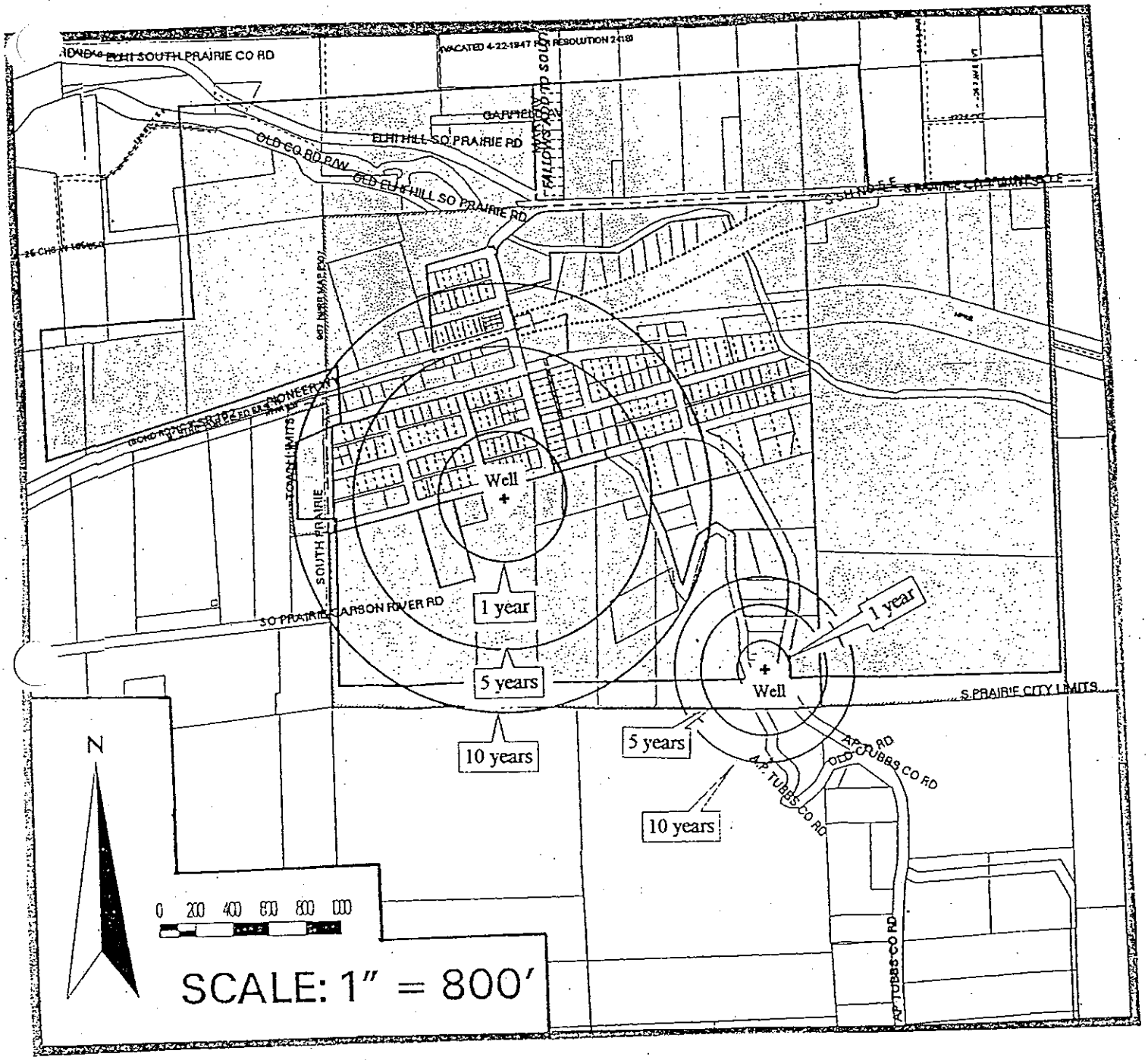


Figure 3. Wellhead Protection Areas

POTENTIAL CONTAMINANT SOURCE INVENTORY

Methods

A field survey was conducted of the South Prairie WHP zones in order to inventory potential sources of contamination (Table 1) and identify land use activities which may pose threats to groundwater quality. The water system operator conducted windshield and walk-through surveys with assistance from Evergreen Rural Water of Washington. The location of all potential contamination sources identified were recorded on base maps of the WHP zones (fig. 4).

Results

In terms of land use, the surveys indicate that the WHP areas are subject to a limited number of activities depending upon the well in question. The majority of the land surrounding the upper well property is undeveloped (forested), with the exception of a few residential properties. Only two residences within the general area (not necessarily the WHP zone) of the upper well rely upon septic systems to treat household wastewater. Less than ½ dozen other residences exist within the upper WHP zones, but all are served by South Prairie's wastewater treatment plant. Accidental hazardous materials spills along Tubbs Road constitute the only other potential source of contamination found in this zone.

The lower WHP zones, being located in town, are subject to high density residential land use along with a handful of commercial enterprises near the main street of town. As a general rule, residential areas are less susceptible to contamination than other common land uses (see Table 2). In South Prairie, homes and businesses are served by the wastewater treatment plant, which is located along the edge of the ten year time of travel zone, near the western edge of the community. The plant does not utilize lagoons as part of the treatment process, and therefore is not likely to pose a threat to groundwater quality within the aquifer.

There are approximately ½ dozen business enterprises located within the five and ten year time of travel zones of the lower well. These businesses include two construction contractor offices, a restaurant, gasoline station, and cabinet fabricator. The contractors do not appear to be storing or utilizing hazardous materials. The gasoline station (Texaco) plays a dual role as convenience store. There are three underground storage tanks on the site. The cabinet fabricator enterprise encompasses several buildings, and appears to be the largest industry within South Prairie.

Another potential source is State Route 162 running through the northern edge of WHP zone. This two lane blacktop runs east-west through the 10 year time of travel zone. Accidental

TABLE 1

COMMON SOURCES OF GROUNDWATER COTAMINATION

AGRICULTURAL

Animal Burial Areas
Animal Feedlots
Chemical application
(pesticides, fungicides, and fertilizers)
Chemical Storage Areas
Irrigation
Manure Spreading Areas

COMMERCIAL

Airports
Auto Repair Shops
Boat Yards
Construction Areas
Car Washes
Cemeteries
Dry Cleaning Establishments
Educational Institutions:
(labs, lawns, and chem. storage)
Gas Stations
Golf Courses (chemical application)
Jewelry and Metal Plating
Laundromats
Medical Institutions
Paint Shops
Photography Establishments
Printers
Railroad Tracks and Yards
Research Laboratories
Road Deicing Operations (road salt)
Road Maintenance Depots
Scrap and Junkyards
Storage Tanks
(above-ground and underground)

INDUSTRIAL

Asphalt Plants
Chemical Manufacture, Warehousing, and Dist.
Electrical and Electronic Products Manufacturing
Electroplaters and Metal Fabricators
Foundries
Machine and Metalworking Shops
Manufacturing and Dist. Sites for Cleaning Supplies
Mining and Mine drainage
Petroleum Products Production, Storage, and Dist.
Pipelines (oil, gas, coal slurry)
Septic Lagoons and Sludge
Storage Tanks
(above-ground and underground)
Toxic and Hazardous Spills
Wells (operating and abandoned)
Wood Preserving Facilities

RESIDENTIAL

Furniture and Wood Strippers and Refinishers
Hazardous Cleaning Agents
Lawn Chemical Applications
Water Softeners
Septic Systems and Sewer Lines
Swimming Pool / Hot Tub Chemicals

WASTE MANAGEMENT

Landfills
Land Treatment Areas
Surface Impoundments
Incinerators
Wastewater and Sewer Lines
Open Burning Sites
Recycling and Waste Reduction Facilities
Stormwater Drains and Retention Basins

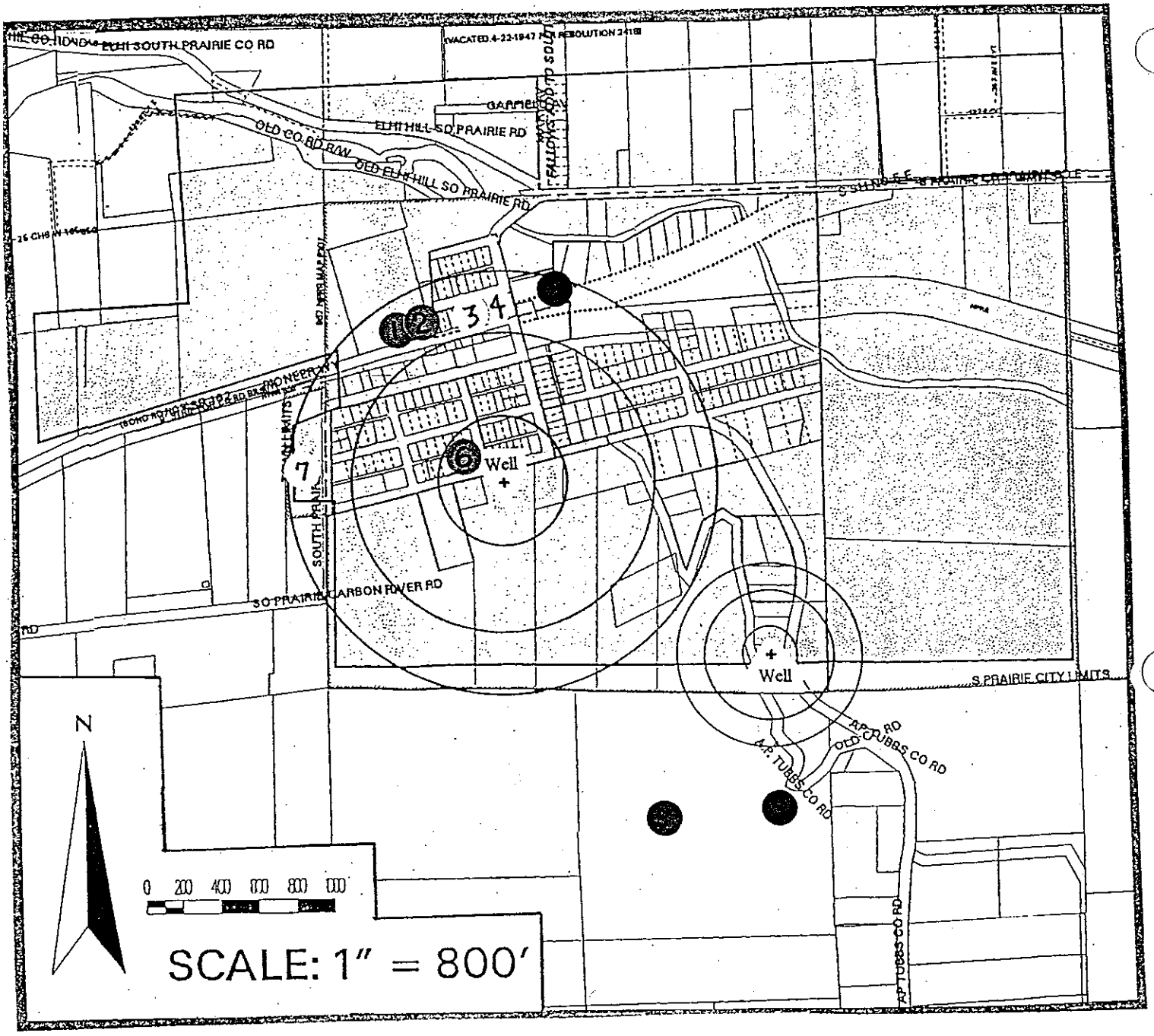


Figure 4. Potential Contaminant Sources

Table 2
Land Uses and Their Relative Risk to Groundwater

LEAST RISK

A.
1. Land surrounding a well or reservoir, owned by water supplier.
2. Permanent open space dedicated to passive recreation.
3. Federal, state, municipal, and private parks.
4. Woodlands managed for forest products.
5. Permanent open space dedicated to active recreation.

B.
1. Field crops: pasture, hay, grains, vegetables.
2. Low density residential: lots larger than 2 acres.
3. Churches, municipal offices.

C.
1. Agricultural production: dairy, livestock, poultry, nurseries, orchards, berries.
2. Golf course, quarries.
3. Medium density residential: lots from 1/2 to 1 acre.

D.
1. Institutional uses: schools, hospitals, nursing homes, prisons, garages, salt storage, sewage treatment facilities.
2. High density housing: lots smaller than 1/2 acre.
3. Commercial uses: limited hazardous material storage and only sewage disposal.

E.
1. Retail commercial: gasoline, farm equipment, automotive, sales and services; dry cleaners; photo processor; medical arts; furniture strippers; machine shops; radiator repair; printers; fuel oil distributors.
2. Industrial: all forms of manufacturing and processing, research facilities.
3. Underground storage of chemicals, petroleum.
4. Waste disposal: pits, ponds, lagoons, injection wells used for waste disposal; landfills; hazardous waste treatment, storage, and disposal sites.

GREATEST RISK

Source: U.S.E.P.A., Seminar Pub. EPA/625/R-93/002, 199:

spillage of hazardous materials transported through the community is addressed under the emergency response section of Contingency Planning.

A final, potential threat within the lower well's protection zone is a single, private well. This well is located upon a residential plot on the corner of Tacoma Ave. and SW 3rd Street. Very little is known about the well at this time. No record of the well has been filed with the State Department of Ecology.

MANAGEMENT STRATEGY

Upper Wellhead Protection Area

Only a few potential contaminant sources and low risk land use activities exist within the upper WHP zone. Although the two unsewered properties are not believed to be located within the WHP zones, both will be provided public education material as part of the management strategy. The material is intended to convey the importance of proper use of septic systems. An informational flyer (fig. 5) was prepared specifically to address these needs. The flyer serves three purposes: 1) Inform the residents why WHP is necessary; 2) provide reference information about septic systems; and 3) identify the areas intended for protection. Also included was a short list of potentially harmful activities residents should avoid.

The upper zone is much smaller in area than the lower WHP zone because this well withdraws much less water than the lower well. In the future, this well may be utilized more if iron and manganese treatment is installed. As more water is withdrawn from the aquifer, the size of the WHP increases. This does not present a management problem because very little property in the area is developed. At most, just a handful of residences with septic systems would be added to the potential contaminant source listing. The same educational material utilized above could be provided within the expanded WHP zones when and if the need arises.

Lower Wellhead Protection Area

Residential areas, though less risky than other land uses, can be a source of contamination when uninformed or uncaring owners and/or tenants misuse or improperly dispose of household hazardous chemicals. A particular challenge for residential WHP areas is that they can be difficult to manage when large numbers of land parcels or people are present. Because these areas constitute a large portion of the lower WHP area, it is important citizens be informed that they can have a direct impact upon the quality of groundwater. To accomplish this a public education campaign was initiated. Another specialized flyer (fig. 6) concerning household hazardous waste recycling and disposal information was distributed within the community.

LETTER OF NOTIFICATION – WELLHEAD PROTECTION PLAN

Dear Residents:

The Town of South Prairie Water System is developing a wellhead protection plan as required by the Washington Department of Health. Wellhead protection involves protecting the land area surrounding our wells in order to prevent contamination of the drinking water supply. Part of the plan is this letter of notification to all potential sources of contamination to our wells. The wells are located by the park on SW 3rd St. and near the water tanks along Tubbs Road. The majority of South Prairie's residents live within the wellhead protection areas surrounding our wells (see map on other side).

This letter is an attempt to inform you of the locations of our wells and protection zones and to serve as a reminder that hazardous materials put onto the ground (or into septic systems) has the potential of contaminating our drinking water supply. Some examples of household hazardous materials are...

- Paint, paint thinner, and other solvents.
- Motor oil, gasoline, antifreeze or similar automotive fluids. These materials can be recycled, **free of charge,** at most major auto shops and parts stores.
- Fertilizers and pesticides.
- Household cleaners, solvents, and furniture polish.

These materials should only be used according to label directions. Any unwanted or unused household hazardous materials can be disposed of **free of charge** at the City of Tacoma landfill.

We are fortunate to have a very good supply of drinking water. It should be everyone's intent to keep it that way for our continued good use, and for the ones that come along after us. Thank you for following these guidelines. If you have any questions about this matter, please feel free to contact me.

Larry Harter
Operator; South Prairie Water System
897-8969

HOUSEHOLD HAZARDOUS WASTE DISPOSAL

City of Tacoma Landfill
3510 S. Mullen
8:30 am - 4:30 pm - 7 days a week
(253) 591-5418

NO CHARGE for Pierce County residents!

Figure 5. Letter of notification – household hazardous wastes

LETTER OF NOTIFICATION – WELLHEAD PROTECTION PLAN

Dear Residents:

The Town of South Prairie Water Supply is required by the Washington Department of Health to develop a wellhead protection plan. Wellhead protection involves protecting the land area surrounding our wells in order to prevent contamination of our drinking water supply. Part of the plan is this letter of notification to all potential sources of contamination to our wells. The wells are located by the park on SW 3rd St. and near the water tanks along Tubbs Road. Nearly all of South Prairie's residents live within the wellhead protection zones surrounding our wells (see map on other side).

This letter is intended to inform you of the location of our wells and protection zones and to serve as a reminder that any hazardous material put onto the ground or into your septic system has the potential of contaminating our drinking water supply. Some potentially harmful activities to avoid are...

- Improper use of a septic system (dumping paint, cleaners, or solvents into your septic system).
- Dumping motor oil, gasoline, antifreeze or similar fluids onto the ground. These materials can be recycled, **free of charge,** at most major auto shops and parts stores.
- Heavy use of fertilizers and pesticides.
- Dumping or burying garbage in the ground.

We are fortunate to have a very good supply of high quality water. It should be everyone's intent to keep it that way for our continued good use, and for the ones that come along after us. Thank you for following these guidelines. If you have any questions about this matter, please feel free to contact me.

Larry Harter, Operator, South Prairie Water System; 897-8969

TIPS TO AVOID SEPTIC SYSTEM TROUBLE:

- DO take leftover household chemicals to a hazardous waste collection center for disposal.
- DO practice water conservation. Repair dripping faucets and leaking toilets, run dishwashers and washing machines only when full.
- DO learn the location of your septic system and drainfield.
- DON'T allow anyone to drive or park over any part of the system. Areas should be left undisturbed with only a mowed grass cover. Roots from nearby trees or shrubs may clog and damage your drain lines.
- DON'T use commercial septic tank additives. These products usually do not help and some may hurt your system in the long run.
- DON'T poison your system by pouring chemicals down the drain. They can kill the beneficial bacteria that treat your wastewate

Figure 6. Letter of notification – septic system owners

Last but not least, business owners were provided an explanatory letter with a map of the WHP areas (fig. 7) in order to heighten awareness and promote responsible management of potential contaminant sources.

The final element of the public education campaign was to communicate the sensitive nature of the WHP zones in a more permanent manner. To accomplish this, high quality reflectorized 'WATER SUPPLY PROTECTION AREA' metal signs were installed near both wells. The signs also foster greater awareness of groundwater protection needs within the immediate vicinity of the wellheads.

CONTINGENCY PLANNING

Alternative Supply

A contingency plan is needed in the event that a contamination event or natural disaster results in the temporary or permanent loss of one or both of the wells. To this end, South Prairie has multiple protections to ensure consumers have an adequate supply of water. Because there is some distance between the wells, a contamination event would not affect both of them simultaneously. Also, each well has the capacity to supply enough water to meet the average daily demand of the water system.

The community has two above ground storage tanks near the upper well with a capacity of 200,000 gallons. At current rates of consumption, the tanks are capable of supplying water to the community for about five days. With conservation, this amount could serve the town even longer. The longest power outage in recent memory lasted three days. Further, the lower well's power source originates in the town of Buckley, while the upper well's power source originates from the town of Wilkeson, to the south. It is unlikely that both power supplies would be incapacitated by a natural disaster at the same time, and for such a duration as to endanger the availability of water to South Prairie.

Emergency Response

An incident/spill response notice (figure 8) will inform local emergency responders and planning agencies of the location of South Prairie's WHP areas and potential contaminant sources. The notice was delivered to the local fire department and Pierce County Department of Emergency Management. After assessing the water system's vulnerability, these agencies will evaluate whether changes in hazardous spill, disaster response, and future planning procedures are needed to adequately protect South Prairie's water supply.

LETTER OF NOTIFICATION – WELLHEAD PROTECTION PLAN

Dear Business Owner / Operator:

The Town of South Prairie Water System is developing a wellhead protection plan as required by the Washington Department of Health. Wellhead protection involves protecting the land area surrounding our wells in order to prevent contamination of our drinking water supply. Part of the plan requires notification to all potential sources of contamination to our wells, which are located by the park on SW 3rd St. and near the water tanks along Tubbs Road (see map on other side).

The purpose of this letter is to inform you of the proximity of your business to our wellhead protection zones and to serve as a reminder that any hazardous material spilled onto the ground has the potential of contaminating our drinking water supply. Some potential contamination sources are...

- Dumping motor oil, gasoline, antifreeze or similar fluids onto the ground.
- Leaking fuel storage tanks and distribution lines.
- Accidental spillage of hazardous chemicals / products.
- Improper use of a septic system (dumping paint, cleaners, or solvents into a septic system).

Because everyone plays a role in the wellhead protection plan, local residents are also being contacted with similar information. We are fortunate to have a good supply of high quality water. Please help us keep it that way for our continued good use, and for the ones that come along after us. Thank you for your attention in this matter. If you have any questions about the plan, please feel free to contact me.

Sincerely,

Larry Harter
Operator; South Prairie Water System
Telephone: 897-8969

Figure 7. Business Owner Notification

Letter of Notification: Town of South Prairie Water System
Wellhead Protection Plan

Dear Emergency Responder:

The South Prairie Water System is developing a wellhead protection plan as required by the Washington Department of Health. As part of this plan, the water system must coordinate with agencies responsible for incident/spill response procedures and planning. Using the results of the susceptibility assessment and the findings of the wellhead protection area inventory, local emergency responders are asked to evaluate whether changes in incident/spill response procedures are needed to better protect groundwater within the wellhead protection zones. As stated in the Wellhead Protection Program Guidance Document, "If a public water system's source water is determined to be vulnerable to surface activities, special procedures may need to be incorporated into local emergency response plans."

Based upon information provided in the Ground Water Contamination Susceptibility Assessment Survey Form, the State has classified both of the wells as MODERATELY susceptible to contamination. *Susceptibility* is determined by conditions that affect the movement of contaminants from the land surface into a water supply. The *vulnerability* (the water source's overall potential for contamination) has been classified as LOW for both sources.

A map of the wellhead protection zones with potential contaminant sources is enclosed for your review. An acknowledgement of receipt of this information and/or a response from your office would be appreciated, but is not required as part of the wellhead protection documentation.

Thank you for your attention in this matter. If you have any questions about the plan, please feel free to contact us.

Sincerely,

Larry Harter

Water Operator
South Prairie Water System
360 897-8969

Greg Caron

Wellhead Protection Specialist
Evergreen Rural Water of Washington
509-962-6326

Figure 8. Letter of Notification

Concluding Remarks

South Prairie's water system is in an excellent position to continue providing a safe and reliable drinking water supply. The community recognizes that the most effective way to protect their water supply is to prevent contamination. This plan serves the interests of South Prairie's residents by protecting their drinking water supply at minimal cost to consumers, while maintaining compliance with drinking water program regulations. With the continued dedication of the water operator and a heightened awareness of groundwater protection by residents and local businesses, South Prairie is likely to have a clean, reliable water supply far into the future.

APPENDICES

Appendix A: Well Reports (Logs)

Appendix B: Susceptibility Assessment

Appendix C: Potential Sources of Contamination: Business and Industry

Appendix D: Resource Contacts

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

Appl. #8787

WELL LOG

Record by: Driller

Source: Driller's record

Location: State of WASHINGTON

County: Pierce

Area:

Map:

SW ¼ NW ¼ sec. 18 T. 19 N., R. 6 E. W.M.

Diagram of Section

Drilling Co.: Rainier Well Drilling Co.

Address: 13605 Waller Rd. E. Tacoma Wash.

Method of Drilling: Cable Date: 19

Owner: Town of South Prairie

Address: South Prairie, Washington

Land surface, datum ft. above / below

SWL: flowing Date: April 25, 19 67 Diam.: 12" x 140'

Correlation	Material	From (feet)	To (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.)		
	Domestic	0	2
	Topsoil, black	2	12
	Sand, brown, silt and gravel	12	28
	Sand, gray, cemented and gravel		
	Sand, black and gravel, hard packed with water	28	34
	Clay, green, blue and gray	34	128
	Sand and gravel with rotten wood and thin layers of clay with thin lenses of peat 30% of the sand and gravel is very light weight pumice	128	140
	Casing: 12" from 0-128'		
	Screened from 120-140'		
	Yield: 100 gpm with 41' DD after 4 hrs.		
	150 gpm with 98' DD after 111 hrs.		
	Test made April 21, 1967		

Sheet ___ of ___ sheets

Turn up

FIRST OF TWO PAGES

WATER WELL REPORT

STATE OF WASHINGTON

Application No. _____

Permit No. _____

File original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

(1) OWNER: Name Town of South Prairie Address c/o [illegible] Sleavin and Assoc., Tacoma, Wa.

LOCATION OF WELL: County Pierce SE ¼ NW ¼ Sec 28 T 19 N., R 6E W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)....

New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 12 inches.
Drilled 425 ft. Depth of completed well 425 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 12 " Diam. from 0 ft. to 425 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 ☐
Manufacturer's Name Johnson
Type stainless steel Model No.
Diam. 10" Slot size 50 from 404 ft. to _____ ft.
Diam. _____ Slot size 40 from _____ ft. to 425 ft.
50

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal 250 lbs. 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 79 ft. below top of well Date 2-5-79
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? H.P. & D.
Yield: 415 gal./min. with 123'2" ft. drawdown after 4 hrs.
(complete detailed report on separate sheet)

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
1 min.	121'5"			2 hr.	89'1"
45 min.	83'10"			3 hr.	88'
1 hr.	82'6"				

Date of test 2-7-79
Bailer test 50 gal./min. with 10 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water 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
Brown clay, hardpan w/rocks	0	45
More of a gravel h.p. (less clay) still w/lge. cobbles	45	61
More of a rusty color here	61	72
A little more clay binder, drilling somewhat faster	72	78
Gray clay hardpan	78	84
Brown hardpan	84	91
Brown sand & gravel some water	91	96
Brown clay hard pan	96	98
Sand, gravel, seepage, big rocks	98	102
Brown hardpan	102	124
Gray clay hardpan	124	129
Greenish-brown clay hardpan	129	142
Darker gray clay with sand & gravel	142	170
Green clay	170	182
Brown clay with gravel	182	197
Gray clay	197	229
Some sand in clay	229	233
Pink (pumice with water)	233	235
Clay mixed in here	235	248
Change to gray clay hardpan	248	274
Solid gray clay	274	306
Greenish colored clay, hardpan	306	316
Clean sand some gravel some water	316	317
Immediate change to much finer sand w/green clay color in the water	317	331
Somewhat coarser, still not the cleanest	331	334
Mostly a sandy clay hardpan	334	344
Sticky gray clay w/vegatation and pumice	344	349
Green hard clay	349	356
Gray silty looking clay	356	359
Coarse sand & gravel, some water	359	362

Work started Dec. 11, 19 78 Completed , 19

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 HARBOR PUMP & DRILLING CO., INC.
(Person, firm, or corporation) (Type or print)

Address 11302 Burnham Dr. N.W., Gig Harbor, Wn. 98335

[Signed] _____
(Well Driller)

License No. _____ Date Feb. 8, 19 79

(USE ADDITIONAL SHEETS IF NECESSARY)

CONTINUED ON PAGE #2.

ECY 050-1-20

Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

MAR 3 7 10 Permit No. ....

(1) OWNER: Name Town of South Prairie Address

(2) LOCATION OF WELL: County Pierce Sec. T. N. R. W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)....
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well ..... inches.
Drilled ..... ft. Depth of completed well ..... ft.

(6) CONSTRUCTION DETAILS:

Casing installed: ..... " Diam. from ..... ft. to ..... 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 ☐
Manufacturer's Name
Type ..... Model No.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☐ Size of gravel:
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☐ No ☐ To what depth? ..... ft.
Material used in seal
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 ..... 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: ..... 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
Bailer test ..... 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:

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
cont. hard packed		362
Mostly coarse sand but has some clay balls.8	362	366
Thin layer hard packed sand and gravel then into hard clay	367	386
Coarse gravel, some water, hard packed	386	393'6"
Thin streak of loose (mostly sand) material then back into hard packed sand and gravel	393'6"	399
Gray clay showing on gravel here	399	400'6"
More hard packed sand & gravel	400'6"	411
Brown color here, some peat seams	411	412
More hard sand & gravel	412	416
Loose streak of sand gravel with clay mixed in	416	417
Somewhat cleaner sand & gravel, some water	417	421
Hard packed gravel again	421	425'6"
Gray and brown clay mixed in here	425'6"	

Work started Dec. 11, 1978. Completed Feb. 5, 1979

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 HARBOR PUMP & DRILLING CO., INC. (Person, firm, or corporation) (Type or print)

Address 11302 Burnham Dr. N.W., Gig Harbor, Wn. 983

[Signed] Jim Miller (Well Driller) by: M. Butl

0311

License No. 223 01 8455 Date February 8, 1979

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : SOUTH PRAIRIE

Water system name : SOUTH PRAIRIE, TOWN OF

County: PIERCE

Water system number: 82300R Source number: SO1

Well depth: 130 (ft.) (*From WFI form*)

Source name: LOWER WELL

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 132 Population served: 445

Township: 19N Range: 06E

Section: 18 1/4 1/4 Section: NW/NE

Latitude/longitude (if available): _____/_____

How was lat./long. determined?

_____ global positioning device _____ survey _____ topographic map
____other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: ___ / ___ / 67? month/day/year

last reconstruction: ___ / ___ / ___ month/day/year

_____ information unavailable

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20-50 ft ___ 50-100 ft X 100-200 ft ___ > 200 ft

___ information unavailable ('< ' *means less than;* '> ' *means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft ___ 20-50 ft ___ 50-100 ft ___ > 100 ft

X flowing well/spring (artesian)

How was water level determined?

___ well log ___ other: _____

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ___ YES X NO

5) Wellhead elevation (height above mean sea level): 440 (ft)

How was elevation determined? X topographic map ___ Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

___ evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? ___ YES ___ NO

X information unavailable

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 13,500000 (gallons)

How was this determined?

__ meter

__ estimated: __ pumping rate (_____)

__ pump capacity (_____)

X other: estimated from new source meter

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 310 (ft)

1 year ground water travel time : 440 (ft)

5 year ground water travel time: 980 (ft)

10 year ground water travel time: 1,390 (ft)

Information available on length of screened/open interval?

__ YES X NO

Length of screened/open interval: 10 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? __ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? X YES __ NO (mark and identify on map).

Comments: STORM WATER DITCH TO EAST OF WELL

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	X
< 2 mg/liter nitrate	X	___
2-5 mg/liter nitrate	___	X
> 5 mg/liter nitrate	___	X

___ Nitrate sampling records unavailable

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL	___	X
VOCs detected at least once	___	X
VOCs never detected	X	___

___ VOC sampling records unavailable

C. EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)	YES	NO
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___

___ EDB/DBCP tests required but not yet completed

X EDB/DBCP tests not required

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected (pesticides and other synthetic organic chemicals)	___	___

___ Other SOC tests performed but none detected
(list test methods in comments

X Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES ___ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : SOUTH PRAIRIE

Water system name : SOUTH PRAIRIE, TOWN OF

County: PIERCE

Water system number: 82300 R Source number: S02

Well depth: 425 (ft.) (*From WFI form*)

Source name: UPPER WELL

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 132 Population served: 445

Township: 19 N Range: 06 E

Section: 18 1/4 1/4 Section: NW / NE

Latitude/longitude (if available): ___/___

How was lat./long. determined?

___ global positioning device ___ survey ___ topographic map
___other: ___

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: __ / __ / 79 month/day/year

last reconstruction: ___ / ___ / ___ month/day/year

___ information unavailable

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20–50 ft ___ 50–100 ft ___ 100–200 ft X > 200 ft

___ information unavailable (*'<' means less than; '>' means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft ___ 20–50 ft X 50–100 ft ___ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

___well log X other: Service Contractor 5-20-93

___ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch)

or

_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: YES / NO

5) Wellhead elevation (height above mean sea level): 580 (ft)

How was elevation determined? X topographic map ___ Drilling/Well Log ___ altimeter

___ other: _____

___ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

___ evidence of a confining layer in well log

___ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the top of the open interval? ___ YES ___ NO

X information unavailable

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 2,575,500 (gallons)

How was this determined?

X meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 220 (ft)

1 year ground water travel time : 310 (ft)

5 year ground water travel time: 700 (ft)

10 year ground water travel time: 980 (ft)

Information available on length of screened/open interval?

__ YES X NO

Length of screened/open interval: _____(ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? YES / (NO) (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? YES / (NO) (mark and identify on map).

Comments: _____

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

	YES	NO
A. Nitrate: (Nitrate MCL = 10 mg/l)		
Results greater than MCL	___	X
	YES	NO
< 2 mg/liter nitrate	X	___
2-5 mg/liter nitrate	___	X
> 5 mg/liter nitrate	___	X
___ Nitrate sampling records unavailable		
	YES	NO
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)		
Results greater than MCL or SAL	___	X
VOCs detected at least once	___	X
VOCs never detected	X	___
___ VOC sampling records unavailable		
	YES	NO
C. EDB/DBCP:(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once	___	___
EDB/DBCP detected above MCL at least once	___	___
EDB/DBCP never detected	___	___
___ EDB/DBCP tests required but not yet completed		
X EDB/DBCP tests not required		
	YES	NO
D. Other SOCs (Pesticides):		
Other SOCs detected (pesticides and other synthetic organic chemicals).	___	___
___ Other SOC tests performed but none detected (list test methods in comments		
X Other SOC tests not performed		

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

_____ YES _____ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

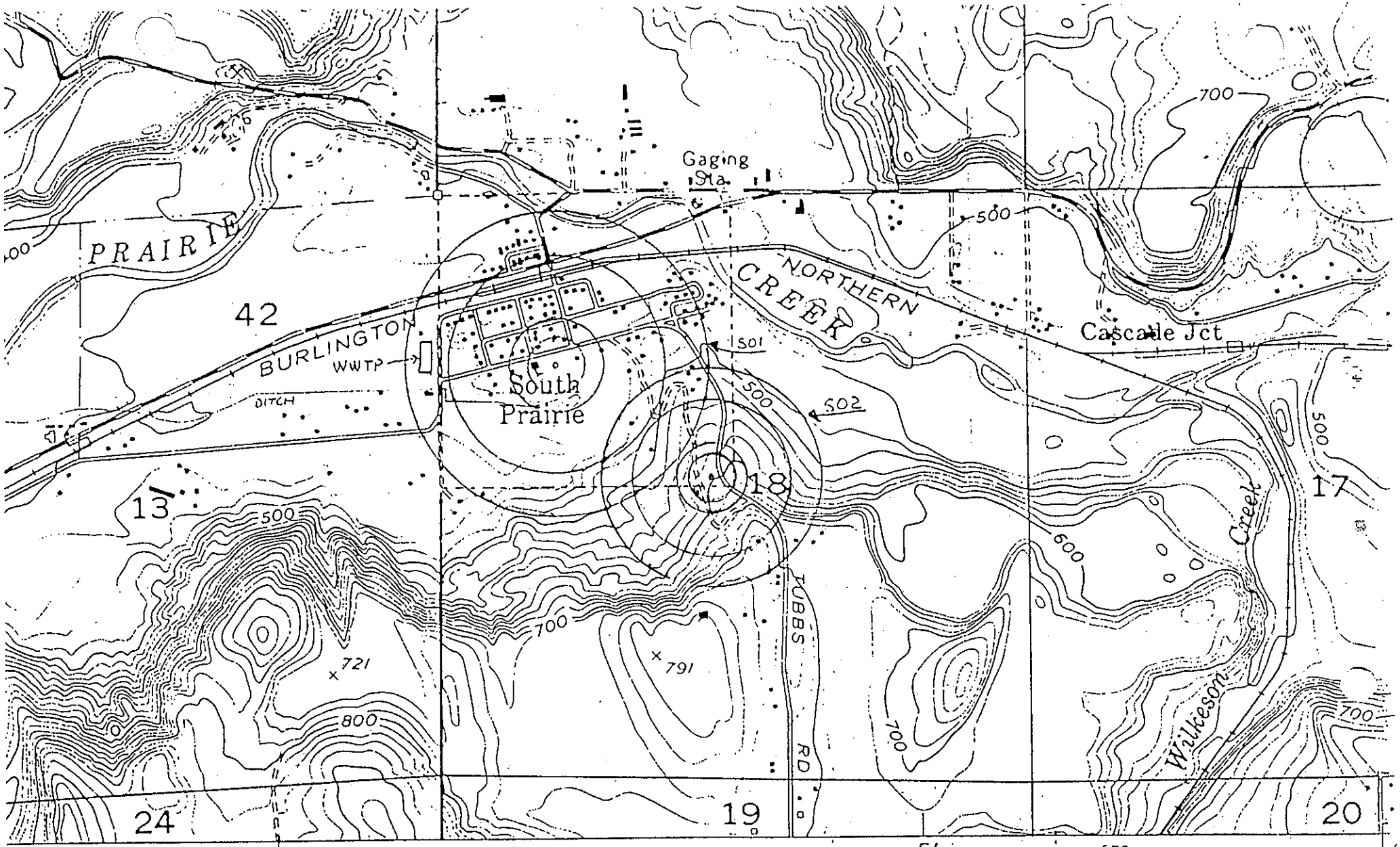
a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.



and published by the Geological Survey

nd USC&GS

erial photographs by Kelsh plotter
taken 1954. Field check 1956

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Appendix C
Potential Contaminant Source Listing

Map #	Business Name	Address	Nature of Business	Possible Contaminants
1	Euro Contstruction		Offices and yard to N.	Fuel?; Hazardous Chemicals
2	Dakota Construction		Offices only	Unknown- no threat likely
3	Wagon Wheel		Restaurant	Household Hazardous Chemicals
4	Hillstrom's Manufacturing		Cabinet Making / Warehouse	Furniture finishing chemicals; other unknown Haz. Mat.
5	Texaco gasoline service		Convenience store	3 UST's; 2 gasoline, 1 diesel
6	Abandoned Well		Not properly abandoned	Construction details unknown
7	Wastewater treatment facility		City of South Prairie	No lagoons present
S' (dark)	septic systems (2)		Not likely within WHP zones	(Minimal threat to water supply)

Appendix D

RESOURCE CONTACTS

Tacoma-Pierce County Health Department
3629 South D St.
Tacoma, WA 98408-6897
(206) 591-6500

Washington Department of Health
Wellhead Protection Program
David Jennings
PO Box 47822
Olympia, WA 98504-7822
(360) 586-9041

Regional Engineer
Chris McKeen
Northwest Regional Office
1511 Third Avenue, Suite 719
MS: K17-12
Seattle, WA 98101
(206) 389-2767

Washington Department of Ecology
Southwest Regional Office
P.O.Box 47775
Olympia, WA 98504-7775

U.S. Environmental Protection Agency
MaryAnn Helferty
Source Water Protection
1200 Sixth Avenue
Seattle, WA 98101
(206) 553-1901

American Water Works Association
Small Systems Department
6666 West Quincy Ave.
Denver, CO 80235
(303) 794-7711

Emergency (hazardous spill) Response:
Local: Fire Department (911)
Statewide: (360) 407-6300

Evergreen Rural Water of Washington
Wellhead Protection Specialist
Greg Caron
738 Cascade Way
Ellensburg, WA 98926
(509) 962-6326

APPENDIX K

Sanitary Survey Report, March 15, 2004

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
20435 72nd Ave. S., Suite 200, K17-12 • Kent, Washington 98032 -2358

March 15, 2004

LARRY HARTER, MANAGER
TOWN OF SOUTH PRAIRIE WATER SYSTEM
PO BOX F
SOUTH PRAIRIE WA 98385

Subject: South Prairie, Town of, Water System; ID #82300R
Pierce County
Results of 2004 Sanitary Survey

Dear Mr. Harter:

I would like to thank you for taking time to meet with me during my recent Sanitary Survey visit. Sanitary Surveys are the Department of Health's (DOH) tool to conduct routine inspections of public water systems and also afford the agency the opportunity to offer technical assistance to improve water system operations and enhance protection of public health. In general, your water system is in good sanitary condition and you should be commended for your efforts and diligence on the water system. Your work helps to protect and enhance the Public Health of your Town's customers. A summary of the results of my survey is included with this letter. The comments are ranked in order of my perception of your greatest priorities.

1. **Sanitary Control Area (SCA)** –The Town has a small maintenance garage within the SCA (approximately 50 feet from the well) of the Lower well (Source S01). The garage houses a small tractor and there are various oils and fuels located in the garage. **The oils and fuels and all chemical storage must be removed from the SCA of the Lower well.**

2. **Source S02 (Upper Well)** –There was a blue filter housing attached to a side pipe on the transmission line from he Upper well. The purpose of this filter housing was unknown. **This housing must be removed to prevent accidental contamination of water from the Upper well.** In addition, the well lacked a downward facing screened air vent and one should be installed.

3. **Routine O&M** – The reservoirs were last cleaned 3 to 4 years ago but there does not appear to be a standard water system schedule for reservoir cleaning and inspection. **The AWWA recommends a five-year cycle for reservoir inspection and cleaning.** There is no valve exercising program. Valves should be exercised on a regular basis to prevent freezing. **It is recommended that the Town implements a valve exercising program that would ensure that all valves be exercised at least once every two years.** Also, fire hydrants have not been checked since 1999. Hydrants should be inspected at least every year for proper operation.

4. **Cross Connection Control Plan** - There was some confusion about the availability of the Cross Connection Control Plan and whether the current ordinance is current with WAC 246-290-490. This confusion over the cross connection control plan could be a hazard to the health of the Town. As the Town's Cross Connection Control specialist, you should have access to all cross connection control ordinances and plans. It also appears that the ordinance and plan will likely need to be updated to meet the current requirements of WAC 246-290-490, which were last updated in 1999.

5. **Reservoirs** – Both reservoirs had locked lids, screened vents, and screened overflows. The older reservoir had a rubber gasketed seal but it was unclear whether the newer reservoir had one. **It is recommended that the presence of a good seal be verified for the newer reservoir and, if necessary, to install a rubber gasket to the lid.**

6. **Arsenic** – Well S01 has a history of arsenic above 10 ug/L (ppb) with the latest IOC sample showing a level of 15 ug/L after treatment for iron and manganese. You are now aware that the arsenic level in S01 is above the new arsenic standard of 10 ug/L. It is likely that additional monitoring will be required when the standard becomes effective in 2006 and that treatment for the well may be necessary. Please contact Steve Hulsman at (253) 395-6777 if you have additional questions on the requirements of the new arsenic standard.

Regulations establishing a schedule of fees, including fees for sanitary surveys, were adopted July 11, 2003 (WAC 246-290-990). An itemized bill for $336.00 is enclosed.

Once again, thanks for your efforts. The day-to-day operations appear to be effective and the water system appears to be adequately maintained. Please feel free to contact me at (253) 395-6757 if I can be of any assistance to you in answering any questions or in addressing any of these issues and recommendations.

Sincerely,

John Ryding

John Ryding, PE
WSDOH Regional Engineer

Enclosures

cc: Tacoma-Pierce County Health Department
Brian Boye, WSDOH
Steve Hulsman, WSDOH

Washington State Department of Health

Division of Drinking Water
INVOICE
Water Plan Review

INVOICE NUMBER	21245
INVOICE DATE	3/16/04
BILLING PERIOD	30 DAYS NW

TO: LARRY HARTER
SOUTH PRAIRIE, TOWN OF
PO BOX F
SOUTH PRAIRIE WA 98385

ATTN: ACCOUNTS PAYABLE DEPT

DATE	DESCRIPTION	QUANTITY	COST	AMOUNT
3/16/04	SURVEY FEE SOUTH PRAIRIE, TOWN OF PIERCE COUNTY PWS ID 82300 DATE OF SURVEY: 3/8/2004	1		$336.00
	Payment due within 30 days. Interest shall accrue at 1% per month after 30 days.			

Make Checks Payable to Department of Health

Return Lower Tear-off Portion to:

Department of Health
P.O. Box 1099
Olympia, WA 98507-1099

Division of Drinking Water
Water Plan Review

NAME	SOUTH PRAIRIE, TOWN OF
INVOICE NO.	21245
INVOICE DATE	March 16, 2004
AMOUNT	$336.00 NW

DOH 713-006P (2/91)

Revenue Section
P.O. Box 1099
Olympia, WA 98507-1099

2 044129 00878

Washington State Department of Health

WATER SYSTEM SANITARY SURVEY REPORT
STATE OF WASHINGTON DEPARTMENT OF HEALTH (DOH)
NORTHWEST DRINKING WATER OPERATIONS

WATER SYSTEM:	**South Prairie, Town of**
COUNTY:	Pierce
PWS ID#:	**82300 R**
INSPECTED BY:	John Ryding
INSPECTION DATE:	3/8/04
SYSTEM OWNER:	**Town of South Prairie**
SYSTEM MANAGER / OPERATOR:	Larry Harter, Manager, (360) 897-8969

APPROVAL STATUS:	The System is served entirely by two groundwater well sources and consists of 141 active residential connections and 13 non-residential services (as listed on their Water Facilities Inventory, WFI). The System serves a full-time residential population of approximately 483. The System has approved capacity to serve 200 connections.
OPERATING PERMIT STATUS:	Green – The system is in substantial compliance.

		ADEQUATE (YES/NO)	OBSERVATIONS / RECOMMENDATIONS
CAPACITY	**Source capacity**	Yes	Source S01 (Lower Well) has a reported capacity of 55 gpm and source S02 has a reported capacity of 325 gpm for a total source capacity of approximately 380 gpm. A quick review of the 2003 source meter records showed a Maximum Day Demand of 75 to 80 thousand gallons per day (approximately 75 gpm at 18 hours of pumping). There appears to be adequate source capacity.
	Storage capacity	Yes	There are two steel reservoirs located on the same site with the same overflow elevations. Each reservoir is 100,000 gallons and they are hydraulically connected to each other. They serve the largest of two pressure zones for the Town. It appears that there is adequate storage capacity but it was not clear what the fire flow requirements were for the Town.

		ADEQUATE (YES/NO)	OBSERVATIONS / RECOMMENDATIONS
	Distribution	Yes	It was reported that 30 psi can be maintained in the distribution system at all times. It appears that the distribution system is adequate.
WATER QUALITY MONITORING	→	→	In general, the System has kept up well with monitoring requirements. Both wells were sampled for IOCs and VOCs in 2003. The nitrate history of both wells is excellent. Both wells have history of elevated manganese levels for which treatment was installed. Well S01 has a history of arsenic above 10 ug/L (ppb) with the latest IOC sample showing a level of 15 ug/L after treatment for iron and manganese. The System must be aware that the arsenic level in S01 is above the new arsenic standard of 10 ug/L. It is likely that additional monitoring will be required when the standard becomes effective in 2006 and that treatment for the well may be necessary. Please contact Steve Hulsman at (253) 395-6777 if you have additional questions on the requirements of the new arsenic standard. The system has been current with lead and copper samples and it appears that two sets of Disinfection Byproducts (DBP) samples are due this year. There are two wells that are chlorinated and it appears that there are two treatment plants present on the system. These two samples must be collected during the period of warmest water temperature. Each set of samples includes a total trihalomethanes (TTHM) sample and a haloacetic acid (HAA) sample. Coliform – The system has a satisfactory coliform history for the last two years (with the exception of a single total coliform positive sample in April of 2002, which was not confirmed by repeats). The System has a coliform monitoring plan (CMP) with a map. This CMP includes routine and repeat sample locations.
SURFACE WATER TREATMENT RULE / GWI		NA	The system uses groundwater wells which are more than 50 feet deep and more than 200 feet from any apparent surface water source. The wells do not appear to have characteristics of groundwater under the influence of surface water (GWI).
OPERATIONS & MANAGEMENT	**Routine O & M**	Yes	The System appears to be adequately maintained but there is room for improvement as resources are available. The distribution system is flushed one per year and more frequently in localized areas if water quality conditions merit. All service meters have been replaced within the last 12 years. The reservoirs were last cleaned 3 to 4 years ago but there does not appear to be a standard water system schedule for reservoir cleaning and inspection. **The AWWA recommends a five-year cycle for reservoir inspection and cleaning.** There is no valve exercising program. Valves should be exercised on a regular basis to prevent freezing. **It is recommended that the System**

		ADEQUATE (YES/NO)	OBSERVATIONS/RECOMMENDATIONS
			implements a valve exercising program that would ensure that all valves be exercised at least once every two years. Also, fire hydrants have not been checked since 1999. Hydrants should be inspected at least every year for proper operation.
	Complaints	Yes	There have been no complaints registered with DOH in the last three years. Mr. Harter deals with complaints that come into the Town regarding the water system.
	Operator Certification	Yes	The System is required to have a certified operator at the WDM1 level or higher. The System is also required to have a water treatment plant operator at a minimum level of BTO. Larry Harter is the certified operator for the System and is certified as a WDM1, BTO, and CCS (# 4583).
	Safety	Yes	There are no obvious safety issues for the operator other than typical sodium hypochlorite handling and accessing the top of the older of the two reservoirs. The operator uses a safety harness to access the top of this reservoir.
	Consumption/ Production Data	Yes	Source meters are read 5 times per week. Service meters are read every month.
	Water Rights	Yes	Water rights were reported to be sufficient to meet system demands.
	Cross-Connection Control	Uncertain	It was not clear what cross connection control plan may be in effect. Mr. Harter has done a hazard inventory for the Town and he checks files in August to ensure that they have been tested annually. The Town has an ordinance but Mr. Harter is unaware of any written plan that is in effect It appears that a plan may have been developed for the last Water System Plan but Mr. Harter does not have a copy of it. **This confusion over the cross connection control plan could be a hazard to the health of the Town. Mr. Harter should have access to all cross connection control ordinances and plans. It also appears that the ordinance and plan will likely need to be updated to meet the current requirements of WAC 246-290-490, which were last updated in 1999.**
FACILITIES	**Source**	Yes	Both wells appeared to be in fairly good condition. Both wells are activated and shut off together by a pressure transducer in one of the reservoirs. The Lower well (S01) is outfitted with a submersible pump and is an artesian well with an air release valve. The well has a check valve and a source meter. The Upper well (S02) also is outfitted with a submersible pump and has a check valve and meter. **However, it does not have a downward facing screened air vent and one should be installed.**

	ADEQUATE (YES/NO)	OBSERVATIONS/RECOMMENDATIONS
Sanitary Control Area / Wellhead Protection	**No**	The Sanitary Control Area (SCA) of the Lower well is reported to be in the control of the White River School District. The Town has a small maintenance garage within the SCA (approximately 50 feet from the well). The garage houses a small tractor and there are various oils and fuels located in the garage. **The oils and fuels and all chemical storage must be removed from the SCA of the Lower well.** The SCA for the upper well appears to be adequate and clear of potential contaminant sources.
Storage	Uncertain	The reservoir exteriors are showing signs of corrosion and age. The oldest reservoir was constructed in 1966 and may be nearing the end of its useful life. The newer reservoir was constructed in 1978. As mentioned above, AWWA recommends inspection and cleaning every five years and the Town should closely monitor the condition of both reservoirs to prevent failure. Both reservoirs had locked lids, screened vents, and screened overflows. The older reservoir had a rubber gasketed seal but it was unclear whether the newer reservoir had one. **It is recommended that the presence of a good seal be verified for the newer reservoir and, if necessary, to install a rubber gasket to the lid.**
Distribution	Yes	The distribution system is mostly constructed of AC piping (approximately 80%). The System now uses C900 PVC for new and replacement piping except for road crossings where DI pipe is used.
Pumping	Yes	There is one booster pump that supplies a small pressure zone of five homes. This booster pump was added to boost pressures to these homes which are located near the storage reservoirs. There is a small bladder tank connected to the pressure side of the booster pump. In the event of booster failure, these homes still receive water but at pressures between 10 and 20 psi.
Treatment	Yes	The wells are treated for iron and manganese using a pyrolusite media filtration system (ATEC) and chlorine is added to both wells using sodium hypochlorite. Monthly chlorination reports are submitted to DOH. The hypochlorite source is Sunny Sol 150 supplied by Jones Chemical. The product appears to be NSF 60 certified. The target chlorine concentration for the distribution system is 0.2 mg/L or more. S01 – Sodium hypochlorite is injected after the source meter and prior to the ATEC filters. Chlorine levels are monitored on a daily basis using grab samples collected after the ATEC filters. The ATEC filters are backwashed every 6 hours. S02 – Sodium hypochlorite is injected after the source meter and prior to the ATEC filters. Chlorine levels are monitored on a daily basis using grab samples collected after the ATEC filters. The ATEC filters are backwashed every 4 hours. There was a blue filter housing attached to a side pipe on the transmission line from S02. The

		ADEQUATE (YES/NO)	OBSERVATIONS/RECOMMENDATIONS
			purpose of this filter housing was unknown. **This housing must be removed to prevent accidental contamination of water from the Upper well.**
	Reliability		There appears to be adequate standby storage but there is no generator capacity. The System may want to explore the possibility of a generator for the Upper well but it does not appear that power outages are lengthy or frequent. There appears to be adequate reliability for the System.

Photographs

S01 Well House and Town Garage

Well S01 – Lower Well

S01 Hypochlorination System

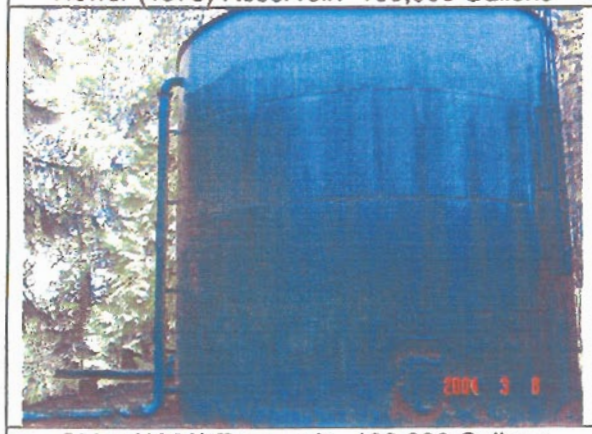
Town Garage Interior. Note Presence of Chemical Storage

Well S02 in Small Enclosure. ATEC Bldg on Left. 1966 and 1978 Reservoirs

Newer (1978) Reservoir. 100,000 Gallons

Newer Tank Ladder Access

Newer Tank Screened Overflow



Older (1966) Reservoir. 100,000 Gallons

Older Tank Drain

Older Tank Screened Overflow

Well S02 - Upper

Well S02 Piping (Well comes in from the left)

S02 Unknown filter housing. Must be removed.

Small BPS for 5 Home Pressure Zone

S02 Hypochlorination System

S02 ATEC system

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

As Of: 3/2/2004

Administrative Data

WS Id:	82300 R
WS Name:	SOUTH PRAIRIE, TOWN OF
DOH Region:	Northwest
County:	PIERCE
Group:	A
Type:	Community
Group Active Date:	01/01/1970
Delivery Address:	
Attention:	
Address:	
City:	
State:	
Zip:	

Predominant Characteristics:
Commercial
Day Care
Food Service / Food Permit
Recreational / RV Park
Residential

Primary Contact

Name:	LARRY HARTER
Mailing Address:	
Attention:	
Address:	PO BOX F
City:	SOUTH PRAIRIE
State:	WA
Zip:	98385
Day / Office Phone:	(360) 897-8969
Mobile / ~~Pager:~~	(253) 223-0492
Evening / Weekend:	(253) 552-0097
Fax:	(360) 897-8717
Alternate Day / Office:	
Alternate Evening / Wk:	

24 Hour / Emergency Number

Name:	
Day / Office Phone:	
Mobile / Pager:	
Evening / Weekend:	
Fax:	
Alternate Day / Office:	
Alternate Evening / Wk:	

Connections

	Current System Est.	DOH Calc.	DOH Approved
Total Residential Connections	0	141	200
Full-time Single Family Residences (Occupied >= 180 Days a Year)	141		
Part-time Single Family Residences (Occupied < 180 Days a Year)	0		
Mulit-family Residential Buildings (Apartments, Condos, Barrakcs, etc.)	0		
Full-time Residential Units (Occupied >= 180 Days a Year)	0		
Part-time Residential Units (Occupied < 180 Days a Year)	0		
Recreational Services (Campsites, RV sites, Standpipes, etc.)	0		0
Other Non-residential Services (Institutional, Industrial, Commercial)	13		0
Total Service Connections		154	200

Total Metered Connections: 154

Distribution Storage Capacity (Total Capacity in Gallons): 200,000

Population

Full Time Residential Population: 483

Part Time Single Family Residential Population Table

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Population												
Use Days												

Transient Non Community Population Table

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Population	115	115	115	115	115	115	115	115	115	115	115	115
Use Days	31	31	31	31	31	31	31	31	31	31	31	31

Non Transient Non Community Population Table

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Population												
Use Days												

WFI Comments

No WFI Comments are available

Operating Permit

Current and Valid Operating Permit: No

Last Permit Color Issued:

Today's Color: Green

Today's Color Permit Conditions:

Note: System does not have a limit on the number of approved service connections

A = DISINFECTION
B = PARTICULATE (TURBIDITY) REMOVAL
C = SOFTENING (HARDNESS REMOVAL)
D = IRON & MANGANESE REMOVAL
E = ORGANICS AND COLOR REMOVAL
F = TASTE/ODOR CONTROL & DECHLORINATION
G = DISINFECTON BY-PRODUCTS CONTROL
H = INORGANICS REMOVAL
I = CORROSION CONTROL
J = DENTAL HEALTH

Water Quality

COLIFORM SUMMARY

	3/04	2/04	1/04	12/03	11/03	10/03	9/03	8/03	7/03	6/03	5/03	4/03
Routine Sample												
SamReq	1	1	1	1	1	1	1	1	1	1	1	1
SamTaken	0	1	1	1	1	1	1	1	1	1	1	1
TC												
EC												
FC												
Repeat Sample												
SamReq												
SamTaken												
TC												
EC												
FC												
Incidents Actual												
Acute												
Non Acute												
MajorRep												
MajorMon												
Min Rep												
Min Mon												

	3/03	2/03	1/03	12/02	11/02	10/02	9/02	8/02	7/02	6/02	5/02	4/02
Routine Sample												
SamReq	1	1	1	1	1	1	1	1	1	1	5	1
SamTaken	1	1	1	1	1	1	1	1	1	1	5	1
TC												1
EC												
FC												
Repeat Sample												
SamReq												4
SamTaken												4
TC												
EC												
FC												
Incidents Actual												
Acute												
Non Acute												
MajorRep												
MajorMon												
Min Rep												
Min Mon												

SOURCE COLIFORM - (COLIFORM NUMERIC)

No Coliform Numeric Samples were found for February 2004

INORGANIC CHEMICALS (IOC)

History - IOC - Analyte Group

Src Num	Source Name	Source Type	Source Use	Lab / Sample Num	Collect Date	Test Panel	Analytes Tested
02	UPPER WELL	Well	P	089 50330	07/05/2001	IOC	2 of 43
02	UPPER WELL	Well	P	089 49854	06/06/2001	IOC	2 of 43
02	UPPER WELL	Well	P	089 49016	04/18/2001	IOC	2 of 43
02	UPPER WELL	Well	P	089 37843	04/22/1999	IOC	27 of 43
02	UPPER WELL	Well	P	119 95262	12/22/1997	ASB	1 of 1
02	UPPER WELL	Well	P	089 26875	10/24/1996	IOC	26 of 43
02	UPPER WELL	Well	P	081 08094	06/07/1993	ICHEM	26 of 19
02	UPPER WELL	Well	P	089 05447	06/05/1990	ICHEM	18 of 19
02	UPPER WELL	Well	P	089 05222	04/24/1990	ICHEM	18 of 19
02	UPPER WELL	Well	P	051 07861	01/20/1985	ICHEM	18 of 19
Dist				051 10290	12/14/1987	ICHEM	18 of 19
Dist				089 03250	03/18/1982	ICHEM	17 of 19

WS Id: 82300 R

Source 02 - 11/05/2003

Analyte DOH #	Analyte Name	Result Range	Units	SRL	Result Qty	Trigger Ind	Trigger Value	MCL Ind	MCL Value
0116	CYANIDE	LT	mg/L	0.0500	0.0500	N	0.1999	N	0.2000
)	FLUORIDE	LT	mg/L	0.2000	0.2000	N	1.9999	N	4.0000
.14	NITRITE-N	LT	mg/L	0.5000	0.2000	N	0.4999	N	1.0000
0020	NITRATE-N	LT	mg/L	0.5000	0.2000	N	4.9990	N	10.0000
0161	TOTAL NITRATE/NITRITE	LT	ug/L	0.5000	0.4000	N		N	
0008	IRON	EQ	mg/L	0.1000	0.0400	N		N	
0010	MANGANESE	LT	mg/L	0.0100	0.0100	N		N	
0013	SILVER	LT	mg/L	0.0100	0.0100	N		N	
0021	CHLORIDE	EQ	mg/L	20.0000	5.0000	N		N	
0022	SULFATE	EQ	mg/L	10.0000	2.0000	N		N	
0024	ZINC	LT	mg/L	0.2000	0.0500	N		N	
0014	SODIUM	EQ	mg/L	5.0000	13.0000	N		N	
0015	HARDNESS	EQ	mg/L	10.0000	98.0000	N		N	
0016	CONDUCTIVITY	EQ	Umhos/c	10.0000	231.0000	N		N	
0017	TURBIDITY	EQ	NTU	0.1000	0.1000	N	0.9999	N	1.0000
0018	COLOR	LT	CU	5.0000	5.0000	N		N	
0026	TDS-TOTAL DISSOLVED SOLI	NA	mg/L	150.0000		N		N	
0009	LEAD	LT	mg/L	0.0020	0.0020	N	0.0154	N	
0023	COPPER	LT	mg/L	0.2000	0.0200	N	1.3400	N	
0171	ORTHOPHOSPHATE	NA	mg/L	0.1000		N		N	
0172	SILICA	NA	mg/L	1.0000		N		N	
0402	ALUMINUM	NA	mg/L	0.0500		N		N	
0403	ALKALINITY-LAB	NA	mg/L	10.0000		N		N	
0404	MAGNESIUM	NA	mg/L	0.1000		N		N	
0405	CALCIUM	NA	mg/L	0.5000		N		N	
0406	AMMONIA	NA	mg/L	1.0000		N		N	
0407	CHLORINE DIOXIDE	NA	mg/L	1.0000		N		N	
0408	OZONE	NA	mg/L	0.2000		N		N	
09	PH	NA	PH			N		N	
.10	CHLORAMINES	NA	mg/L			N		N	
0099	INACTIVATION RATIO	NA	None			N		N	
0100	RESIDUAL CHLORINE	NA	mg/L	0.2000		N		N	
0115	ASBESTOS	NA	MFL	7.0000		N	6.9990	N	7.0000

Result Range:
EQ - Equal To LT - Less Than GT - Greater Than NA - Not Analyzed ND -- No Detect

NITRATE / NITRITE

History - IOC - Analyte Group

Src Num	Source Name	Source Type	Source Use	Lab / Sample Num	Collect Date	Test Panel	Analytes Tested
01	LOWER WELL	Well	P	089 64898	11/05/2003	IOC	28 of 43
01	LOWER WELL	Well	P	089 58130	10/02/2002	IOC_SHO	3 of 7
01	LOWER WELL	Well	P	089 51401	09/05/2001	NIT	1 of 3
01	LOWER WELL	Well	P	089 45408	09/06/2000	NIT	1 of 3
01	LOWER WELL	Well	P	089 37842	04/22/1999	IOC	27 of 43
01	LOWER WELL	Well	P	089 33810	06/24/1998	NIT	1 of 3
01	LOWER WELL	Well	P	089 29351	06/18/1997	NIT	1 of 3
01	LOWER WELL	Well	P	089 26874	10/24/1996	IOC	26 of 43
02	UPPER WELL	Well	P	089 64899	11/05/2003	IOC	28 of 43
02	UPPER WELL	Well	P	089 58129	10/02/2002	IOC_SHO	3 of 7
02	UPPER WELL	Well	P	089 51402	09/05/2001	IOC	3 of 43
02	UPPER WELL	Well	P	089 45409	09/06/2000	NIT	1 of 3
02	UPPER WELL	Well	P	089 37843	04/22/1999	IOC	27 of 43
02	UPPER WELL	Well	P	089 33809	06/24/1998	NIT	1 of 3
02	UPPER WELL	Well	P	089 29350	06/18/1997	NIT	1 of 3
02	UPPER WELL	Well	P	089 26875	10/24/1996	IOC	26 of 43

RADIONUECLIDES (RAD)

History - RAD - Analyte Group

Src Num	Source Name	Source Type	Source Use	Lab / Sample Num	Collect Date	Test Panel	Analytes Tested
01	LOWER WELL	Well	P	023 10408	09/03/2003	RAD	1 of 13
01	LOWER WELL	Well	P	023 61222	07/09/2003	RAD	1 of 13
01	LOWER WELL	Well	P	101 06067	10/07/1998	RAD	1 of 13
02	UPPER WELL	Well	P	023 10407	09/03/2003	RAD	1 of 13
02	UPPER WELL	Well	P	023 61220	07/09/2003	RAD	1 of 13
02	UPPER WELL	Well	P	101 06068	10/07/1998	RAD	1 of 13
Dist				101 01622	03/10/1982	RAD	1 of 13

Detail - RAD

No Analytes Detected

LEAD AND COPPER (LCR)

Monitoring Level	Start	End	Pb 90th	Pb Hi	Cu 90th	Cu Hi	Sam Reqt	Sam Taken	AL Pb Inc	AL Cu Inc	Mon Inc
Base3Y	01/2004	12/2006					5	0			
Base3Y	01/2001	12/2003	.0020	.0020	.1700	.1700	5	5			
AnnualRed	01/2000	12/2000	.0020	.0020	.0400	.0500	5	5			
AnnualRed	01/1999	12/1999	.0020	.0020	.0750	.0800	5	5			
Second6Mo	01/1998	06/1998	.0020	.0040	.1000	.1000	10	12			
First6Mo	04/1997	09/1997	.0060	.0100	.3000	.3800	10	13			

APPENDIX L

Emergency Response Contingency Plans

CONTINGENCY PLAN
BOMB THREAT/SABOTAGE

SCENARIO

The Town receives a call or letter containing a threat of sabotage/bomb or injection of toxic materials into water well. Location of any devices is unknown.

- Wells/Pumping Facilities – Possible target due to relative ease of access and isolated location.
  - Make provisions to take target source off line by closing isolation valves, etc.
  - Power down well (by bomb squad).
  - Open interties, if available.
  - Contamination: Restrict use of water, drain the system, and pump well to waste. Flush system from other sources.
- Storage Tanks – Likely target due to size and effect.
  - Make provisions to turn off valves to isolate tanks from system.
  - Contamination: Drain system and flush.
- Water Transmission Mains – Not likely target.
- Power Supply – Likely to be affected only as secondary target to other facilities.
  - Notify power company.
- General Response Actions – Office will take call; Police and Fire Department will respond.
  - Attempt to get caller to reveal location of bomb or method of sabotage.
  - Immediately notify Police and Fire Departments of location of bomb/sabotage or, if unknown, likely targets.
  - Train all personnel how to handle a caller making a bomb threat.
  - Keep a copy of the following checklist near the switchboards at the Town Hall, Fire, and Police Departments.

Reporting Bomb Threats

Person Receiving Call

- Attempt to retain the caller long enough to obtain all pertinent information, such as where the bomb/sabotage is located, type of bomb/sabotage, and when it is set to go off.
- Listen carefully to the exact words of the message so that you can repeat the information clearly and accurately.
- Listen for background noises, voice accent, word pronunciation, voice pitch (high or low), male or female voice, child, or adult.
- Try to signal another person near you to pick up the same telephone line and listen in.

- Prepare a list of the following information:
  - Date and time of call.
  - Type of bomb/sabotage.
  - Location of bomb/sabotage.
  - Description of bomb/sabotage.
  - What caller actually said.
  - Sex of caller.
  - Estimated age of caller.
  - Type of voice (soft, loud, whisper, normal, drunk).
  - Background noises heard, if any.
  - Your name and location.
- Report the threat to the Police Department and the Fire Department.

Town Clerk or Utilities Manager

- Notify employees to search their areas.
- Notify local law enforcement agency having jurisdiction.
- If a suspicious object or package is discovered at any time, whether or not a bomb threat call has been received, proceed as follows:
  - Do not move, touch, or disturb the object or package in any way.
  - Immediately notify the Police and Fire Departments.
- Clear all persons from the immediate area and notify the Fire Department of location and description of the suspicious object or package.
- Evaluate available information and make a decision on evacuation.
- Notify employees of evacuation decision or all-clear decision.
- When directed to evacuate, leave building.
- Take coats, jackets, purses, and briefcases when leaving the work area.
- Lock cash drawers and other valuable items.

Employees

- Search own work areas for suspicious objects or packages as follows:
  - Desks
  - Wastebaskets
  - File Cabinets
  - Supply Room
  - Closets
  - Ashtray Receptacles
  - Locked Doors
  - Underside of Horizontal Surfaces

- Turn off electrical machines or other noisemaking equipment.
- Search nonwork areas in assigned area including:
  - Restrooms
  - Conference Rooms
  - Coffee Shops
  - Store Rooms
  - Hallways, Stairways, and Lobbies
- Notify immediate supervisor of the results of the search.

CONTINGENCY PLAN
REGIONAL EARTHQUAKE

SCENARIO

7.5 Richter magnitude. Considerable damage to brick buildings. Foundations displaced. Ground cracks. Pipes broken.

- Wells/Pumping Facilities – Potential for damaged casing, shifted base, damage to chlorinators, and loss of power. Possible reduced yield.
  - Inspect well base.
  - If no power is available, call power company (**see Major Power Outage**).
  - Turn on pump to aid in fire fighting if damage is not severe. Pump to waste if water is turbid.
  - If pump or feeder pipes are damaged, isolate from system and commence temporary repairs.
- Treatment Facilities/Equipment – Potential for damage to buildings, metering control, injector pumps, power failure.
  - Check for spillage of sodium hypochlorite tanks.
  - If no power is available, call power company (**see Major Power Outage**).
  - Check for damage to chlorinators, injectors, analyzers, and metering control. If all is okay and there are breaks in mains and widespread fires in the transmission system, increase chlorine residual to 3.0 mg/L.
  - Maintain supply and manual metering pumps to feed sodium hypochlorite in case chlorinators are damaged.
- Storage Tanks – High potential for structural damage.
  - Close tank isolation valves.
  - Inspect tanks for structural damage. If imminent failure is suspected, drain tank; otherwise, open valves.
  - Monitor tank levels throughout emergency.
  - Implement **Water Shortage Response Plan** at level appropriate to handle emergency. Keep Fire Department informed of available water so fire-fighting efforts may be prioritized.
- Water Transmission Mains – Potential for broken pipes. Fire fighting demands may be high.
  - Stockpile repair fittings at key locations. Know location of suppliers.
  - Keep detailed system maps of isolation valves and water mains with all personnel so crews can locate valves and isolate broken pipes. Have valve wrench in each vehicle.
  - Open available interties if water is needed for fighting fires. **Call** adjacent water utility first to ensure water is available.

- Provide an emergency source of water at a central location for those users who are without service.
- Provide surface hose connection to connect town grid to tank complex if major leaks develop in the existing AC transmission pipe.

- Power Supply – Potential for wide-scale power outages.
  - Respond as for **Major Power Outage**.
- General Response Actions – Most taxing disaster on water system staff. Some may be injured in earthquake. Transportation impaired. Communications are down.
  - Train all personnel for earthquake response.
  - Keep Emergency Call-Up List that includes regular and a reserve force of emergency water system staff.
  - Call Department of Health for instruction.
  - Do not keep vehicles in damage prone locations.
  - Use radios or cell phones to coordinate activities.
  - Coordinate with Pierce County Emergency Response Agencies (**see Emergency Call-Up List**).
  - Inform local radio and television stations of nature and extent of water system damage.

CONTINGENCY PLAN
MAJOR POWER OUTAGE

SCENARIO

Major regional power outage occurs due to earthquake, windstorm, or other disaster with loss of power to all water production facilities for more than 12 hours.

- Wells – Tubbs Road or School Yard Well out of service.
  - Call power company and alert them of emergency nature of the situation.
- Treatment Facilities/Equipment – Hypochlorite injector pumps and/or Fe/Mn filters cease to operate.
  - Monitor chlorine residual in storage tanks.
  - All facilities should be checked after power is restored to ensure return to normal operations.
- Storage Tanks – Water levels may drop if wells are down for extended period.
  - Monitor storage tank levels.
  - Adhere to **Water Shortage Response Plan**.
- Water Transmission Mains – No effect.
- Power Supply – Interruption in power may create the need to recalibrate telemetry equipment.
- General Response Actions
  - All personnel should obtain portable lights.
  - Check all facilities after power restoration to ensure telemetry and metering controls are in operation.

CONTINGENCY PLAN
FLOODING/WASHOUTS

SCENARIO

100-year flood in the South Prairie River. Heavy rains cause washouts of roads and embankments.

- Wells – Tubbs Road Well is above 100-year flood plains. School Yard Well is within the flood plain.
  - If pump buildings become filled with water, provide protective diking around the pump house.
- Treatment Facilities/Equipment – Tubbs Road Well is above 100-year flood plains. School Yard Well is flooded.
  - See "Wells" above.
- Storage Tanks – Above flood plains, no effect.
- Water Transmission Mains – May break due to road washouts. Some sections of the system may become contaminated.
  - Isolate breaks.
  - Eliminate cross connections by keeping buildings from flooding.
  - Sterilize all lines that are affected.
  - Provide a source of emergency water at a central point for all who are affected by the loss of service.
- Power Supply – Some localized outages could occur. See **Major Power Outage** if system is affected.
  - Keep all electrical equipment dry.
- General Response Actions
  - Use alternate routes in event of road washouts.
  - Keep Emergency Call-Up List that includes regular and a reserve force of emergency water system staff.

CONTINGENCY PLAN
HAZARDOUS SPILL

SCENARIO

A hazardous chemical spill occurs in the watershed, and one or both well sources become contaminated.

- Wells – Source of supply is contaminated.
  - ➢ Immediately isolate source from the system.
  - ➢ Call Department of Health emergency spill response number.
  - ➢ Increase chlorine residual in affected tank to 3.0 mg/L or greater to oxidize or disinfect the contaminants.
  - ➢ If health threat is immediate, notify users to stop using water.
  - ➢ Attempt to determine contaminating substance. Call professional services as required.
  - ➢ Coordinate with professionals to treat water to highest safe, feasible extent.
- Treatment Facilities/Equipment – No effect.
- Storage Tanks – No effect.
  - ➢ Initiate **Water Shortage Response Plan** if necessary.
- Water Transmission Mains – No effect.
  - ➢ Initiate **Water Shortage Response Plan** if necessary.
- Power Supply – No effect.
- General Response Actions – Some may be sick from ingesting tainted water.
  - ➢ Train personnel in hazardous waste cleanup, emergency water treatment, and use of protective equipment.
  - ➢ Inform public of possible health effects of contaminant (**see Public Notification**).

CONTINGENCY PLAN
EXTENDED DROUGHT

SCENARIO

Extended drought conditions severely tax available water supply: Demand increases.

- Wells – Well drawdown may increase with less recharge, though this effect will be long term and seasonal.
  - Monitor static and dynamic water levels in wells. Make records of any changes.
- Treatment Facilities/Equipment – No effect.
- Storage Tanks – No effects.
- Water Transmission Mains – No effects.
  - Open interties with utilities (if available).
- Power Supply – No effect.
- General Response Actions
  - Familiarize personnel with **Water Shortage Response Plan.**
  - Initiate **Water Shortage Response Plan.**

CONTINGENCY PLAN
WATER SYSTEM PERSONNEL INJURY

SCENARIO

Due to injury or sickness, the water system staff is unable to work.

- Wells – No effect.
  - Ensure telemetry is functioning between wells.
- Treatment Facilities/Equipment – Requires monitoring of hypochlorite solution and adjusting chlorine dose. Routine maintenance may be delayed.
  - Adjust chlorine injection to maintain desired residual. See Routine Operations in Section 7.3.2 for mixing of hypochlorite solution.
- Storage Tanks – Not vulnerable to short-term work stoppages.
  - Check tank water levels during periods of high demand.
- Water Transmission Mains – Not vulnerable to short-term work stoppages.
- Power Supply – No effect.
- General Response Actions
  - Familiarize more than one operator with each part of the system.
  - In the event of serious accident, call an ambulance.
  - For accidents resulting from fire, gas, explosion, etc., call the Fire Department.
  - Never move a seriously injured person unless necessary to prevent further injury.
  - Train all personnel in first aid and CPR.
  - Maintain medical histories and information cards on all employees. Use this card when accidents, illness, or injuries occur.
  - All injuries, no matter how minor, should be reported immediately to the Town Clerk or the Mayor.
  - Once proper medical treatment is received, complete an accident report form and submit it to the Mayor's office.
  - If work stoppage persists, consider obtaining help from local water district operators on a part-time basis.

CONTINGENCY PLAN
MECHANICAL FAILURE

SCENARIO

A major source is incapacitated by large mechanical failure. To fix equipment, manufacturer's technicians are needed.

- Wells – Pump out of service.
  - Prepare a list showing pump manufacturer's local supplier and service representatives.
  - If pump fails during peak demand period, implement **Water Shortage Response Plan**.
  - Call manufacturer or service representative if problem cannot be repaired in-house.
- Treatment Facilities/Equipment – Injector pumps and regulators subject to failure.
  - Switch to backup injector, etc.
  - If both injectors are damaged, manually inject chlorine (sodium hypochlorite) until repaired.
  - Call manufacturer or service representative if problem cannot be repaired in-house.
- Storage Tanks – No mechanical parts.
  - Monitor tank levels.
- Water Transmission Mains – No mechanical parts.
- Power Supply – No effect.
- General Response Actions
  - During repairs, some personnel may neglect routine duties.
  - Keep backup stocks of repair parts.

CONTINGENCY PLAN
SUB-ZERO WEATHER

SCENARIO

Extended freezing weather has promoted deep frost penetration in the soil. Local service connection lines are freezing. Conditions are similar throughout the county.

- Wells – Minor parts not well oiled are subject to freezing shut.
  - Exercise pumps daily.
  - Keep moving parts oiled and moisture free.
  - Keep buildings warm with space heaters.
  - Keep space heaters in storage at Public Works building and in chlorination buildings. Rentals cannot be relied upon due to heavy demand in the region causing shortages.
- Treatment Facilities/Equipment
  - Keep buildings warm with space heaters.
- Storage Tanks – Broken lines and open faucets may result in increased water demand.
  - Monitor tank levels.
  - Implement **Water Shortage Response Plan** if required.
- Water Transmission Mains – Effects are unlikely. Routine maintenance will be disrupted.
  - Fill meter boxes with insulating material to resist pipe freezing.
  - Areas of widespread problems should be documented and examined for preventive measures, such as deeper mains, insulted meter boxes, special customer notification, etc.
- Power Supply – Outage possible due to snow-weighted falling trees.
  - Inform power company of problem priority.
  - Check all electrical equipment throughout freezing weather to ensure continued function.
  - **See Major Power Outage.**
- General Response Actions
  - Ensure staff is wearing proper cold weather clothing to prevent hypothermia and frostbite.
  - Noncritical routine maintenance can be temporarily halted.
  - Prior to cold weather season, stock items for frozen line repair, fuels, and equipment for emergency power. Suppliers will most likely be out of stock during cold weather.

CONTINGENCY PLAN
WATERSHED FIRE

SCENARIO

A massive watershed fire threatens wells, treatment facilities, and storage tanks. Local efforts cannot stop blaze.

- Wells – Wood structures/building elements may burn.
  - Turn off supply that is immediately threatened.
  - Implement **Water Shortage Response Plan** if required.
  - Turn on other well to aid in fire fighting.
  - Hose down building and surrounding area.
  - Create firebreaks around building.
- Treatment Facilities/Equipment – Metal buildings subject to intense heat.
  - Create firebreaks around building.
  - Hose down facilities.
  - Avoid spraying hazardous fire retardants in the watershed.
- Storage Tanks – Threatened by high heat. Heavy demand will cause levels to drop.
  - Create firebreaks around tanks.
  - Keep tanks as full as possible to provide insulating capacity.
  - Monitor tank levels.
- Water Transmission Mains – No effect expected.
- Power Supply
  - Monitor power to chlorination facilities.
- General Response Actions
  - Keep line of communication open with Fire Department.
  - Inform emergency response personnel that the area is a watershed and fire retardants that are toxic cannot be used.

CONTINGENCY PLAN
WINDSTORM

SCENARIO

High winds knock down trees and block access roads.

- Wells – Buildings subject to damage by falling trees.
  - Top large trees annually that have a potential to fall on facilities.
- Treatment Facilities/Equipment – Buildings subject to damage by falling trees.
  - Top large trees that have a potential to fall on facilities.
- Storage Tanks – No severe damage expected.
  - Check roofs to ensure they are securely fastened.
- Water Transmission Mains – No damage expected.
- Power Supply – Power outages may occur.
  - **See Major Power Outage.**
- General Response Actions
  - Equip personnel with chainsaws to check watershed after storm.
  - Keep flashlights, chainsaws, crowbars, leather gloves, etc., in stock at a location not prone to damage.

CONTINGENCY PLAN
VANDALISM

SCENARIO

Vandalism causes damage to the water system.

- Wells – Unlikely target of vandalism. Fencing of well areas restricts entry.
  - Maintain active presence at Tubbs Road Well to check for signs of human passage.
  - Keep all tap box lids locked and secured.
  - Post signs near spring taps with the following description:

    Town of South Prairie Water Supply

    Do Not Disturb

    (Ordinance Number if Available)
  - Keep pump building door and gates locked at all times.
- Treatment Facilities/Equipment – Unlikely target of vandalism. Fencing of well areas restricts entry.
  - See "Wells" above.
- Storage Tanks – Target of graffiti.
  - If graffiti is observed, paint or clean immediately to discourage its spread.
  - Keep gates and fences around tanks locked at all times.
- Water Transmission Mains – No effects expected.
  - Fire hydrants may be subject to vandalism. Inspect all hydrants regularly according to a rotating schedule.
- Power Supply – Not likely target.
- General Response Actions
  - Visit all facilities regularly and inspect for signs of vandalism.
  - Alert Police of all vandalism.
  - Look for patterns, such as times, days of the week, and seasons when vandalism is likely to occur.
  - If problems persist, consider staking out a high-risk facility to catch perpetrators.
  - Design underground facilities in preference to aboveground facilities.
  - Keep stockpiled materials out of sight.

APPENDIX M

Miscellaneous DOH Publications

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APPENDIX N

Construction Standards

TOWN OF SOUTH PRAIRIE
CONSTRUCTION STANDARDS

1.1 General

The following abbreviations and terms are defined here as they are typically used in contract documents and specifications. When used in the proposal form to denote items of work and units of measurements, abbreviations are defined to mean the full expression.

1.2 Abbreviations for Associations and Standards

These abbreviations are used in plans and specifications as defined here:

AAA	American Arbitration Association
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AGC	Associated General Contractors of America
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
CFR	Code of Federal Regulations
CLI	Chain Link Institute
CRAB	County Road Administration Board
CRSI	Concrete Reinforcing Steel Institute
DIPRA	Ductile Iron Pipe Research Association
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FSS	Federal Specifications and Standards, General Services Administration
HUD	United States Department of Housing and Urban Development
IEEE	Institute of Electrical and Electronics Engineers

MSHA	Mine Safety and Health Act
MUTCD	Manual on Uniform Traffic Control Devices
NEC	National Electrical Code
NEMA	National Electrical Manufacturers' Association
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NRMCA	National Ready Mix Concrete Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PPI	Plastic Pipe Institute
P/PCI	Precast/Prestressed Concrete Institute
RCW	Revised Code of Washington (Laws of the State)
SEPA	State Environmental Policy Act
SSPC	Steel Structures Painting Council
UL	Underwriter Laboratory
UMTA	Urban Mass Transit Administration
WAC	Washington Administrative Code
WCLIB	West Coast Lumber Inspection Bureau
WISHA	Washington Industrial Safety and Health Administration
WRI	Wire Reinforcement Institute
WSDOE	Washington State Department of Ecology
WSDOT	Washington State Department of Transportation
WWPA	Western Wood Products Association

1.3 ABBREVIATIONS FOR ITEMS OF WORK AND UNITS OF MEASUREMENT

Plans and specifications may include common engineering and construction abbreviations. Many such abbreviations need no definition. But when the following abbreviations are used, they will only mean:

ACP	Asphalt Concrete Pavement
Agg.	Aggregate
Al.	Aluminum
ATB	Asphalt Treated Base
BST	Bituminous Surface Treatment
Cl.	Class
Cfm	Cubic Feet per Minute
Cfs	Cubic Feet per Second
Comb.	Combination
Conc.	Concrete
Crib.	Cribbing
Culv.	Culvert
cy or cu yd.	Cubic Yard
Diam.	Diameter
Est.	Estimate or Estimated
Excl.	Excluding
F	Fahrenheit

Gph	Gallon per Hour
Gpm	Gallon per Minute
Hund.	Hundred
In.	Inch
Incl.	Including
Lb	Pound(s)
LF or Lin. Ft.	Linear Foot (Feet)
LS	Lump Sum
M	Thousand
MBM	Thousand Feet Board Measure
Pres.	Pressure
PSI	Pounds per Square Inch
PVC	Polyvinyl Chloride
Reg.	Regulator
Reinf.	Reinforced, Reinforcing
Sec.	Section
St.	Steel
Str.	Structural
sy or sq. yd.	Square Yard(s)
Th.	Thick or Thickness
Tr.	Treatment
VC	Vitrified Clay

1.4 DEFINITIONS

As Approved

The words "as approved," unless otherwise qualified, shall be understood to be followed by the words "by the Town or it's representative for conformance with the Construction Document."

As Shown, and as Indicated

The words "as shown" and "as indicated" shall be understood to be followed by the words "on the Drawings" or "on the Standard Details."

Construction Documents

The "Construction Documents" consist of the General Conditions, Specifications, Drawings, all modifications thereof incorporated into the Documents before their execution, and all other requirements incorporated by specific reference thereto.

Contractor

The individual, partnership, firm, corporation, or joint venture contracting with the Property Owner or Developer to do the prescribed work.

Developer

The proponent of the improvement to the Town of South Prairie water system.

Town

The Town of South Prairie acting through its representatives.

Drawings

The term "Drawings" refers to the official Drawings, profiles, cross sections, elevations, details, and other working Drawings and supplementary Drawings, or reproductions thereof, signed by the Engineer, which show the location, character, dimensions, and details of the work to be performed. Drawings may either be bound in the same book as the balance of the Construction Documents or bound in separate sets, and are a part of the Construction Documents, regardless of the method of binding.

Engineer

The person or organization responsible for the production of the Construction Documents. The term "Engineer" means the Engineer or their authorized representative.

Inspector

The Town's representative who inspects construction performance in detail.

Laboratory

The laboratories the Town authorizes to test work, soils, and materials.

Or Equal

The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the product named in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the project design requirements will be made by the Town's representative. Such equal products shall not be purchased or installed by the Contractor without written authorization.

Plans

See Drawings

Right of Way

Land, property, or property interest, usually in a strip, acquired or owned by a public agency, primarily, for transportation purposes.

Shoulder

The part of the roadway next to the traveled way or auxiliary lanes. It provides lateral support of base and surface courses and is an emergency stopping area for vehicles.

Specifications

The term "Specifications" refers to those portions of the Construction Documents consisting of written technical descriptions of materials, equipment, construction systems, standards, and workmanship as applied to the work and certain administrative details applicable thereto. Where standard specifications, such as those of ASTM, AASHTO, etc., have been referred to, the applicable portions of such standard specifications shall become a part of these Construction Documents. If referenced specifications conflict with specifications contained herein, the requirements contained herein shall prevail.

Standard Details

A manual of specific plans or drawings adopted by the Town which show frequently recurring components of work that have been standardized for use.

State

The state of Washington acting through its representatives.

Structures

Bridges, culverts, catch basins, drop inlets, retaining walls, cribbing, manholes, endwalls, buildings, service pipes, sewers, underdrains, foundation drains, and other features found during work that the contract may or may not classify as a structure.

Subcontractor

An individual, partnership, firm, corporation, or joint venture who is sublet part of the contract by the Contractor.

Subgrade

The top surface of the roadbed on which subbase, base, surfacing, pavement, or layers of similar materials are placed.

Surety

A company that is bound with the Contractor to ensure performance of the contract, payment of all obligations pertaining to the work, and fulfillment of such other conditions as are specified in the contract, contract bond, or otherwise required by law.

Traveled Way

That part of the roadway made for vehicle travel excluding shoulders and auxiliary lanes.

Work

The provision of all labor, materials, tools, equipment, and everything needed to successfully complete a project according to the contract.

Working Drawings

Shop drawings, shop plans, erection plans, falsework plans, framework plans, cofferdam, cribbing and shoring plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data, including a schedule of submittal dates for working drawings where specified, which the Contractor must submit to the Town for approval.

2.1 PURPOSE

Town of South Prairie, as a municipal corporation, is responsible to the public for insuring that water mains are constructed in accordance with currently accepted standards for public work. The requirements imposed upon developers and contractors are intended by the Town as a contract with the Developer, which incorporates minimum standards prerequisite to acceptance of the Work by the Town as a part of its system. Privately constructed extensions will not be permitted to connect to the Town's systems unless the Work is performed and paid for in accordance with this Agreement.

2.2 TOWN AUTHORITY

The Town shall have authority to approve, reject or require changes in Plans designed by Developer's Engineer; to require such changes in the Plans during the course of work; to inspect the work; to stop work to insure compliance with the approved Plans and Specifications; to reject non-conforming work and materials; and to decide questions which may arise in the execution of the Work. The Town shall have the authority to impose fines for violation of Town policies adopted pursuant to resolution.

2.3 DEVELOPER RESPONSIBILITY

The Developer shall keep fully informed regarding the nature, quality and extent of the work to be done, and if in doubt, to secure specific instructions from the Town.

The Developer shall keep a competent supervisor on the Work during its progress who shall represent the Developer, and to whom instructions may be given as though to the Developer. The Supervisor shall be familiar with the Plans and Specifications and shall promptly report to the Town any error, inconsistency or omission which may be discovered.

The Developer shall enforce discipline and good order among its employees and shall not employ on the Work any unfit person or anyone not skilled in the work assigned. Employees or agents of the Developer who may impair the quality of the construction shall be removed from the Work upon the written request of the Town.

2.4 COMPLIANCE WITH PUBLIC AUTHORITY

The Work shall conform to the regulations of each public authority with jurisdiction over the manner and quality of performance of the Work. Construction in public roads or rights-of-way shall conform to the standards and requirements of the governmental agency having jurisdiction, and to the requirements of the franchise or permit therefor. The Developer shall be responsible for ascertaining the requirements of each public authority and the franchises and permits.

The Developer shall be responsible for coordinating construction activity with all interested parties and agencies.

2.5 PERMITS

The Developer shall not hold a preconstruction conference until all necessary permits have been issued by public authority and are in Town possession. The Developer shall pay the cost of obtaining all required permits, and shall reimburse the Town for all costs incurred by the Town for permits, inspection fees and other charges imposed by public authority because of the Work. The Developer shall be responsible for assuring compliance with the requirements of all permits, franchises, and licenses.

2.6 CROSS-CONNECTION CONTROL

Developer shall comply with all government and Town rules and regulations governing cross-connections. Developer shall install and maintain backflow prevention devices required by the Town as a condition of final acceptance of the work by the Town.

2.7 PRECONSTRUCTION CONFERENCE

The Developer shall hold a preconstruction conference with all concerned parties at a location agreeable to the Town at least five days before work commences. The Developer shall arrange for the conference and for the attendance of concerned parties.

2.8 PRECONSTRUCTION PHOTOS

Preconstruction photos acceptable to the Town shall be submitted to the Town at the preconstruction meeting.

2.9 QUALITY OF MATERIALS AND WORKMANSHIP

All materials shall be new, and workmanship and materials shall be of the highest quality commonly used. The Developer shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

2.10 DETERMINATION OF "AS EQUAL"

The Town and its Engineer shall be the sole judge whether supplies or material qualify "as equal" substitutions under the Plans and Specifications.

2.11 OMISSIONS AND DISCREPANCIES

Minor items of work or materials omitted from Plans and Specifications prepared by the Town's Engineer, or Developer's Engineer, but clearly inferable therefrom and called for by good practice, shall be provided and/or performed by the Developer. In case of doubt, the Town's decision shall be determinative.

2.12 SPECIFICATIONS INCORPORATED BY REFERENCE

Where any standard specifications are referenced or included by reference herein, the latest issue and/or amendment thereto published as of the date of the agreement shall be incorporated into the contract. Should a conflict exist between the approved design drawings and any standard specifications or details referenced herein, the Town shall determine which shall prevail.

2.13 MATERIAL AND EQUIPMENT LIST

The Developer shall file a material and equipment list with the Town prior to the preconstruction conference, including the quantity, manufacturer and model number, acceptability under any specified inspections and/or tests required by AWWA specification, if applicable, of material and equipment to be installed as part of the Work. The Town may reject materials and equipment which do not conform to Town specifications and the approved Plans. Failure of the Town to reject materials and equipment indicated on the list within 10 working days shall waive the Town's right to reject such materials or equipment thereafter.

2.14 ROYALTIES AND PATENTS

Developers shall pay all royalties and license fees and defend all suits or claims for infringement of any patent rights and shall hold the Town harmless on account thereof, unless, a particular process or product of a particular manufacturer is specified by the Town and the Developer or its Contractor are unaware that the process or article is an infringement of a patent.

2.15 EXISTING UTILITIES OR OBSTRUCTIONS

A. Preparation of Plans by Town Engineer

Existing utilities and obstructions are shown on the Drawings so far as known to the Town Engineer and the Town. The information is not guaranteed and is provided only for such value as it may have. Incomplete or erroneous information shall not be the cause of claim against the Town Engineer or the Town and shall not relieve the Developer of responsibility for repairing any damage caused to such utilities during performance of the Work.

B. Preparation of Plans by Developer's Engineer

The Town shall provide to the Developer any information it may have regarding existing utilities and obstructions. The information is not guaranteed but is provided only for such value as it may have. Incomplete or erroneous information shall not be the cause of claim against the Town Engineer or the Town and shall not relieve the Developer of responsibility for repairing any damage caused to such utilities during performance of the Work.

C. Notification of Utilities

The Developer shall contact all utilities and determine whether existing utilities and obstructions exist. The Developer shall reimburse the Town for damage to the property of the Town or damage to property of others for which the Town is liable when caused by the Developer and/or the Developer's Contractor and for other expenses, including reasonable attorneys' fees and court costs incurred by the Town because of such damage. Whenever the Developer fails to repair or restore existing improvements damaged by its contractor within 72 hours of notice, the Town may order the work done by others and all costs incurred shall be paid by the Developer; provided that if the Town determines an emergency exists, it may notify the Developer who shall immediately commence repair or restoration work, or it may make repairs or restoration at the Developer's expense.

2.16 CONTRACTORS

Only contractors licensed and bonded with the State of Washington shall install extensions; a copy of the license shall be provided to the Town. Developer shall submit in writing not less than fifteen (15) days before the pre-construction conference, the name(s), address(es) and telephone number(s) of all contractors and subcontractors the Developer proposes to use in doing the Work. If the Town disapproves, then it shall notify Developer within ten (10) days. Nothing contained in this agreement shall create any contractual rights between the Town and any person or firm employed to do the Work.

2.17 PLANS AND SPECIFICATIONS ACCESSIBLE

One copy of the Plans and Specifications shall be accessible on the job site at all times.

2.18 SURVEY CONTROL

The Developer shall provide all property corners and street centerline stakes, and shall provide reasonable and necessary opportunities and facilities for, locating and staking the lines and appurtenances. Accuracy of such horizontal control is the sole responsibility of the Developer and any modification of horizontal location of any facility shall be at the Developer's expense.

The Work shall not commence until the Developer has made provision to establish such points necessary for the Work. The Work shall conform to such points and instructions. The Developer shall preserve benchmarks, reference points and stakes, and, in case of destruction, shall be charged for re-establishment, any resulting expense and shall be responsible for any errors that may be caused by their absence or disturbance.

2.19 INSPECTION AND TESTS

All work shall be subject to inspection by the Town. The Town shall have access to the Work at all times, and the Developer shall provide proper facilities for such access and inspection. The Developer shall make reasonable tests of the Work at the Developer's expense upon the Town's request. Whenever work must be specially tested or inspected for compliance with public regulations, or with the Plans and Specifications, the Developer shall give the Town reasonable notice of the readiness of the Work for such test or inspection. The Town shall make inspections within 24 hours of notification by the Developer. Work shall not be covered up without consent of the Town, or it must be uncovered for inspection at the Developer's expense. Such inspections and tests shall not relieve the Developer of any of its responsibilities.

The presence or absence of a Town inspector on any job is discretionary with the Town, and neither presence nor absence of a Town inspector will relieve the Developer of responsibility to obtain the construction results specified in this agreement.

The Town is not a safety expert, and is not engaged in that capacity whenever performing inspections and tests. The authority of the Town to perform inspection and tests shall not relieve the Developer of its responsibility for safety.

2.20 ACCESS

Bridging shall be provided across private driveways and roadways whenever trenches are open to avoid interference with normal traffic flow.

2.21 PUBLIC HAZARD OR INCONVENIENCE

If performance of the Work results in hazard or inconvenience to the public, then the Town may correct the same, and the Developer shall reimburse the Town for expense incurred. The Developer shall also reimburse the Town for the expense incurred in complying with any order of public authority lawfully made with respect to the Work during the performance of the Work or within two years after acceptance of the same.

2.22 USE OF COMPLETED PORTIONS

The Town may take possession of and use any completed or partially completed portions of the Work. Possession and use shall not constitute acceptance of any of the Work.

2.23 PROTECTION OF WORK AND PROPERTY

The Developer shall exercise due care to protect property and the Work and shall supervise the project to ensure the contractor exercises such care. The Developer shall be solely responsible

for any loss or damage to property or the Work occurring prior to the completion of and acceptance of the Work by the Town.

2.24 OTHER WORK

The Town may have other contracts in progress affecting the Work. The Developer shall afford reasonable opportunity to other contractors for introduction and storage of their materials and performance of their work. The Work and other contracts shall be properly coordinated.

2.25 TRAFFIC MAINTENANCE AND PROTECTION

All work shall be performed with due regard for the safety and convenience of the public and in a manner that minimizes interference with automotive and pedestrian traffic. Flagging personnel, barricades, signs and traffic control shall be furnished as required by appropriate agency. Emergency vehicles shall be provided access at all times.

2.26 SANITATION

Necessary sanitation convenience, properly secluded from public observation, shall be provided and maintained during the Work as required by appropriate agency.

2.27 SAFETY

The Developer and Developer's Contractor will be solely and completely responsible for conditions of the job site, including safety of all persons and property during the performance of the Work, and for compliance with all federal, state and local safety laws and regulations. This requirement will apply continuously and will not be limited to normal working hours.

The right of the Town or the Town Engineer to conduct construction review of the Contractor's performance or inspection of the Work or the site is not intended to include review of the adequacy of the Contractor's safety measures in, on or near the construction site.

2.28 CONFINEMENT OF CONTRACTOR'S OPERATIONS

The Developer shall ensure that the Contractor confines construction activities within the property of the Developer and the limits of easements and construction permits outside of the Developer's property. Damage to property or persons from any encroachment beyond these limits shall be the responsibility of the Developer.

2.29 TAPS, CUT-INS AND LARGE METER TESTS

All taps and cut-ins to the existing water mains shall be made by Contractor approved by the Town at fees established by the Town Council. If extensions require meters three inches or larger, then meter installation, including valves, piping, vaults, drain lines and meters shall be performed by the Developer's Contractor according to Town standards. The Developer shall pay the meter test fee established by the Town and shall sign a Town meter application form and pay all fees and charges due at that time.

2.30 COST OF WATER

Construction water shall be furnished at the Town's regular rates through a temporary meter rented to Developer at rates established by Town ordinance. The Developer shall pay the cost of all other water furnished by the Town based upon meter readings. Return of the meter is a condition of project acceptance.

2.31 RESTORATION OF IMPROVEMENTS

All existing improvements removed or disturbed during the Work shall be restored to their original condition. A signed release from the affected property owner will be required. All restoration shall be made at Developer's expense to the condition of the area prior to construction.

Whenever restoration of existing improvements will be necessary, the Developer shall provide photographs before and after construction acceptable to the Town.

2.32 FINAL INSPECTION

All material and completed work are subject to final inspection and testing by the Town to determine whether the Work complies with the Plans and Specifications.

2.33 "AS-BUILT" DRAWINGS

The Contractor will maintain "as-built" information about the project as it is constructed. This information will be available to the Developer's Engineer for preparation of "as-built" drawings to be prepared at the Developer's expense.

2.34 OWNERSHIP OF PLANS

The originals of all "as-built" Plans prepared by Developer's Engineer shall be delivered to the Town as a condition of and prior to acceptance of the project, and shall become the property of the Town. Neither the Developer nor the Developer's Engineer shall have any rights of ownership, copyright, trademark or patent in the Plans.

2.35 CLEANUP

The construction site shall be kept clean during the Work. Before the Work shall be considered complete, the Developer shall clean out ditches filled during the Work; replace damaged surfacing; remove surplus materials, trash and brush; repair all damages; and otherwise leave the job in a neat and orderly condition. Dust control shall be provided during the Work and during cleanup. The Developer shall keep existing roads and streets adjacent to or within the limits of the project open to and maintained in a good and safe condition for traffic at all times. The Developer shall remove, on a daily basis, any deposits or debris which accumulates on the roadway surface as a result of construction operations. Removal shall be performed on a more frequent basis should the Town determine that such removal is necessary.

2.36 EASEMENTS AND RECORDING

The Town will not approve the Plat for recording until all of the underground portion of the extension(s) have been installed and tested. A copy of the proposed final plat must be delivered to the Town prior to recording so that the Town may review the plat for adequacy of easements. A copy of the final recorded plat and all necessary recorded easements shall be delivered to the Town before service connections will be allowed to the extension.

3.1 PIPE, FITTINGS, APPURTENANCES

3.1.1 Materials

Materials shall meet the following requirements:

3.1.1.1 Polyvinyl Chloride (PVC) Pipe

PVC pipe for distribution lines shall meet the requirements of AWWA C900. PVC pipe shall have the same outside dimensions as ductile iron pipe. PVC pipe for distribution pipelines shall be a minimum of DR 18. Pipe shall be listed by Underwriters' Laboratories, Inc. Joints shall meet the requirements of ASTM D 3139 using a restrained rubber gasket conforming to ASTM F 477. Solvent welded pipe joints are not permitted.

The pipe manufacturer shall test all pipe as required by these Specifications and the standards referenced. The pipe supplier shall submit to the Town two copies of all test results including a certification that material to be delivered is represented by the samples tested and that such delivered materials meets or exceeds the specified requirements. No pipe shall be delivered until test results and certifications are in the hands of the Town. The Town shall have free access to all testing and records pertaining to material to be delivered to the job site. The basis of acceptance shall be a certificate of compliance as described in WSDOT Section 1-06.3, accompanied by two copies of pressure test results of the pipe involved.

3.1.1.2 Water Main Fittings

Fittings for water mains shall be Tyton joints or mechanical joints and meet the requirements of AWWA C110 and AWWA C111. Fittings shall be cement mortar lined, meeting the requirements of AWWA C104. Bolts, nuts, and washers used for securing fittings shall be of similar materials. Bolts shall be stainless steel and meet the requirements of ASTM A 193, Grade BM8. Nuts shall be stainless steel and meet the requirements of ASTM A 194, Grade 8M.

3.1.1.3 Valves

Valves for water mains shall be suitable for ordinary waterworks service, intended to be installed in a normal position on buried pipelines for water distribution systems. Valves shall open counterclockwise and shall be equipped with a 2-inch-square AWWA standard operating nut. Unless otherwise specified, all valves shall be the non-rising stem type. The valves shall be standard pattern of a manufacturer whose products are approved by the Town and shall have the name or mark of the manufacturer, year valve casting was made, size and working pressure plainly cast in raised letters on the valve body. The valve bodies shall be cast iron, ductile iron, or other approved material mounted with approved non-corrosive metals. All wearing surfaces shall be bronze or other approved non-corrosive material, and there shall be no moving bearing or contact surfaces of iron in contact with iron. Contact surfaces shall be machined and finished in the best workmanlike manner, and all wearing surfaces shall be easily renewable.

Water valves for main lines larger than 8-inches shall be butterfly valves. Valves for mains 8-inches and smaller shall be gate valves. Valves shall be provided with hand wheels above grade or operating nuts below grade. All valves shall be approved by the Town prior to purchase and installation.

A. Butterfly Valves

Butterfly valves shall be rubber seated and shall meet the requirements of AWWA C504, Class 150B. Butterfly valves shall be suitable for direct burial. Shaft seals shall be standard O-ring

seals. Valve operators shall be of the traveling nut or worm gear type, sealed, gasketed, and permanently lubricated for underground service. Valve operators shall be constructed to the standard of the valve manufacturer to withstand all anticipated operating torques and designed to resist submergence in ground water. The Contractor shall provide an affidavit of compliance stating that the valve furnished fully complies with AWWA C504.

Acceptable Manufacturers: Mueller, or approved equal.

B. Gate Valves

Gate valves shall meet the requirements of AWWA C500 and AWWA C509, except they shall be iron body with epoxy coating inside and out with fusion welded resilient rubber wedge seat. Valve operators shall be constructed to the standard of the valve manufacturer to withstand all anticipated operating torques and designed to resist submergence in ground water.

Acceptable Manufacturers: Mueller, or approved equal.

C. Valve Boxes

Valve boxes shall be installed on all buried valves. The box shall be of cast iron, two-piece slip type standard design with a base corresponding to the size of the valve. The box shall be coal-tar painted by the manufacturer using its standard. The cover shall have the word "WATER" cast in it. Cover tabs shall be installed parallel to the direction of the pipe.

D. Valve Stem Extensions

Valve stem extensions shall have a 2-inch square operating nut and self-centering rockplate support. Valves with an operating nut more than 36-inches below grade shall have a valve stem extension to raise the operating nut to within 24 inches of the ground surface. The minimum valve stem length shall be 12-inches. Valve stems shall be made of steel and be painted with two coats of metal paint.

E. Valve Marker Posts

Posts shall have a 4-inch minimum square section and a minimum length of 42 inches, with beveled edges and shall contain at least one No. 3 bar reinforcing steel. The exposed portion of the marker posts shall be coated with two coats of paint per the Standard Detail. The size of the valve and the distance in feet to the valve shall be stenciled on the face of the post, using black paint and a stencil which will produce letters 2 inches high.

3.1.1.4 Fire Hydrants

Fire hydrants shall conform to AWWA C502 and shall be of standard manufacture.

Acceptable Manufacturers: M&H 929, Mueller Super Centurian 200, Clow Medallion, or approved equal.

A. End Connections

The end connections shall be mechanical joint or flanged, meeting the requirements of AWWA C110 and AWWA C111.

B. Hydrant Dimensions

Hydrant connection pipes shall be 6 inches inside diameter with 6-inch auxiliary gate valves. Barrels shall have a 7-inch minimum inside diameter. Hydrant length, measured from the bottom of the hydrant to the sidewalk ring, shall provide proper cover at each installed location. Valve openings shall be 5-1/4 inches minimum diameter. Hydrants shall have two 2 1/2 -inch hose

nozzles and one pumper nozzle with "storz" fitting. Nozzles shall be fitted with cast iron threaded caps with operating nuts of the same design and proportions as the hydrant stem nuts. Caps shall be threaded to fit the corresponding nozzles and shall be fitted with suitable neoprene gaskets of positive water tightness under test pressures. The direction of opening shall be counterclockwise and shall be clearly marked on the operating nut or hydrant top. Hydrants shall be with O-ring stem seals. The hydrant shall be painted with two coats of paint to match the requirements of the local fire department.

C. Hydrant Extensions

Hydrant extensions shall have a 6-inch minimum inside diameter and shall be gray cast iron or ductile iron and shall conform to the AWWA Standards for such castings. The drillings of the connecting flanges on the extensions shall match the drillings of the flanges on the hydrant. Hydrant extensions shall also include the necessary hydrant operating stem extensions.

D. Holding Spool

The holding spool shall be a mechanical joint holding spool with class 53 ductile iron pipe or class 53 ductile iron pipe with mega-lug connectors may be used.

Acceptable Manufacturers: Pacific Water Works, or approved equal.

E. Traffic Flange

Hydrants shall be provided with a traffic flange and shall be equipped with break away flange or break away bolts at the traffic flange which will allow the hydrant barrel to separate at this point with a minimum breakage of hydrant parts in case of damage. There shall also be provided at this point, a safety stem coupling on the operating stem that will shear at the time of impact.

F. Guard Posts

Guard posts for hydrants shall be provided where shown in the Plans. Guard posts shall be reinforced concrete having a compressive strength of 3,500 psi and shall be 6 feet in length by 6-inches in diameter. Reinforcing shall consist of a minimum of five 1/2-inch diameter x 5'-8" long deformed steel bars equally spaced.

3.1.1.5 Blow-Off Hydrant

Blow-off hydrants shall be self draining and non-freezing.

Acceptable Manufacturers: Aquarius, or approved equal.

3.1.1.6 Air Release Valves

Air release valves shall be designed to operate with potable water under pressure to permit discharging a surge of air from an empty line when filling and relieve the vacuum when draining the system. The valves shall also release an accumulation of air when the system is under pressure. This shall be accomplished in a single valve body designed to withstand 300 psi. The body and cover shall be cast iron conforming to ASTM A 48, Class 30. Floats shall be stainless steel conforming to ASTM A 240 and designed to withstand 1,000 psi. Seats shall be Buna N rubber. Internal parts shall be stainless steel or bronze.

Acceptable Manufacturers: APCO, or approved equal.

3.1.1.7 Tapping Tee

Tapping valves shall be furnished with flanged inlet end connections. The outlet ends shall conform in dimensions to the AWWA Standards for hub or mechanical joint connections, except

that the outside of the hub shall have a large flange for attaching a drilling machine. The seat opening of the valve must permit a diameter cut no less than 1/2-inch smaller than the valve size. Valves specifically designed for tapping meeting the requirements of AWWA C500, and valves meeting the requirements of AWWA C509, will be permitted. Tapping valves shall be of the same type as other valves on the project. Tapping sleeves shall be ductile iron, stainless steel, or other approved material.

3.1.1.8 Concrete Blocking

Concrete for blocking shall be cured for five (5) days and reach a strength of 2,500 psi at 28 days.

3.1.1.9 Detectable Marking Tape

Detectable marking tape shall consist of inert polyethylene plastic that is impervious to all known alkalis, acids, chemical reagents, and solvents likely to be encountered in the soil, with a metallic foil core to provide the most positive detection and pipeline locators. The tape shall be color coded blue and shall be imprinted continuously over its entire length in permanent black ink "Caution Water Line" prominently shown.

Acceptable Manufacturers: Terra Tape, or approved equal.

3.1.1.10 Toning Wire

Toning wire shall be 12-gauge neoprene coated wire blue in color.

3.1.1.11 Main Line Casing

Casing pipe for distribution and transmission mains shall be welded steel meeting the requirements of ASTM designation A53.

3.1.2 Construction Details

Installation of pipe, fittings, and appurtenances shall meet the requirements of the standard details and the manufacturers recommendations.

3.1.2.1 Installation of Water Main Pipe

Water main pipe shall be installed per Sections 3.2 and 3.3.

3.1.2.2 Installation of Water Main Fittings

Water main fittings shall be installed per Sections 3.2 and 3.3.

3.1.2.3 Installation of Valves For Water Mains

All valves shall be inspected upon delivery in the field to ensure proper working order before installation. They shall be set and jointed to the pipe in the manner as set forth in the AWWA Standards for the type of connecting ends furnished. The valves shall also be carefully inspected for injury to the outer protective coatings. At all places where the coating has been ruptured or scraped off, the damaged area shall be cleaned to expose the iron base installation, and the cleaned area shall then be recoated with two or more field coats of approved protective coating. Upon delivery at the work site, all valves shall be opened to prevent the collection of water in the valve. Valves shall have the interiors cleaned of all foreign matter and shall be inspected both in open and closed position prior to installation. Valves and valve boxes shall be set plumb and valve boxes shall be placed over the valve or valve operator in a manner that the valve box does not transmit shock or stress to the valve. The lower casting of the unit is installed first, in a manner as to be supported by a minimum backfill or by a Styrofoam collar not less than 2 inches in thickness. The casting shall

not rest directly upon the body of the valve or upon the water main. Backfill shall be carefully tamped around the valve box to a distance of 3 feet on all sides or to the undisturbed face of the trench if it is closer. The cast iron valve box cover shall be set flush with the roadbed or finished paved surface.

Where required, a valve marker post shall be furnished and installed with each valve. Valve marker posts shall be placed at the edge of the right-of-way opposite the valve and be set with 18 inches of the post exposed above grade. The exposed portion of the valve marker posts shall be painted with two coats of concrete paint in a color selected by the Town, and then the size of the valve and the distance in feet to the valve shall be stenciled with black paint on the face of the post, using a stencil which will produce letters 2 inches high.

3.1.2.4 Installation of Fire Hydrants

Fire hydrants shall be installed per Sections 3.4.

3.1.2.5 Installation of Blow-Off Assemblies

Blow-off assemblies shall be constructed at the locations shown in the Plans and in accordance with the Standard Plans.

3.1.2.6 Installation of Air Release Valves

The air release valves shall be installed as shown in the Standard Details. All piping shall be sloped to permit escape of any entrapped air. Backfilling and compaction shall be as specified in Section 3.2. After installation, all valves shall be subjected to field testing and disinfected as outlined in Section 3.5. Should any defects in design, materials, or workmanship appear during these tests, the Contractor shall correct such defects with the least possible delay and to the satisfaction of the Town.

3.1.2.7 Installation of Tapping Tee

Tapping tees and saddles shall be installed per the manufacturer's recommendations at location approved by the Town.

3.1.2.8 Installation of Concrete Thrust Blocking

Concrete thrust blocking, as detailed in the Standard Details, shall be placed at bends, tees, dead ends, and crosses. Blocking shall be commercial concrete poured in place. Concrete blocking shall bear against solid undisturbed earth at the sides and bottom of the trench excavation and shall be shaped so as not to obstruct access to the joints of the pipe or fittings.

3.1.2.9 Installation of Detectable Marking Tape

Detectable marking tape shall be installed over all water lines including services lines. The tape shall be placed approximately 12-inches to 18-inches below finished grade and shall extend its full length.

3.1.2.10 Installation of Toning Wire

Toning wire shall be wrapped around the pipe and service lines. Toning wire shall be tied off at all valves and service meters and extended to the top of the box.

3.1.2.11 Installation of Main Line Casing

Casing pipe shall be installed under WSDOT rights-of-way and at all other locations shown on the plan. Casing pipe shall be installed per the Standard Details.

3.2 TRENCH EXCAVATION, BEDDING AND BACKFILL

The work covered in this Section includes excavating, bedding, and backfilling water mains, fittings and appurtenances.

3.2.1 Definitions

A. Trench Widths

Trench width is from trench wall to trench wall, outside of shoring.

B. Unsuitable Material

Material removed because it is unsatisfactory for foundations is defined as unsuitable foundation material. Material removed in trenching which is unsuitable for replacement in the backfill is defined as unsuitable backfill material.

C. Bedding

Bedding is the method or material used to transmit load from the pipe into the foundation or into the side support.

D. Backfill Materials

Backfill materials include all materials placed above the bedding up to the underside of the pavement or surfacing materials.

E. Foundation Material

Foundation material includes all material placed below the bedding material to replace excavated unsuitable material.

3.2.2 Materials

Materials shall meet the following requirements:

3.2.2.1 Bedding Material

Bedding material for water lines shall be a clean sand/gravel mixture free from organic matter and conforming to the following gradation:

Sieve Size	Percent Passing
3/4 square	100
3/8 square	70-100
U.S. No. 4	55-100
U.S. No. 10	35-95
U.S. No. 20	20-80
U.S. No. 40	10-55
U.S. No. 100	0-10
U.S. No. 200	0-3

All percentages are by weight.

3.2.2.2 Bank Run Gravel for Trench Backfill

Trench backfill material shall be a clean sand/gravel mixture conforming to the following gradation:

Sieve Size	Percent Passing
2-1/2 square	100
1/4 square	25 min
U.S. No. 200	10.0 max
Dust Ratio	2/3 max

Sand Equivalent 30 min

All percentages are by weight.

Bank run gravel material retained on a 1/4-inch sieve shall contain no more than 0.20 percent by weight of wood waste.

3.2.2.3 Drain Rock

Drain rock material shall be a clean sand/gravel mixture conforming to the following gradation:

Sieve Size	Min.	Max.
1 square	100	
3/4 square	80	100
3/8 square	10	40
U.S. No. 4	0	4
U.S. No. 200	0	2.0

All percentages are by weight.

3.2.2.4 Foundation Material

Foundation material shall meet the requirements of Bedding Material or Bank Run Gravel for Trench Backfill. The Town will make the decision based on the quality of materials proposed.

3.2.3 Construction Details

Installation of pipe and fittings shall meet the requirements of the standard details and the manufacturers recommendations.

3.2.4 General

All material excavated from trenches and piled adjacent to the trench or in a roadway or public thoroughfare shall be piled and maintained so that the toe of the slope of the spoil material is at least 2 feet from the edge of the trench. It shall be piled in a manner to prevent surface water from flowing into the excavation and in a manner that will cause a minimum of inconvenience to public travel. Free access shall be provided to all fire hydrants, water valves, and meters; and clearance shall be left to enable the free flow of storm water in all gutters, conduits, and natural watercourses.

The trench width shall be as shown in the Standard Details and shall be excavated to the depth and grade as given by the Engineer. Trenches must be of sufficient width in the pipe zone to permit proper installation and bedding of the pipe and to provide the required compaction of backfill. Above the top of the pipe zone, the Contractor may excavate to any width. Placement of bedding material shall precede the installation of all pipe. This shall include necessary leveling of the native trench bottom or the top of the foundation material as well as placement and compaction of required bedding material to a uniform grade so that the entire length of pipe will be supported on a uniformly dense unyielding foundation. When, after excavating to the foundation level, the material remaining in the trench bottom is determined to be unsuitable by the Engineer, excavation shall be continued to such additional depth and width as required by the Engineer. Unsuitable foundation materials shall be disposed of at an approved site. The trench foundation shall be backfilled to the bottom of the pipe zone with Foundation Material, or other suitable material, and compacted to form a uniformly dense, unyielding foundation. Excavation for structures connected

to the pipelines shall be sufficient to provide a minimum of 12 inches between their surfaces and the sides of the excavation.

Where pipe is to be placed in a new embankment, the embankment shall be constructed as shown in the Plans or as directed by the Engineer for a distance each side of the pipe location of not less than five times the diameter and to a minimum height equal to one-half of the outside diameter of the pipe. The embankment material shall be compacted to 95 percent density and the moisture content at the time of compaction shall be between optimum and 3 percentage points below optimum as determined by the Compaction Control Tests specified in WSDOT Section 2-03.3(14)D. The trench shall then be excavated to a width as specified in WSDOT Section 2-09.4, and the pipe installed in accordance with the Standard Plan.

3.2.4.1 Ungraded Streets

On ungraded streets, when grading is not called for, the depth of trench excavation shall be as shown in the Plans. Where the Plans show the pipe is to be laid above the existing ground surface, an embankment fill shall be made and compacted to conform with the section shown in the Plans, and the water main trench shall be excavated therein. That portion of the embankment below the bottom of the pipe shall be compacted with rollers or mechanical compactors under controlled moisture conditions as required under Method B of WSDOT Section 2-03.3(14)C.

3.2.4.2 Clearing and Grubbing in Ungraded Streets

On ungraded streets, where clearing and grubbing is not called for in the Contract, the area to be excavated or filled shall be cleared and grubbed by the Contractor. This work shall consist of the removal and disposal of all logs, stumps, roots, brush, and other refuse within 5 feet of the centerline of the pipe.

3.2.4.3 Removal of Existing Street Improvements

Removal of existing street improvements and pavement from driveways and sidewalks shall be performed as specified in WSDOT Section 2-02 for projects in WSDOT right-of-way and as required by Pierce County Public Works in Pierce County rights-of-way and easement. Stockpiling of waste materials along the trench will not be allowed.

3.2.4.4 Grade and Alignment

The Contractor shall verify the locations and establish the depth of the existing water mains at the points where connections are to be made prior to trenching for the pipelines. The profile shall be adjusted so neither a high spot or a low spot is created adjacent to the connection to the existing water mains. The depth of trenching for water mains shall be such as to give a minimum cover of 36-inches over the top of the pipe in improved areas and 42-inches over the top of the pipe in unimproved areas, unless otherwise specified. Deeper excavation may be required due to localized breaks in grade, or to install the new main under existing culverts or other utilities where necessary. Where the profile of the pipeline and the ground surface is shown in the Plans, the pipeline shall be laid to the elevation shown regardless of depth. The excavation shall be to such depth that the minimum cover over the valve nuts shall be 12-inches.

3.2.4.5 Dewatering

The Contractor shall furnish, install, and operate all necessary equipment to keep excavations above the foundation level free from water during construction, and shall dewater and dispose of the water so as not to cause injury to public or private property or nuisance to the public. Sufficient pumping equipment in good working condition shall be available at all times for all

emergencies, including power outage, and shall have available at all times competent workers for the operation of the pumping equipment.

3.2.4.6 Shoring

The Contractor shall provide all materials, labor, and equipment necessary to shore trenches to protect the work, existing property, utilities, pavement, etc., and to provide safe working conditions in the trench. The Contractor may elect to use any combination of shoring and overbreak, tunneling, boring, sliding trench shield, or other method of accomplishing the work consistent with applicable local, State, or Federal safety codes. If workers enter any trench or other excavation 4 feet or more in depth that does not meet the open pit requirements of WSDOT Section 2-09.3(3)B, it shall be shored. The Contractor alone shall be responsible for worker safety. Upon completing the work, the Contractor shall remove all shoring unless the Plans or the Town direct otherwise. Shoring to be removed, or moveable trench shields or boxes, shall be located at least 2 1/2 pipe diameters away from pipe if the bottom of the shoring, shield, or box extends below the top of the pipe, unless a satisfactory means of reconsolidating the bedding or side support material disturbed by shoring removal can be demonstrated.

3.2.4.7 Trench Excavation

The Contractor shall perform all excavation of every description and in whatever materials encountered to the depth indicated in the Plans. All excavations shall be made by open cut unless otherwise provided for trenches shall be excavated to true and smooth bottom grades and in accordance with the lines given by the Engineer. The trench bottom shall provide uniform bearing and support for each length of pipe. Bell holes shall be excavated to the extent necessary to permit accurate work in making and inspecting the joints. The banks of the trenches shall be kept as nearly vertical as soil conditions will permit, and where required to control trench width or to protect adjacent structures, the trench shall be sheeted and braced. Trench widths to 1 foot above the top of the pipe shall not exceed 30 inches maximum or 1 1/2 times the outside diameter of the pipe plus 18-inches whichever is greater. Standard excavating equipment shall be adjusted so as to excavate the narrowest trench possible. Trench excavation shall be not more than 400 feet ahead of the pipe laying operation and all trenches shall be closed up at the end of the day. The Contractor shall exercise sound engineering and construction practices in excavating the trench and maintaining it so that no damage will occur to any foundation, structure, pole line, pipe line, or other facility because of slough or slopes, or from any other cause. If, as a result of the excavation, there is disturbance of the ground which may endanger other property, the Contractor shall immediately take remedial action at no expense to the Town. No act, representation, or instruction of the Town shall in any way relieve the Contractor from liability for damages or costs that result from trench excavation. Care shall be taken not to excavate below the depth specified. Excavation below that depth shall be backfilled with pipe bedding material and compacted as specified herein.

3.2.4.8 Rock Excavation

Rock excavation shall cover the removal and disposal of rock that requires systematic drilling and blasting for its removal, and also boulders exceeding 1/2 cubic yard. Ledge rock, boulders, or stones shall be removed to provide a minimum clearance of 4 inches under the pipe. Hardpan, hard clay, glacial till, sandstone, siltstone, shale, or other sedimentary rocks which are soft, weathered, or extensively fissured will not be classified as rock excavation. Rock is defined as material having a modulus of elasticity of more than 200,000 psi or unconfined compressive strength at field moisture content of more than 2,000 psi. Materials removed shall be replaced with

selected native materials from adjacent trenches or from imported bedding or backfill as directed by the Town.

3.2.4.9 Extra Trench Excavation

Changes in grades of the water main from those shown in the Plans may be necessary because of unplotted utilities, or for other reasons. If, in the opinion of the Town, it is necessary to adjust, correct, relocate, or in any way change the line and grade, such changes shall be made by the Contractor under the terms of these Specifications.

3.2.4.10 Removal and Replacement of Unsuitable Materials

Whenever in excavating the trench for water mains, the bottom of the trench exposes peat, soft clay, quicksand, or other unsuitable foundation material, such material shall be removed to the depth directed by the Town and backfilled with foundation material. Material removed from the trench that is unsuitable for backfill shall be removed and hauled to a waste site. If material is not available within the limits of the project for backfilling the trench, the Contractor shall furnish suitable material meeting the requirements of Foundation Material, Section 3.2.2.4. All unsuitable material shall be loaded directly into trucks and hauled to a waste site obtained by the Contractor and approved by the Town.

3.2.4.11 Bedding the Pipe

Placement of pipe zone bedding shall be performed in accordance with these requirements and the Standard Plans. Pipe zone bedding shall provide uniform support along the entire pipe barrel, without load concentration at joint collars or bells. All adjustment to line and grade shall be made by scraping away or filling in with bedding material under the body of the pipe and not by blocking or wedging. Bedding disturbed by pipe movement, or by removal of shoring movement of a trench shield or box, shall be reconsolidated prior to backfill. Pipe zone bedding shall be as specified and shall be placed in loose layers and compacted to 90 percent maximum density. Bedding shall be placed, spread, and compacted before the pipe is installed so that the pipe is uniformly supported along the barrel. Lifts of not more than 6-inches in thickness shall be placed and compacted along the sides of the pipe to the height shown in the Standard Details. Material shall be worked carefully under the pipe haunches and then compacted. If the Town determines that the material existing in the bottom of the trench is satisfactory for bedding the pipe, the bedding material specified in the Standard Details is not required, provided the existing material is loosened, regraded, and compacted to form a dense, unyielding base. Material shall be placed to a minimum depth of 4 inches under the pipe and 6 inches over the top of the pipe. The bedding material shall be rammed and tamped around the pipe to 95 percent of maximum density by approved hand-held tools, so as to provide firm and uniform support for the full length of the pipe, valves, and fittings. Care shall be taken to prevent any damage to the pipe.

3.2.4.12 Backfilling Trenches

Prior to backfilling, all form lumber and debris shall be removed from the trench. Sheeting used by the Contractor shall be removed just ahead of the backfilling. Backfill up to 12 inches over the top of the pipe shall be evenly and carefully placed. Materials capable of damaging the pipe or its coating shall be removed from the backfill material. The remainder of the material shall be placed by dumping into the trench by any method at the option of the Contractor, and shall be compacted as specified hereinafter. A minimum 3-inch sand cushion shall be placed between the water main and existing pipelines or other conduits when encountered during construction and as directed by the Engineer.

Trenches shall be backfilled as soon after the pipe laying as possible, except at thrust blocking and fittings which must be approved by the Town prior to cover. Backfill above the pipe zone shall be accomplished in such a manner that the pipe will not be shifted out of position nor damaged by impact or overloading. If pipe is being placed in roadways or paved areas, backfill above the pipe zone shall be placed in horizontal layers no more than 6 inches thick and compacted to 95 percent maximum density. If pipe is being placed outside of roadways in non-paved areas, backfill above the pipe zone shall be placed in horizontal layers no more than 6 inches thick and shall be compacted to 85 percent maximum density. All compaction shall be in accordance with the Compaction Control Test of WSDOT Section 2-03.3(14)D. Material excavated from the trench shall be used for backfill above the pipe zone, except that organic material, frozen lumps, wood, rocks, or pavement chunks larger than 6 inches in maximum dimension shall not be used. Materials determined by the Town to be unsuitable for backfill at the time of excavation shall be removed and replaced with Bank Run Gravel for Trench Backfill as specified in Section 3.2.2.2. When it is required that a blanket of select material or bank run gravel is to be placed on top of the native backfill, the backfill shall be placed to the elevations shown in the Plans, or to the elevations specified by the Town. Surface material shall be loosened to whatever depth is required to prevent bridging of the top layer, but shall in no case be less than 18 inches. The Contractor shall not operate tractors or other heavy equipment over the top of the pipe until the backfill has reached a height of 2 feet above the top of the pipe.

3.2.4.13 Compaction of Backfill

Backfill shall be compacted to at least 95 percent of maximum density as specified in WSDOT Section 2-03.3(14)D in paved areas, WSDOT rights-of-way or as required by Pierce County Public Works in Pierce County right-of ways and easements. At locations where paved streets, roadway shoulders, driveways, or sidewalks will be constructed or reconstructed over the trench, the backfill shall be spread in layers and be compacted by mechanical tampers. In such cases, the backfill material shall be placed in successive layers not exceeding 6 inches in loose thickness, and each layer shall be compacted with mechanical tampers to the density specified herein. Mechanical tampers shall be of the impact type as approved by the right-of-way owner.

Backfill shall be compacted to at least 85 percent of maximum density as specified in WSDOT Section 2-03.3(14)D in unimproved areas and under lawns and landscaping.

3.3 PIPE INSTALLATION

Pipe shall be installed in accordance with the manufacturer's printed specifications and instructions, and to the standards of the AWWA for installing the type of pipe used. The Contractor shall provide all tools and equipment, including any special tools required for installing each particular type of pipe used. Short lengths of pipe supplied by the manufacturer shall be used whenever possible to provide the proper spacing of valves, tees, or special fittings.

3.3.1 Materials

Materials shall meet the requirements of Section 3.1.

3.3.1.1 Dewatering of Trench

Where water is encountered in the trench, it shall be removed during pipe bedding and laying operations and the trench so maintained until the ends of the pipe are sealed and provisions

are made to prevent floating of the pipe. Trench water or other deleterious materials shall not be allowed to enter the pipe at any time.

3.3.1.2 Handling of Pipe and Fittings

Pipe and fittings shall be handled in a manner that will prevent damage to the pipe, pipe lining, or coating. Pipe and fittings shall be loaded and unloaded using hoists and slings in a manner to avoid shock or damage, and under no circumstances shall they be dropped, skidded, or rolled against other pipe. If any part of the coating or lining is damaged, repair thereof shall be made by the Contractor in a manner satisfactory to the Town. Damaged pipe will be rejected, and the Contractor shall immediately place all damaged pipe apart from the undamaged and shall remove the damaged pipe from the site within 24 hours. Threaded pipe ends shall be protected by couplings or other means until laid. The pipe and fittings shall be inspected for defects. Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations, and any pipe or fitting that has been installed with dirt or foreign material in it shall be removed, cleaned, and relayed. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or by other means approved by the Engineer to ensure cleanliness inside the pipe.

3.3.1.3 Cutting Pipe

Whenever it becomes necessary to cut a length of pipe, the cut shall be made by abrasive saw or by a special pipe cutter. All pipe ends shall be square with the longitudinal axis of the pipe and shall be reamed and otherwise smoothed so that good connections can be made. Threads shall be cleanly cut. Oxyacetylene torch cutting of ductile iron pipe shall not be allowed.

3.3.1.4 Laying of Pipe

After an accurate grade line has been established, the pipe shall be laid in conformity with the established line and grade in the properly dewatered trench. Mud, silt, gravel, and other foreign material shall be kept out of the pipe and off the jointing surfaces. All pipe laid in the trench to the specified line and grade shall be kept in longitudinal compression until the backfill has been compacted to the crown of the pipe. The Contractor shall exercise care in matching pipe joints for concentricity and compatibility. In no case shall two pipes be joined together with ends having the maximum manufacturer's tolerance.

When pipe laying is not in progress, the forward end of the pipe shall be kept tightly closed with an approved temporary plug. Where pipe joints must be deflected within the manufacturer's recommended limits to accommodate required horizontal or vertical curvature, it shall first be joined in straight alignment and then deflected as required. Where pipe joints must be deflected to an amount greater than the manufacturer's recommended limits to accommodate required horizontal or vertical curvature, the curves shall be achieved with a series of tangents and fittings, subject to the approval of the Town.

3.3.1.5 Laying Pipe on Curves

PVC pipe 12 inches and under may be bent to allow for slight changes in direction. The minimum bending radius shall be as follows:

Size Minimum	Bending Radius
4-inch	125 feet
6-inch	175 feet
8-inch	225 feet
10-inch	275 feet
12-inch	325 feet

Axial deflection at the pipe joints shall not be allowed. PVC Pipe 14 inches in diameter may be bent to a minimum radius of 400 feet. For 16-inch diameter and larger pipe, slight changes in direction may be accomplished by axial deflection of the pipe joint. The maximum deflection allowed at each joint is one degree or that allowed by the pipe manufacturer, whichever is less. For changes in direction greater than one degree per joint, fittings shall be used.

3.3.1.6 Cleaning and Assembling Joint

All parts of the pipe ends, couplings, fittings, and appurtenances shall be cleaned to remove oil, grit, or other foreign matter from the joint. Care shall be taken to keep the joint from contacting the ground. Pipe not furnished with a depth mark shall be marked before assembly to ensure visual observation of the work.

3.3.1.7 Rubber Gasketed Joints

In laying pipe with rubber gaskets, the pipe shall be handled carefully to avoid knocking the gasket out of position or contaminating it with foreign material. Any gasket so disturbed shall be removed, cleaned, relubricated if required, and replaced before joining the sections. The pipe shall be properly aligned before joints are forced home. Sufficient pressure shall be applied in making the joint to ensure that the joint is home, as defined in the standard installation instructions provided by the pipe manufacturer. The Contractor may use any method acceptable to the Town for pulling the pipe together, except that driving or ramming by hand or machinery will not be permitted. Any pipe damaged during joining and joint tightening shall be removed and replaced. Care shall be taken to properly align the pipe before joints are entirely forced home. During insertion of the tongue or spigot, the pipe shall be partially supported by hand, sling or crane to minimize unequal lateral pressure on the gasket and to maintain concentricity until the gasket is properly positioned. Since most gasketed joints tend to creep apart when the end of the pipe is deflected and straightened, such movement shall be held to a minimum once the joint is home. Sufficient restraint shall be applied to the line to ensure that joints once home are held so by compacting backfill material under and alongside the pipe or by other acceptable means. At the end of the work day, the last pipe shall be blocked in such a manner as may be required to prevent creep.

3.3.1.8 Connections

A. Connections to Existing Mains

Connections to the existing water main(s) shall not be made without first making the necessary arrangements with the Town in advance. Work shall not be started until all the materials, equipment, and labor necessary to properly complete the work are assembled on the site. If the connection to the existing system involves turning off the water, the Contractor shall be responsible for notifying the residents affected by the shutoff. The Town will advise which property owners are to be notified. The Contractor may be required to perform the connection during times other than normal working hours. The Contractor shall not operate any valves on the existing system without specific permission of the Town. For connection by any method other than those approved by the Town, the Contractor shall furnish a detailed sketch for approval not less than two weeks prior to

the expected construction. Existing water mains shall be cut by the Contractor. The Contractor shall remove the portions of pipe to provide for the installation of the required fittings at the points of connection. All damage caused by the Contractor's operations to existing piping to remain in-service shall be repaired by the Contractor at no expense to the Town. The Contractor shall determine the exact length of the existing water main that must be removed.

The pipe ends shall be beveled to prevent damage to the transition coupling gasket during installation of the coupling. The exterior of the existing pipe end shall be cleaned to a sound, smooth finish before installation of the coupling. Transition couplings shall be installed by the Contractor and shall be provided with a polyethylene wrap. The polyethylene wrap shall be wrapped loosely around the pipe, fittings, and couplings, and secured with 2-inch-wide polyethylene adhesive tape. Pipelines in which the couplings are installed shall be wrapped a minimum of 3 feet on each side of the coupling. Joints or seams in the plastic film wrap shall be made using the 2-inch-wide polyethylene adhesive tape. The polyethylene wrap need not be watertight, but no part of the pipe or coupling shall be exposed to the backfill. Care shall be exercised during backfilling to prevent the plastic film wrap from being punctured or otherwise damaged. When work is once started on a connection, it shall proceed continuously without interruption, and as rapidly as possible until completed. No shutoff of mains will be permitted overnight, over weekends, or on holidays.

B. Jointing of Dissimilar Pipe

Dissimilar pipe shall be jointed by use of a factory-fabricated adapter coupling as detailed in the Plans or as approved by the Town.

C. Plugs and Caps

Plugs and caps for pipe branches, stubs, or other pipeline ends to be used in the future, shall be made of an approved material and shall be secured in a place with thrust block.

D. Maintaining Service

Where existing services are to be transferred from old to new mains, the Contractor shall plan and coordinate its work with the Town so that service will be resumed with the least possible inconvenience to customers. To supply customers with water during the construction of a water main project where any Section of the pipe has passed satisfactory hydrostatic and bacteriological tests, the Town reserves the right to install service connections into the section of new pipe at such locations as the Town may elect. The installation of any such service connections by the Town shall not be construed by the Contractor as an acceptance by the Town of any part of the work required.

3.4 INSTALLATION OF HYDRANTS

3.4.1 Description

This section covers the installation of fire hydrants intended for ordinary water works service.

3.4.2 Materials

Materials shall meet the requirements of Section 3.1.

3.4.3 Construction Details

Installation of fire hydrants shall meet the requirements of the standard details and the manufacturer's recommendations.

3.4.4 Setting Hydrants

Where shown in the Plans, hydrants shall be installed in accordance with the Standard Details. In addition, a minimum 3-foot radius unobstructed working area shall be provided around all hydrants. The breakaway flange shall be set 2 inches above finished grade. All hydrants shall be set on concrete blocks as shown in the Standard Details. The hydrant barrel drain shall waste into a pit of porous gravel material situated at the base of the hydrant as shown in the Standard Details. All hydrants shall be inspected upon delivery in the field to ensure proper working order. After installation, fire hydrants, auxiliary gate valves, and other appurtenances thereto shall be subjected to a hydrostatic test and disinfection procedures as specified in Section 3.6. After all installation and testing is complete, the exposed portion of the hydrant shall be painted with one field coat. The type and color of paint will be designated by the Town. Any hydrant not in service shall be identified by covering with a burlap or plastic bag properly secured.

3.4.4.1 Hydrant Connections

Hydrant laterals shall consist of one continuous section of 6-inch ductile iron pipe from the main to the hydrant and shall include an auxiliary gate valve set vertically and placed in accordance with the Standard Plan.

A. Hydrant Restraints

The thrust created in the hydrant lateral shall be restrained as shown in the Standard Plans.

B. Auxiliary Gate Valves and Valve Boxes

Auxiliary gate valves and valve boxes shall be installed in accordance with Section 3.1 and the Standard Details except that the end connections shall be provided as required for the proper joint restraint system, or the bells shall provide sufficient clearance between the body of the valve and the hub to permit the installation of shackles.

C. Hydrant Guard Posts

Hydrant guard posts shall be constructed at the locations shown in the Plans and in accordance with the Standard Plans. The exposed portion of each guard post shall be painted to match the hydrant.

3.4.4.2 Resetting Existing Hydrants

Where existing hydrants are shown in the Plans for adjustments to conform to a new street alignment or grade or both, the hydrant shall be relocated without disturbing the location of the hydrant lateral tee at the main. The method for thrust restraint for the hydrant lateral shall be determined by the conditions found in the field and shall be constructed as directed by the Engineer. This work shall conform to Section 3.4 and the Standard Details.

3.4.4.3 Moving Existing Hydrants

Existing hydrants shall be moved where shown in the Plans. When the existing hydrant lateral tee does not accommodate a new hydrant location, a new hydrant lateral tee shall be installed in the main. The existing hydrant lateral tee shall be removed from the main (if said main is to remain active), and a new section of pipe inserted into the water main in place of the existing hydrant lateral tee. Where the existing main to which the existing hydrant lateral tee is connected, and is to be abandoned or temporarily activated after the existing hydrant is moved, the open end of the hydrant lateral pipeline shall be plugged (and temporary thrust restraint provided if temporarily reactivated). All work shall meet the requirements of Section 3.4 and the Standard Details.

3.4.4.4 Reconnecting Existing Hydrants

Existing hydrants shall be reconnected where shown in the Plans. The location and elevation of the existing hydrant shall remain unchanged, but the existing hydrant connection is changed to connect with a new hydrant tee provided in a new main. Hydrant reconnections shall meet the requirements of Section 3.4 and the Standard Details.

3.4.4.5 Hydrant Extensions

The Contractor shall furnish and install hydrant extensions where required. The hydrant extensions, operating stems for the hydrant main valves, and sidewalk flanges shall conform to AWWA C502. After installation, the extended fire hydrant shall be subjected to a hydrostatic pressure test and disinfection procedure as specified in Section 3.6.

3.5 SERVICE CONNECTIONS

3.5.1 General

This work consists of installing the service connections from the main to the water meter for the premises served. Service connections for commercial as well as residential locations are included.

3.5.2 Materials

Materials shall meet the requirements of the following sections:

Service Saddles

Saddles shall be ductile iron, bronze, or stainless steel. Saddles used for 3/4 -inch and 1-inch services shall be single strap for DIP and PVC and double stainless steel straps on A/C water lines and may be either AWWA tapered thread or female iron pipe thread outlet. Saddles used for 1-1/2 -inch and 2-inch services shall be double strap and shall be female iron pipe thread outlet. Saddles shall be formed for PVC pipe and have flat, stainless steel straps.

Acceptable Manufacturers: Smith Blair, or approved equal.

Corporation Stops

Corporation stops shall be made of bronze alloy. Corporation stops used with 3/4-inch and 1-inch outlet saddles shall have either AWWA tapered thread or male iron pipe thread inlets and outlet connections compatible with polyethylene tubing. Thread patterns for the saddle outlet and corporation stop inlet shall be the same. Corporation stops used with 1-1/2-inch and 2-inch outlet saddles shall have male iron pipe thread inlets and outlet connections compatible to connecting with polyethylene tubing.

Acceptable Manufacturers: Mueller, or approved equal.

Service Pipe

Polyethylene tubing for service lines shall meet the requirements of AWWA C901. Tubing shall be high molecular polyethylene with a 200 psi mass rating. Tubing used for 3/4-inch and 1-inch shall be either SIDR 7 (iron pipe size). Tubing used for 1-1/2-inches and 2 inches shall be iron pipe size. One an a half-inch (1 1/2") and two-inch (2") services shall be provided with a gate valve at the main line tap. The gate valve shall have a valve box.

Acceptable Manufacturers: Discopipe, or approved equal.

Service Fittings

Fittings used for service connections shall be made of bronze alloy. Fittings used for polyethylene tubing shall be compression type. Stainless steel liners shall be used when utilizing compression fittings on polyethylene tubing. Bronze threaded nipples and fittings shall meet the requirements of ANSI B-16.15, ASA 125 pound class.

Acceptable Manufacturers: Mueller, or approved equal.

Meter Setters

Meter setters shall be manufactured and tested in accordance with all applicable parts of AWWA C800. Meter setters shall have an angle ball meter stop inlet with drilled padlock wing, an outlet angle-ball with brass level handle, measure 18 inches in height, and shall have inlet and outlet threads compatible with fittings connecting to service pipes. Meter setters for 3/4 -inch and 1-inch services shall have meter saddle nuts for installation and removal of the meter. Meter setters for 1-1/2-inch and 2-inch services shall be equipped with a locking bypass.

Acceptable Manufacturers: Mueller, or approved equal.

Meters

Service meters shall meet the requirements of AWWA C700. Service meters shall read in cubic feet.

Acceptable Manufacturers: Sensus SRII provided by the Town, or approved equal.

Meter Boxes

Meter boxes and covers located in the non-traffic areas shall be constructed of high density polyethylene. High density polyethylene meter boxes and covers shall have a tensile strength conforming to ASTM D 638. Meter box covers shall include a cast iron reading lid. Meter boxes located in traffic areas shall be constructed of reinforced concrete. Traffic covers shall be constructed of either aluminum or steel. Meter boxes and covers shall be designed for H-20 loading.

Acceptable Manufacturers: Carson #1419, or approved equal.

Service Line Sleeve

Service lines sleeves shall be schedule 80 PVC.

3.5.3 Construction Details

All service connections to water mains, shall be made using saddles as specified and be of the size and type suitable for use with the pipe being installed. Service pipelines shall be installed perpendicular to the main, unless approved otherwise by the Town. The depth of trenching for service connection piping shall provide a minimum of 36-inches of cover over the top of the pipe. Particular care shall be exercised to ensure that the main is not damaged by the work undertaken to install the service. Excavating and backfilling for service connections shall be as specified in Section 3.2, except that the service pipeline shall be installed under pavement, curbs, and sidewalks by boring methods approved by the governmental agency (the Town of South Prairie, Pierce County, or WSDOT) having jurisdiction over the roadway. Service pipes shall be cut using a tool or tools specifically designed to leave a smooth, even, and square end on the piping material to be cut. Cut ends shall be reamed to the full inside diameter of the pipe. Pipe ends to be connected using

couplings which seal to the outside surface of the pipe shall be cleaned to a sound, smooth finish before the couplings are installed. Where shown in the Plans, existing service connections shall be reconnected to the new mains. The location of existing service connections shall be verified in the field by the Contractor. The Contractor shall notify affected customers of the service interruption at least 24 hours prior to service interruption. Pipe materials used to extend or replace existing service connections beyond the meter box shall be polyethylene pipe. All fittings, appurtenances, and other miscellaneous materials on the sections of existing pipe which have been removed shall become the property of the Contractor.

3.5.4 Flushing and Disinfection

All service pipe and appurtenances shall be pre-chlorinated prior to installation per Section 3.6. After installation, the service connection shall be flushed prior to connecting the meter.

3.6 TESTING AND DISINFECTION

3.6.1 General

All mains and appurtenances shall be hydrostatically tested and disinfected.

3.6.2 Materials

3.6.2.1 Dry Calcium Hypochlorite

As each length of pipe is laid, sufficient high test calcium hypochlorite (65-70% chlorine) shall be placed in the pipe to yield a dosage of not less than 50 mg/l available chlorine, calculated on the volume of the water which the pipe and appurtenances will contain. The number of grams of 65% test calcium hypochlorite required for a 20-foot length of pipe equals $(0.008431)x(d)^2$, in which "d" is the pipe diameter in inches.

3.6.2.2 Sodium Hypochlorite

Sodium hypochlorite, commercial grade (12.5% Cl) or liquid household bleach (5-6% Cl), may be substituted for the chlorine gas-water mixture. This liquid chlorine compound may be used full strength or diluted with water and injected into the main in correct proportion to the fill water so that dosage applied to the water will be at least 50 mg/l.

3.6.3 Hydrostatic Pressure Test

All water mains and appurtenances shall be tested in sections of convenient length under a hydrostatic pressure equal to 150 psi in excess of that under which they will operate and in no case shall the test pressure be less than 200 psi. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished and operated by the Contractor. The pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All thrust blocks shall be in place and time allowed for the concrete to cure before testing. Where permanent blocking is not required, the Contractor shall furnish and install temporary blocking and remove it after testing. The mains shall be filled with water and allowed to stand under pressure a sufficient length of time to allow the escape of air and allow the lining of the pipe to absorb water. The Town will furnish the water necessary to fill the pipelines for testing purposes at a time of day when sufficient quantities of water are available for normal system operation. The test shall be accomplished by pumping the main up to the required pressure, stopping the pump for 15 minutes, and then pumping the main up to the test pressure again. During the test, the section being tested shall be observed to detect any visible leakage.

A clean container shall be used for holding water for pumping up pressure on the main being tested. This makeup water shall be sterilized by the addition of chlorine to a concentration of 50 mg/l. The quantity of water required to restore the pressure shall be accurately determined by pumping through a positive displacement water meter. The meter shall be approved by the Town. Acceptability of the test will be determined as follows: The quantity of water lost from the main shall not exceed the number of gallons per hour as determined by the formula:

$$L = \frac{ND\sqrt{P}}{7400}$$

in which:
L = allowable leakage, gallons/hour
N = number of joints in the length of pipeline tested
D = nominal diameter of the pipe in inches
P = average test pressure during the leakage test, psi

There shall not be an appreciable or abrupt loss in pressure during the 15 minute test period. Gauges used in the test shall be accompanied with certifications of accuracy from a laboratory approved by the Town. Any visible leakage shall be corrected by the Contractor regardless of the allowable leakage specified above. Should the tested section fail to meet the pressure test as specified, the Contractor shall locate and repair the defects and then retest the pipeline. All tests shall be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. After the test has been completed, each gate valve shall be tested by closing each in turn and relieving the pressure beyond. This test of the gate valve will be acceptable if there is no immediate loss of pressure on the gauge when the pressure comes against the valve being checked. The Contractor shall verify that the pressure differential across the valve does not exceed the rated working pressure of the valve. Sections to be tested shall normally be limited to 1,500 feet. The Town may require that the first section of pipe, not less than 1,000 feet in length, installed by each of the Contractor's crews, be tested in order to qualify the crew and the material. Pipe laying shall not be continued more than an additional 1,000 feet until the first Section has been tested successfully. Prior to calling the Town to witness the pressure test, the Contractor shall have all equipment set up completely ready for operation and shall have successfully performed the test to ensure that the pipe is in a satisfactory condition. Defective materials or workmanship, discovered as a result of hydrostatic field test, shall be replaced by the Contractor. Whenever it is necessary to replace defective material or correct the workmanship, the hydrostatic test shall be re-run at the Contractor's expense until a satisfactory test is obtained.

3.6.3.1 Testing Extensions From Existing Mains

When an existing water main is extended with new pipe to a new valve and the distance from the existing pipe to the new valve is 18 feet or less, the section of new pipe installed between the new valve and the end of the existing main shall be made with pretested, pre-chlorinated pipe, and no hydrostatic test will be required. When the required hydrostatic tests are conducted in the new main section beyond the installed new valve in the closed position, the normal pressure of the existing main may be present against the other side of the new valve. Where the distance between the end of an existing water main pipe extension to the new valve is more than 18 feet, the connection of the new pipe to existing pipe shall not be made until after hydrostatic tests have been made to the required pressure in both directions against the new valve. This shall be accomplished

by installing a temporary cap or plug on the end of the new pipe beyond the new valve as close as possible to the existing pipe for testing purposes. The short length of pipe between the temporary cap or plug end with the new valve in the closed position, with no hydrostatic pressure active on the opposite side of the valve, shall be subjected to the required test pressure. The same test shall be made against the other side of the new valve when that section of pipe is tested with no hydrostatic pressure active in the short section of pipe toward the existing main. The final connection to the existing main shall be made with pretested pre-chlorinated pipe.

3.6.3.2 Testing Section with Hydrants Installed

When hydrants are included with the section of main pipe to be tested, the testing shall be conducted in three separate tests as follows: Test No. 1 - Water main gate valves and hydrant auxiliary gate valves closed, with the hydrant operating stem valves and hose ports wide open. Test No. 2 - Water main gate valves and the hydrant operating stem valves tightly closed but the hydrant auxiliary gate valves and hose ports wide open. Test No. 3 - Each hydrant shall be tested to the pressure indicated in Section 3.6.3 with the hydrant auxiliary gate valve and hose ports closed and the hydrant operating stem valve wide open. 25 psi shall be in the supply main beyond the hydrant auxiliary gate valve when testing a hydrant singly.

3.6.3.3 Testing Hydrants Installed on Existing Mains

For hydrants installed and connected to an existing main, the hydrant connection including hydrant tee, connection pipe, and auxiliary gate valves, shall be installed with pretested materials. Before the hydrant connection is made to the existing main, the hydrant installation shall be subjected to the hydrostatic Test No. 3 as specified in Section 3.6.3.2. Hydrants installed and connected to an existing main shall have a satisfactory bacteriological sample obtained following the hydrostatic test.

3.6.4 Disinfection of Water Mains

Before being placed in service, all new water mains and repaired portions of, or extensions to, existing mains shall be chlorinated and a satisfactory bacteriological report obtained.

3.6.4.1 Flushing

Sections of pipe to be disinfected shall first be flushed to remove any solids or contaminated material that may have become lodged in the pipe. If no hydrant is installed at the end of the main, then a tap shall be provided large enough to develop a velocity of at least 2.5 fps in the main. Taps required by the Contractor for temporary or permanent release of air, chlorination or flushing purposes shall be provided by the Contractor as a part of the construction of water mains. Where dry calcium hypochlorite is used for disinfection of the pipe, flushing shall be done after disinfection. The Contractor shall be responsible for disposal of treated water flushed from mains. This wastewater shall be neutralized for protection of aquatic life in the receiving water before disposal into any natural drainage channel. The Contractor shall be responsible for disposing of disinfecting solution to the satisfaction of Town and other governing authorities.

3.6.4.2 Requirement of Chlorine

Before being placed into service, all new mains and repaired portions of, or extensions to, existing mains shall be chlorinated so that a chlorine residual of not less than 25 mg/1 remains in the water after standing 24 hours in the pipe. The initial chlorine content of the water shall be not less than 50 mg/l.

3.6.4.3 Form of Applied Chlorine

Chlorine shall be applied by one of the methods outlined in Section 3.6.2 to give a dosage of not less than 50 mg/l of available chlorine.

3.6.4.4 Point of Application

The preferred point of application of the chlorinating agent is at the beginning of the pipeline extension or any valved section of it, and through a corporation stop inserted in the horizontal axis of the pipe. The water injector for delivering the chlorine-bearing water into the pipe should be supplied from a tap on the pressure side of the gate valve controlling the flow into the pipeline extension. Alternate points of applications may be used when approved by the Town.

3.6.4.5 Rate of Application

Water from the existing distribution system, or other source of supply, shall be controlled to flow very slowly into the newly-laid pipeline during application of the chlorine. The rate of chlorine gas-water mixture feed shall be in such proportion to the rate of water entering the newly-laid pipe that the dosage applied to the water will be at least 50 mg/l.

3.6.4.6 Preventing Reverse Flow

No connections shall be made between the existing distribution system and pipelines not disinfected without a State Department of Health approved backflow preventer installed in the connecting line.

3.6.4.7 Retention Period

Treated water shall be retained in the pipe at least 24 hours. After this period, the chlorine residual at pipe extremities and at other representative points shall be at least 25 mg/l.

3.6.4.8 Chlorinating Valves, Hydrants, and Appurtenances

In the process of chlorinating newly-laid pipe, all valves, hydrants, and other appurtenances shall be operated while the pipeline is filled with the chlorinating agent and under normal operating pressure.

3.6.4.9 Chlorinating Connections to Existing Water Mains and Water Service Connections

The chlorinating procedure to be followed shall be as specified in Section 9 of AWWA Standard C651. All closure fittings shall be swabbed with a very strong chlorine solution at least as strong as liquid household bleach (5-6% Cl).

3.6.4.10 Final Flushing and Testing

Following chlorination, all treated water shall be flushed from the newly-laid pipe until the replacement water throughout its length shows, upon test, the absence of chlorine. In the event chlorine is normally used in the source of supply, then the tests shall show a residual not in excess of that carried in the system. A sample tap shall be located ahead of the flushing hose for convenience and for sanitary sampling. Before placing the lines into service, a satisfactory report shall be received from the local or State health department on samples collected from representative points in the new system. Samples will be collected and bacteriological tests obtained by the Engineer and paid for by the Developer.

3.6.4.11 Repetition of Flushing and Testing

Should the initial treatment result in an unsatisfactory bacteriological test, the original chlorination procedure shall be repeated by the Contractor until satisfactory results are obtained.

Failure to get a satisfactory test shall be considered as failure of the Contractor to keep the pipe clean during construction, or to properly chlorinate the main.

APPENDIX O

Detailed Project Cost Estimates

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	D1 - 2nd Street, 3rd Street and So. Prairie - Carbon River Co. Rd. Loop				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Mobilization	1	ls	$ 6,222	$ 6,222
2	Traffic Control	5	day	$ 650	3,250
3	8" Cl 52, incl. backfill, valves	820	lf	$ 55	45,100
4	Fire Hydrant Assemblies	2	ea	$ 2,500	5,000
5	Testing & Disinfection	820	lf	$ 1	820
6	Locate Existing Utilities	1	ls	$ 2,000	2,000
7	Erosion Control	1	ls	$ 1,000	1,000
8	Trench Safety	1	ls	$ 1,000	1,000
9	Connect to Existing	3	ea	$ 2,000	6,000
10	Crushed Surfacing Top Course	85	cy	$ 40	3,400
11	Asphalt Concrete Pavement, Cl B	120	ton	$ 85	10,200
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 83,992
	Contingency	30%			$ 25,197
	Sales Tax	8.20%			$ 6,887
				Planning Level Construction Cost:	$ 116,076
	Administration	5%			$ 5,804
	Engineering	20%			$ 23,215
				GRAND TOTAL:	**$ 146,000**

Notes:

- Fire Hydrants assumed to be every 500 feet in residential zoned areas
- Mobilization = 8%
- Traffic Control = 1 day per 200 feet, assuming 2 laborers/day @ $40/hr
- Engineering includes half-time construction inspection
- Pavement Restoration:
  - Assumes 8' trench width
  - Asphalt pavement 3" thick
  - Crushed surfacing 4" thick
- Pipe costs include backfill, fittings

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	D2 - Pioneer Way Loop				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Mobilization	1	ls	$ 4,608	$ 4,608
2	Traffic Control	3	day	$ 650	1,950
3	8" Cl 52, incl. backfill, valves	560	lf	$ 55	30,800
4	Fire Hydrant Assemblies	2	ea	$ 2,500	5,000
5	Testing & Disinfection	560	lf	$ 1	560
6	Locate Existing Utilities	1	ls	$ 2,000	2,000
7	Erosion Control	1	ls	$ 1,000	1,000
8	Trench Safety	1	ls	$ 1,000	1,000
9	Connect to Existing	3	ea	$ 2,000	6,000
10	Crushed Surfacing Top Course	60	cy	$ 40	2,400
11	Asphalt Concrete Pavement, Cl B	81	ton	$ 85	6,885
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 62,203
	Contingency	30%			$ 18,661
	Sales Tax	8.20%			$ 5,101
				Planning Level Construction Cost:	$ 85,964
	Administration	5%			$ 4,298
	Engineering	15%			$ 12,895
				GRAND TOTAL:	**$ 104,000**

Notes:	Fire Hydrants assumed to be every 500 feet in commercially zoned areas
	Mobilization = 8%
	Traffic Control = 1 day per 200 feet, assuming 2 laborers/day @ $40/hr
	Engineering includes half-time construction inspection
	Pavement Restoration:
	Assumes 8' trench width
	Asphalt pavement 3" thick
	Crushed surfacing 4" thick
	Pipe costs include backfill, fittings

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	D3 - New Transmission Main				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Mobilization	1	ls	$ 17,406	$ 17,406
2	Traffic Control	12	day	$ 650	7,800
3	12" CI 52, incl. backfill, valves	1,800	lf	$ 65	117,000
4	8" CI 52 inc. backfill, valves	600	lf	$ 55	33,000
5	Fire Hydrant Assemblies	5	ea	$ 2,500	12,500
6	Testing & Disinfection	2,400	ls	$ 1	2,400
7	Locate Existing Utilities	1	ls	$ 1,000	1,000
8	Erosion Control	1	ls	$ 1,000	1,000
9	Trench Safety	1	ls	$ 1,000	1,000
10	Connect to Existing	11	ea	$ 2,000	22,000
11	Crushed Surfacing Top Course	125	cy	$ 40	5,000
12	Asphalt Concrete Pavement, CI B	175	ton	$ 85	14,875
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 234,981
	Contingency	30%			$ 70,494
	Sales Tax	8.20%			$ 19,268
		Planning Level Construction Cost:			$ 324,744
	Administration & Inspection	5%			$ 16,237
	Engineering	15%			$ 48,712
				GRAND TOTAL:	**$ 390,000**

Notes:

- Fire Hydrants assumed to be every 500 feet in residential zoned areas
- Mobilization = 8%
- Traffic Control = 1 day per 200 feet, assuming 2 laborers/day @ $40/hr
- Engineering includes half-time construction inspection
- Estimate does not include funds for easements or right-of-way acquisitions.
- Pipe costs include backfill, fittings
- Pavement Restoration:
  - Assumes 8' trench width
  - Asphalt pavement 3" thick
  - Crushed surfacing 4" thick

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	D4 - Water Main Replacment and Upgrades - Next 20 Years				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Repl. Various Dia. Pipe with 8" Dia.	5,100	l.f.	$ 55	280,500
2	Fire Hydrant Assemblies	11	ea	$ 2,500	27,500
3	Testing & Disinfection	10	ea	$ 4,000	40,000
4	Locate Existing Utilities	10	ea	$ 1,000	10,000
5	Erosion Control	10	ea	$ 1,000	10,000
6	Trench Safety	10	ea	$ 1,000	10,000
7	Mobilization	1	ls	$ 55,838	55,838
8	Traffic Control	26	day	$ 650	16,900
9	Connect to Existing	40	ea	$ 2,000	80,000
10	Crushed Surfacing Top Course	525	cy	$ 40	21,000
11	Asphalt Concrete Pavement, Cl B	735	ton	$ 85	62,475
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 614,213
	Contingency	30%			$ 184,264
	Sales Tax	8.20%			$ 50,365
		Planning Level Construction Cost:			$ 848,842
	Administration	5%			$ 42,442
	Engineering	15%			$ 127,326
				GRAND TOTAL:	**$ 1,019,000**
				ANNUAL TOTAL:	**$ 50,950**

Notes:

Replacement Assumptions

- 50% of AC pipe to be replaced in next 20 years (existing installed around 1967)
- 5 - 20% of PVC/PE pipe to be replaced in next 20 years (existing installed within past 20 years)
- Existing hydrants to be replaced.
- Approximately 1 project every 2 years for 10 projects total over 20 years.
- Mobilization 10%
- Traffic Control = 1 day per 200 feet, assuming 2 laborers/day @ $40/hr
- Pipe costs include backfill, fittings
- Pavement Restoration:
  - Assumes 8' trench width
  - Asphalt pavement 3" thick
  - Crushed surfacing 4" thick

Parametrix, Inc.

D4 - Water Main Replacment and Upgrades - Next 20 Years

NOTE: REVIEW THIS PAGE MAY NEED MODIFICATION
DUE TO PIPE REPLACEMENT QUANTITIES

Street Name	Ex. Dia.	Length (ft)	Mat.	Avg. Age	Repl. Dia.	% Replace in 20 yrs.	Repl. Length (feet)
Cascade	6	275	AC	40	8	50%	138
Eleanor	6	560	AC	40	8	50%	280
Eleanor	8	260	AC	40	8	50%	130
Emery	8	500	AC	40	8	50%	250
First St	6	1100	AC	40	8	50%	550
Franklin	6	300	AC	40	8	50%	150
Pioneer Way	8	400	AC	40	8	50%	200
Second St	6	2000	AC	40	8	50%	1000
Third St	8	2700	AC	40	8	50%	1350
Washington	8	425	AC	40	8	50%	213
Third St	6	330	PVC	20	8	20%	66
Carbon Road	6	430	PVC	15	8	15%	65
First St	6	370	PVC	15	8	15%	56
Pioneer Way	2	1910	PVC/PE	14	8	15%	287
Pioneer Way	8	1500	PVC	12	8	10%	150
Eli-Hill / So Prairie	8	1830	C900	5	8	5%	92
126th Street Ct E	2	550	PVC		8	5%	28
250th Ave	6	490	PVC		8	5%	25
Emery	8	225	PVC		8	5%	11
Emery	8	355	DI		8	5%	18
						TOTAL	5055

Traffic control = 1 day per 200 feet = 25.3

Hydrants = 1 every 500' for commercial/residential fire code 10.1

Paving 3"

733.8 Tons (includes 5% add'l qty)

CSTC 4"

523.6 cy (includes 5% add'l qty)

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	S1a - Well #1 Study - Water Rights and Treatment Alternatives				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Pilot Study	1	l.s.	$ 50,000	$ 50,000
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 50,000
	Contingency	30%			$ 15,000
	Sales Tax	8.20%			$ 4,100
				Planning Level Construction Cost:	$ 69,100
	Administration	5%			$ 3,455
	Engineering	0%			$ -
				GRAND TOTAL:	**$ 73,000**

Notes: See description in Water System Plan.

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	S1b - Well #1 Rebuild - 110 GPM				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Mobilization	1	l.s.	$ 27,520	$ 27,520
2	New well house (400 sf)	400	sf	$ 150	60,000
3	New Fe/Mn filtration system (110 gpm)	1	ls	$ 100,000	100,000
4	New well casing, incl. redrilling	400	lf	$ 250	100,000
5	Site piping	1	ls	$ 20,000	20,000
6	Pump controls	1	ls	$ 20,000	20,000
7	Mechanical piping	1	ls	$ 25,000	25,000
8	Chlorination	1	ls	$ 8,000	8,000
9	Connect to existing pipe	1	ls	2,000	2,000
10	Testing & Disinfection	500	lf	$ 1	500
11	Locate Existing Utilities	1	ls	$ 2,000	2,000
12	Erosion Control	1	ls	$ 1,000	1,000
13	Trench Safety	1	ls	$ 1,000	1,000
14	New Pump/Motor - 100 gpm	1	l.s.	4,500	4,500
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 371,520
	Contingency	30%			$ 111,456
	Sales Tax	8.20%			$ 30,465
				Planning Level Construction Cost:	$ 513,441
	Administration	5%			$ 25,672
	Engineering	25%			$ 128,360
				GRAND TOTAL:	**$ 668,000**

Notes:

1. Mobilization 8%
2. Engineering includes design and half-time construction inspection.
3. Site development costs based upon similar well project in City of Orting.
4. Assumes water rights have been acquired under Project S1a.
5. Assumes arsenic-producing geological layers will be by-passed through redrilling of well and no arsenic treatment will be required.
6. Pump costs based on verbal conversation with Water Systems and Pump Service Ltd.
   1014 8th NE
   Auburn, WA 98002
   (253) 939-5859

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	S1c - Well #1 Arsenic Treatment				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Treatment Option	1	l.s.	$ 200,000	$ 200,000
2	Arsentic treatment facility, 300 sf	300	sf	$ 150	45,000
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 245,000
	Contingency	30%			$ 73,500
	Sales Tax	8.20%			$ 20,090
				Planning Level Construction Cost:	$ 338,590
	Administration	5%			$ 16,930
	Engineering	25%			$ 84,648
				GRAND TOTAL:	**$ 441,000**

Notes:

- Traffic Control = 1 day per 200 feet, assuming 2 laborers/day @ $40/hr
- Pipe costs include backfill, fittings
- Mobilization 8%
- Engineering includes half-time construction inspection
- *There are several treatment alternatives (see sheet S1c.add) which should be fully explored in a pilot study before any decision is made. A higher range of treatment costs is used here for conservative planning purposes. The treatment alternative would be determined in Project S1a.

Parametrix, Inc.

1998 Arsenic Treatment Costs*

	Capital	Capital Disposal	O&M Capital	O&M	O&M Disposal	1998 Upfront $$	1998 O&M $$/yr	2006 Upfront $$	2006 O&M $$/yr
Ion Exchange	$50,000	$4,000		$11,000	$500	$54,000	$11,500	$66,000	$14,000
Activated alumina	$50,000			$11,000	$700	$50,000	$11,700	$61,000	$15,000
Activated alumina with adjusted pH	$90,000			$11,000	$300	$90,000	$11,300	$110,000	$14,000
Greensand System	$80,000		$4,000	$10,000	$1,000	$84,000	$11,000	$103,000	$14,000
Coagulation assisted microfiltration	$400,000		$200,000	$35,000	$2,000	$600,000	$37,000	$730,000	$45,000
Iron based sorbents	No cost information available at time of printing handbook.								

* Costs estimated from EPA Arsenic Treatment Technology Evaluation Handbook for Small Systems (July 2003)
This analysis provides very general orders of magnitude. Different technologies may or may not be feasible for South Prairie.

General notes:
Well #1: 55 gpm ~ .08 mgd
From on DOH Manual 331-210, Arsenic Treatment Guidance Document:
Activated alumina or iron-based sorbents possible candidates.
More water quality information is required before making any recommendations.

Seattle CCI 1998: 6957
Seattle CCI 2006: 8459

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	S2 - Construct Intertie with Neighboring Purveyor				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Mobilization	1	ls	$ 15,560	$ 15,560
2	8" meter vault and control station	1	ea	$ 40,000	$ 40,000.00
3	12" Cl 52, incl. backfill, valves, restoration	1500	lf	$ 75	$ 112,500.00
4	Testing & Disinfection	1	ls	$ 5,000	$ 5,000.00
5	Locate Existing Utilities	1	ls	$ 2,000	$ 2,000.00
6	Erosion Control	1	ls	$ 2,000	$ 2,000.00
7	Trench Safety	1	ls	$ 2,000	$ 2,000.00
8	Connect to existing pipes	2	ea	$ 3,000	$ 6,000.00
9	PRV Assembly	1	ea	$ 25,000	25,000
10	**Tacoma Water Buy-In - Ask Nate**				0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 210,060
	Contingency	30%			$ 63,018
	Sales Tax	8.20%			$ 17,225
			Planning Level Construction Cost:		$ 290,303
	Administration	5%			$ 14,515
	Engineering	25%			$ 72,576
				GRAND TOTAL:	**$ 378,000**

Notes:

- Approximately 100' pipe outside South Prairie UGA.
- Assumes alternative 1 as shown on Figure 9-1.
- Engineering fees include design and part-time inspection of construction.
- Estimate does not include costs for easement or right-of-way acquisition.
- Mobilization 8%

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	S3 - Well House #2 Improvements				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Reframe and Construct New Roof	1	ea	$ 7,000	$ 7,000
2	Interior pipe painting	1	ls	5,000	5,000
3	Mobilization	1	ls	1,360	1,360
4	Paint preparation	1	ls	5,000	5,000
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 18,360
	Contingency	30%			$ 5,508
	Sales Tax	8.20%			$ 1,506
				Planning Level Construction Cost:	$ 25,374
	Administration	5%			$ 1,269
	Engineering	20%			$ 5,075
				GRAND TOTAL:	**$ 32,000**

Notes:

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	S4 - Replacement of 0.1 MG Reservoir at Tubbs Road Well				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Mobilization	1	l.s.	17,440	$ 17,440
2	Demolition of existing tank	1	l.s.	15,000	15,000
3	New 0.1 MG concrete tank	1	l.s.	150,000	150,000
4	Piping Upgrades	1	l.s.	25,000	25,000
5	Electrical/I&C	1	l.s.	20,000	20,000
6	Flex-Tend Joint Assemblies	1	ea	8,000	8,000
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 235,440
	Contingency	25%			$ 58,860
	Sales Tax	8.20%			$ 19,306
				Planning Level Construction Cost:	$ 313,606
	Administration	5%			$ 15,680
	Engineering	10%			$ 31,361
				GRAND TOTAL:	**$ 361,000**
Notes:	Recent bid in Orting (180K tank) cost approx. $180K, incl. assoc. piping.				
	Mobilization 8%				

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	S5 - Reservoir Upgrades				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	New seals, vents	1	ls	$ 3,000	$ 3,000
2	Safety appurtenances	1	ls	10,000	10,000
3	Flex-TEND Joint Assemblies	1	ea	8,000	8,000
4	Mobilization	1	ls	1,680	1,680
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
				Sub-total:	$ 22,680
	Contingency	30%			$ 6,804
	Sales Tax	8.20%			$ 1,860
				Planning Level Construction Cost:	$ 31,344
	Administration	5%			$ 1,567
	Engineering	10%			$ 3,134
				GRAND TOTAL:	**$ 37,000**

Notes:

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	S6 - Increase Chlorine Contact Time, Well #1				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Mobilization	1	l.s.	$ 5,203	$ 5,203
2	8" Cl 52, incl. backfill, valves	700	l.f.	$ 55	38,500
3	Fire Hydrant Assemblies	1	ea	$ 2,500	2,500
4	Testing & Disinfection	1	ls	$ 4,000	4,000
5	Locate Existing Utilities	1	ls	$ 2,000	2,000
6	Erosion Control	1	ls	$ 1,000	1,000
7	Trench Safety	1	ls	$ 1,000	1,000
8	Traffic Control	4	day	$ 650	2,600
9	Connect to existing pipe	1	ls	2,000	2,000
10	Crushed Surfacing Top Course	72	cy	$ 40	2,875
11	Asphalt Concrete Pavement, Cl B	101	ton	$ 85	8,561
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 70,239
	Contingency	30%			$ 21,072
	Sales Tax	8.20%			$ 5,760
				Planning Level Construction Cost:	$ 97,070
	Administration	5%			$ 4,854
	Engineering	15%			$ 14,561
				GRAND TOTAL:	**$ 117,000**

Notes:

- Traffic Control = 1 day per 200 feet, assuming 2 laborers/day @ $40/hr
- Pipe costs include backfill, fittings
- Mobilization 8%
- Engineering includes design and half-time construction inspection.
- Fire Hydrants assumed to be every 700 feet in commercially zoned areas
- Pavement Restoration:
  - Assumes 8' trench width
  - Asphalt pavement 3" thick
  - Crushed surfacing 4" thick

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	S7 - Replace Submersible Well Pump at Well #2				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	New Pump/Motor - 350 gpm (30 hp)	1	l.s.	$ 9,000	$ 9,000
2	Manhours	10	hrs	150	1,500
3	Mobilization	1	l.s.	3,640	3,640
4	Telemetry Improvements	1	l.s.	10,000	10,000
5	Casing/Screen Inspection and Cleaning	1	l.s.	25,000	25,000
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 49,140
	Contingency	20%			$ 9,828
	Sales Tax	8.20%			$ 4,029
				Planning Level Construction Cost:	$ 62,997
	Administration	5%			$ 3,150
	Engineering	10%			$ 6,300
				GRAND TOTAL:	**$ 73,000**

Notes:	Based on verbal conversation with Water Systems and Pump Service Ltd.
	1014 8th NE
	Auburn, WA 98002
	(253) 939-5859
	South Prairie has used this company for previous pump replacement services in the past.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM1 - Meter Replacement Program - 10 Years				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Replace aging meters	160	ea	$ 60	$ 9,600
2	Mobilization	1	ls	768	768
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 10,368
	Contingency	30%			$ 3,110
	Sales Tax	8.20%			$ 850
			Planning Level Construction Cost:		$ 14,329
	Administration	5%			$ 716
	Engineering	0%			$ -
				GRAND TOTAL:	**$ 16,000**
				ANNUAL TOTAL:	**$ 1,600**

Notes:

New meters include registers equipped to work with touch-reach meter reader.

Meter reading software, meter reading equipment and billing software provided under OM-2 - Meter Reading/Billing Software and Equipment

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM2 - Meter Reading/Billing Software and Equipment				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Replace meter registers for touch-read	160	ea	$ 65	$ 10,400
2	Hand-held Meter Wand	1	ea	5,100	5,100
3	Pit probe	1	ea	1,300	1,300
4	Meter reading software	1	ea	5,300	5,300
5	Billing software	1	ea	2,000	2,000
6	Upgraded desktop office computer	1	ea	1,000	1,000
7	Software installation and technical support	1	ls	5,000	5,000
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 30,100
	Contingency	25%			$ 7,525
	Sales Tax	8.20%			$ 2,468
				Planning Level Construction Cost:	$ 40,093
	Administration	5%			$ 2,005
	Engineering	10%			$ 4,009
				GRAND TOTAL:	**$ 47,000**

Notes:

Budgetary numbers provided by Sensus Meter representative
Scott Setzer, 206-295-4532
except for billing software estimate provided by DTH Software.
www.dthsoftware.com.

Sensus meters can only accept Sensus registers noted above. Cost savings may be achieved using different hand-held wand, pit probe, and meter reading software, but the Sensus software/equipment is guaranteed to work with Sensus meters.
Billing software is not provided by Sensus and must be provided by another software development firm. DTH Software provided packages much more in-line with size of South Prairie than other large companies. Other local firms could be evaluated.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM3 - Fire Hydrant Replacement				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Fire Hydrant Assemblies	3	ea	$ 2,500	$ 7,500
2	Isolation valve replacements	3	ea	500	$ 1,500
3	Testing & Disinfection	3	ea	$ 500	$ 1,500
4	Locate Existing Utilities	3	ea	$ 500	$ 1,500
5	Erosion Control	3	ea	$ 500	$ 1,500
6	Trench Safety	3	ea	$ 500	$ 1,500
7	Mobilization	1	ls	1,200.00	$ 1,200
8					$ -
9					$ -
10					$ -
11					$ -
12					$ -
13					$ -
14					$ -
15					$ -
16					$ -
17					$ -
18					$ -
19					0
				Sub-total:	$ 16,200
	Contingency	30%			$ 4,860
	Sales Tax	8.20%			$ 1,328
			Planning Level Construction Cost:		$ 22,388
	Administration	10%			$ 2,239
	Engineering				$ -
				GRAND TOTAL:	**$ 25,000**
				ANNUAL TOTAL:	**$ 8,333**

Notes: Hydrants #1, #6 and #15.

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM4 - Leak Detection Program				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Leak Detection - systemwide	1	l.s.	$ 2,000	$ 2,000
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 2,000
	Contingency	20%			$ 400
	Sales Tax	8.20%			$ 164
			Planning Level Construction Cost:		$ 2,564
	Administration	5%			$ 128
	Engineering	5%			$ 128
			SEMI-ANNUAL TOTAL:		**$ 3,000**

Notes:	Based upon estimate provided by Hughes Supply, Inc.
	Utility Services Group
	10013 MLK Jr. Way South
	Seattle, WA 98178
	Fax: 206-725-5932
	Phone: 206-725-3441

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM5 - Paint Interior/Exterior of Reservoir #2				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Exterior blasting/painting 3-4 coats	2650	sf	$ 8.50	$ 22,525
2	Interior blasting/painting 3- 4 coats	2650	sf	11.00	29,150
3	Disposal of blast media	16	lb	110	1,760
4	Mobilzation	1	ls	5,000	5,000
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 58,435
	Contingency	30%			$ 17,531
	Sales Tax	8.20%			$ 4,792
			Planning Level Construction Cost:		$ 80,757
	Administration	5%			$ 4,038
	Engineering	10%			$ 8,076
				TOTAL:	**$ 93,000**

Notes:

- Estimated for work every 10-15 years.
- Assumes lead based paint removed on existing tanks.
- If no lead based paint, closer to $30/lb disposal fees.
- Based on budgetary numbers provided by Purcell Painting, Inc.
- 6456 S. 144th Street
- Tukwila, WA 98168

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM6 - Clean and Inspect Storage Reservoirs				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Reservoir Cleaning / Inspection	1	yr	$ 5,200	$ 5,200
2	(includes walls)				0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 5,200
	Contingency	10%			$ 520
	Sales Tax	8.20%			$ 426
			Planning Level Construction Cost:		$ 6,146
	Administration	5%			$ 307
	Engineering	0%			$ -
				GRAND TOTAL:	**$ 7,000**

Notes: Estimated to be used every 3 years

Costs provided by Liquivision Technology, Inc.
PO Box 5277, 1515 S. 6th St.
Klamath Falls, OR 97601
Phone: 800-229-6959
Fax: 541-883-1361
www.divingservices.com

Liquivision has performed similar services for South Prairie in the past.
Services have not included wall cleaning which is why this cost is higher than quotes in past.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM7 - Flushing Fire Hydrants and Water Mains, Exercising Valves				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Temporary summer hires	800	hrs	$ 20	$ 16,000
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 16,000
	Contingency	0%			$ -
	Sales Tax	0.00%			$ -
				Planning Level Construction Cost:	$ 16,000
	Administration	0%			$ -
	Engineering	0%			$ -
				GRAND TOTAL:	**$ 16,000**
Notes:	Assume temporary summer workers.				
	Total hours based on 2 temporary workers, 40 hours/week for 2.5 months.				

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM8 - Public Education Program				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Bill inserts	900	sheets	$ 0.15	$ 135
2	Staff time	12	hrs	30	360
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 495
	Contingency	0%			$ -
	Sales Tax	0.00%			$ -
				Planning Level Construction Cost:	$ 495
	Administration	5%			$ 25
	Engineering	0%			$ -
				ANNUAL TOTAL:	**$ 600**

Notes: This project will meet DOH requirements to provide water conservation public education.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM9 - Purchase New Vehicle for Town O&M Department				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	New truck	1	ls	$ 25,000	$ 25,000
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 25,000
	Contingency	0%			$ -
	Sales Tax	8.80%			$ 2,200
			Planning Level Construction Cost:		$ 27,200
	Administration	5%			$ 1,360
	Engineering	0%			$ -
				GRAND TOTAL	**$ 29,000**
				WATER FUND PORTION:	**$ 10,000**

Notes: Costs to be split between storm/sewer/water utilities.

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM10 - Cross Connection Control (CCC) Plan				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Program set-up	1	ls	$ 7,000	$ 7,000
2	Backflow assembly testing (yearly)	1	ls	1,500	1,500
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 8,500
	Contingency	0%			$ -
	Sales Tax	8.20%			$ 697
				Planning Level Construction Cost:	$ 9,197
	Administration	5%			$ 460
	Engineering	0%			$ -
				GRAND TOTAL:	**$ 10,000**

Notes:
- Consultant review of ordinances/policies and drafting of new to meet CCC requirements.
- Customer provides and installs backflow prevention devices.
- Hazard assessment performed by Town of South Prairie
- Testing of backflow prevention devices by contractor.

Parametrix, Inc.

Town of South Prairie

Preliminary Cost Opinion Worksheet

Project:	OM11 - GIS Mapping and Database				
Prepared by:	J. Dvorak	Date:	8/1/2006		
Item Number	Description	Quantity	Unit	Unit Price	Total
1	Program set-up	1	ls	$ 1,500	$ 1,500
2	Annual maintenance fee	1	ls	420	420
3	GIS equipment (rental)	1	ls	400	400
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
				Sub-total:	$ 2,320
	Contingency	30%			$ 696
	Sales Tax	8.20%			$ 190
				Planning Level Construction Cost:	$ 3,206
	Administration	10%			$ 321
	Engineering	0%			$ -
				GRAND TOTAL:	**$ 4,000**

Notes:
- Consultant review of ordinances/policies and drafting of new to meet CCC requirements.
- Customer provides and installs backflow prevention devices.
- Hazard assessment performed by Town of South Prairie
- Testing of backflow prevention devices by contractor.

Parametrix, Inc.

APPENDIX P

Financial Viability Test

Worksheet 1 - SIX YEAR OPERATING BUDGET - With Rate Increase

Line No.		2006	2007	2008	2009	2010	2011	
1	**REVENUES**							
2	Water Rates	79,146.93	85,713.48	92,839.46	100,573.25	108,967.47	126,323.47	
3	Fees and Service	1,751.00	1,751.00	1,751.00	1,751.00	1,751.00	1,751.00	- Avg. of late fees and turn-on fees 1999-2005.
4	Other Revenue	4,064.00	4,064.00	4,064.00	4,064.00	4,064.00	4,064.00	- Avg. of all other fees (not incl. connection fees) 1999-2005.
5	TOTAL REVENUE	84,961.93	91,528.48	98,654.46	106,388.25	114,782.47	132,138.47	
6	**EXPENSES**							
7	O&M Expenses							
8	Salaries and Benefits (Operator)	12,332.31	12,948.92	13,596.37	14,276.19	14,990.00	15,739.50	- Avg. oper. wage/benefits 1999-2005, accelerated approx. 5% per year.
9	Power and Utilities	4,138.54	4,345.47	4,562.74	4,790.88	5,030.42	5,281.94	- Avg. utilities 1999-2005, accelerated 5% per year.
10	Chemical and Treatment	1,331.05	1,397.60	1,467.48	1,540.86	1,617.90	1,698.79	- Avg. supplies 1999-2005, accelerated 5% per year.
11	Monitoring	1,071.62	1,125.20	1,181.46	1,240.53	1,302.56	1,367.69	- Avg. testing costs 1999-2005, acceleterated 5% per yr.
12	Materials, Supplies & Parts	6,090.06	6,394.56	6,714.29	7,050.01	7,402.51	7,772.63	- Avg. minor equip, repair/maint. expenses 1999-2005, accelerated 5% per year.
13	Transportation	310.37	341.41	375.55	413.11	454.42	499.86	- Avg. trans. costs 1999-2005, accelerated approx. 10% /yr due to fuel costs.
14	Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	- No additional information available.
15	Total O&M Expenses	25,273.95	26,553.17	27,897.90	29,311.57	30,797.80	32,360.41	
16	General and Administrative Expenses							
17	Salaries & Benefits (admin staff)	10,844.61	11,386.84	11,956.19	12,553.99	13,181.69	13,840.78	- Avg. clerk & acct. wages/benefits 1999-2005, accelerated approx. 5% per year.
18	Office Supplies and Postage	2,098.15	2,464.44	2,899.40	3,416.35	4,031.23	4,763.10	- 2005 costs accelerated 5 - 20% each item, as indic. by historical trend.
19	Insur. - Veh., Liab., Workers	3,500.00	3,675.00	3,858.75	4,051.69	4,254.27	4,466.99	- Assumes 5% increase per year above 2005.
20	Legal and Accounting	7,421.16	7,792.22	8,181.83	8,590.92	9,020.47	9,471.49	- Avg. fees 1999-2005, accelerated 5% per year.
21	Engineering and Prof.	2,932.92	3,079.57	3,233.54	3,395.22	3,564.98	3,743.23	- Avg. costs 1999-2005, accelerated 5% per year.
22	Fees	773.28	811.94	852.54	895.16	939.92	986.92	- Avg. fees 1999-2005, accelerated 5% per year.
23	Misc. Expenses (eg. training)	0.00	0.00	0.00	0.00	0.00	0.00	- No information available.
24	Total Gen. and Admin.	27,570.13	29,210.01	30,982.25	32,903.35	34,992.57	37,272.51	
25	Depreciation Expense	N/A	N/A	N/A	N/A	N/A	N/A	
26	TOTAL EXPENSES	52,844.08	55,763.18	58,880.15	62,214.92	65,790.37	69,632.93	
27	Taxes (Property, B&O, etc)	5,131.07	5,592.86	6,096.22	6,644.88	7,242.92	7,894.78	- 2005 taxes increased avg. 9% as evidenced by historical trend since 1999.
28	Annual Debt Payments - Loans/Bonds (Principal & Interest)							
28a	Bond - 1968 (Water Dist. Improvements, Ord. 49)	4,100.00	4,100.00	341.67				- Final payment January 2008.
28b	Public Works Trust Fund (PW-05-691-PWP-206)	10,609.00	10,609.00	10,609.00	10,609.00	10,609.00		- Loan to perform comprehensive water system plan update.
28c	Loan Payment (Anticipated)			3,293.17	3,293.17	3,293.17	3,293.17	- Payment begins year after loan initiated.
28d	Loan Payment (Anticipated)				8,148.04	8,148.04	8,148.04	- Payment begins year after loan initiated.
28e	Loan Payment (Anticipated)					26,949.85	26,949.85	- Payment begins year after loan initiated.
28f	Loan Payment (Anticipated)						7,654.85	- Payment begins year after loan initiated.
28g	Loan Payment (Anticipated)							
29	Total Outstanding Debt - Loans/Bonds (Principal & Interest)	14,709.00	14,709.00	14,243.83	22,050.21	49,000.05	46,045.90	
30	Capital Improvement Program Expenditures							
31	New CIP Facilities	0.00	0.00	0.00	406,076.00	0.00	0.00	
32	Renewal & Replacement Facilities	0.00	45,344.00	480,879.16	54,668.00	139,798.00	14,113.17	- Projects D1, D2, D3, D4, S3, S5, OM1, OM2, OM4, OM5, OM6, OM7
33	Safe Drinking Water Act Facilities	0.00	121,680.00	0.00	0.00	0.00	0.00	- Projects S1a, S1c, S6.
34	Non-Facility Costs (eg. conservation program costs)	0.00	9,984.00	2,812.16	2,924.65	3,042.00	3,163.30	- Projects OM-8, OM-9, OM-10, OM-11.
35	Capital Sources							
36	Loan/Bonds Funds		53,848.00	133,232.12	440,668.65	125,167.74	0.00	
37	Grants	0.00	108,160.00	337,459.20	0.00	0.00	0.00	- Assume 75% of projects S6 and D3 paid through grant (arsenic treatment).
38	Special Charges	2,000.00	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00	- Assume ~$3,000/yr based on historical trend 1 connection/yr. No major growth anticipated.
39	Withdrawal From Existing Reserves	0.00	12,000.00	10,000.00	20,000.00	14,672.26	14,276.47	
40	Net CIP Unfunded (31+32+33+34) - (36+37+38+39)	(2,000.00)	0.00	0.00	0.00	0.00	0.00	
41	Operating Cash Reserve							
42	Minimum Balance (1/8 Line (15+24))	6,605.51	6,970.40	7,360.02	7,776.86	8,223.80	8,704.12	- All reserve (operating, emergency/, repl.) funds are kept in single account.
43	Annual Installment	0.00	364.89	389.62	416.85	446.93	480.32	As of 6/27/06, total funds equals $124,901. Total amount into reserves = $15,000/yr.
44	Running Balance	6,605.51	6,970.40	7,360.02	7,776.86	8,223.80	8,704.12	See calculations for replacement reserves, line 51.
45	Emergency Reserve							
46	Minimum Balance (Cost of Most Vulnerable Facility)	73,000.00	76,650.00	80,482.50	84,506.63	88,731.96	93,168.55	- Assumed to be pump replacement of Well #2.
47	Annual Installment	0.00	3,650.00	3,832.50	4,024.13	4,225.33	4,436.60	- All reserve (operating, emergency/, repl.) funds are kept in single account.
48	Running Balance (May be Alternative Financing)	73,000.00	76,650.00	80,482.50	84,506.63	88,731.96	93,168.55	As of 6/27/06, total funds equals $124,901. Total amount into reserves = $15,000/yr.
49	Replacement Reserve (VOLUNTARY)							See calculations for replacement reserves, line 51.
50	Target Balance (System Replacement Cost)							
50a	Previous Year Balance	45,295.49	55,295.49	53,295.49	53,295.49	43,295.49	28,623.23	
51	Annual Installment	10,000.00	10,000.00	10,000.00	10,000.00			- Reserves in excess of minimum operating and emergency funds are assumed
51a	Withdrawals	0.00	12,000.00	10,000.00	20,000.00	14,672.26	14,276.47	- See Line 39.
52	Running Balance	55,295.49	53,295.49	53,295.49	43,295.49	28,623.23	14,346.76	Town contributes $15,000/yr into single reserve account.
53	TOTAL REVENUE REQ'D (Add 26+27+29+40+43+47+51)	80,684.14	90,079.93	93,442.33	105,350.97	126,705.61	128,490.53	
54	BUDGET SURPLUS (DEFICIT) ANNUAL (Subtract 5-53)	4,277.78	1,448.55	5,212.13	1,037.28	(11,923.14)	3,647.94	
54a	**END OF YEAR WATER FUND BALANCE (CUMULATIVE)**	**29,277.78**	**30,726.33**	**35,938.46**	**36,975.74**	**25,052.60**	**28,700.54**	
55	1.5% Monthly Median Household Income	67.42	70.79	74.33	78.05	81.95	86.05	- Based on annual $53,937 in 2005 per WA OFM. Earnings escalated 5% each year.
56	Projected Monthly Residential Bill	38.00	40.58	43.33	46.27	49.42	52.79	- From Worksheet 2. Assumes no rate increase after 2006.

Worksheet 2 - Projection of Water Rate Revenues
(With Rate Increase)

	Resid. ERU's[b]	Monthly Base Charge[c]	Avg. Consump. ccf/ERU/mo[a]	Avg. $$/CCF[c]	Residential Total Yearly Sales[f]	Avg. Res. Monthly Bill	Comm. ERU's[b]	Avg. $$/ERU /YR[d]	Comm. Total Yearly Sales	Total Projected Sales
2006	137	$ 23.28	7.55	$ 1.95	$ 62,476.11	$ 38.00	45	$ 370.46	$ 16,670.82	$ 79,146.93
2007	137	$ 24.68	7.55	$ 2.11	$ 66,708.75	$ 40.58	47.5	$ 400.10	$ 19,004.73	$ 85,713.48
2008	137	$ 26.16	7.55	$ 2.27	$ 71,234.08	$ 43.33	50	$ 432.11	$ 21,605.38	$ 92,839.46
2009	137	$ 27.73	7.55	$ 2.46	$ 76,072.75	$ 46.27	52.5	$ 466.68	$ 24,500.50	$ 100,573.25
2010	137	$ 29.39	7.55	$ 2.65	$ 81,246.91	$ 49.42	55	$ 504.01	$ 27,720.56	$ 108,967.47
2011	150	$ 31.15	7.55	$ 2.87	$ 95,024.43	$ 52.79	57.5	$ 544.33	$ 31,299.03	$ 126,323.47

Commercial Business[g]	Avg. Consump. CF/YR[h]	Avg. Consump. CCF/MO	Meter Size	Monthly Base Rate[e]	Consump. Tier[f]	$$/ CCF[e]	Yearly Total 2006
Post Office	880	0.73	5/8"	$ 25.67	1	$ 1.95	$ 325.20
Meblex	3,553	2.96	5/8"	$ 25.67	1	$ 1.95	$ 377.32
Wgn Wheel	47,758	39.80	5/8"	$ 25.67	3	$ 2.45	$ 1,478.11
Town Hall	973	0.81	5/8"	$ 25.67	1	$ 1.95	$ 327.02
Church Bldg	148	0.12	5/8"	$ 25.67	1	$ 1.95	$ 310.92
Euro Gen'l	1,261	1.05	5/8"	$ 25.67	1	$ 1.95	$ 332.62
Castle Heat	4,767	3.97	5/8"	$ 25.67	1	$ 1.95	$ 401.00
Inglin	23,343	19.45	5/8"	$ 25.67	2	$ 2.20	$ 821.58
Andrea Ward	716	0.60	5/8"	$ 25.67	1	$ 1.95	$ 321.99
In Bottle	908	0.76	5/8"	$ 25.67	1	$ 1.95	$ 325.75
J&J Coffee	368	0.31	5/8"	$ 25.67	1	$ 1.95	$ 315.21
WWTP	2,485	2.07	5/8"	$ 25.67	1	$ 1.95	$ 356.49
McGraw	14,101	11.75	5/8"	$ 25.67	2	$ 2.20	$ 618.27
Daycare	16,237	13.53	5/8"	$ 25.67	2	$ 2.20	$ 665.26
Arnolds	7,261	6.05	5/8"	$ 25.67	1	$ 1.95	$ 449.62
Jump Start	5,054	4.21	5/8"	$ 25.67	1	$ 1.95	$ 406.59
Fire Station	5,290	4.41	2"	$ 174.45	1	$ 1.95	$ 2,196.56
D&D Garage	2,019	1.68	5/8"	$ 25.67	1	$ 1.95	$ 347.41
RV Park	228,707	190.59	1"	$ 57.55	3	$ 2.45	$ 6,293.92
TOTAL							**$ 16,670.82**
$$/ERU/YEAR (Avg non-residential ERU's 2005 = 45)							$ 370.46

a. Average residential consumption based upon 1999-2004 data. 755 cf/mo = 7.55 ccf/mo
b. See Chapter 2 detailing residential and commercial growth projections.
c. See rate increase chart below.
d. Commercial consumption, see "Commercial Dtl" above. Costs escalated 8% per year.
e. Based on meter size and determined by Town Ordinance 401 for 2006.
f. Based on monthly average consumption use.
g. Businesses with data that were open as of mid-2005.
h. Average consumption based on 1999-2004 data.

Worksheet 2 - Projection of Water Rate Revenues
(With Rate Increase)

	Monthly Base Charge[j]	Avg. Consump. ccf/ERU/mo[l]	Avg. $$/CCF[k]	Residential Monthly Bill	Annual Bill	DOH Benchmark
2006	23.28	7.55	1.95	38.00	456.03	809.06
2007	24.68	7.55	2.11	40.58	486.93	849.51
2008	26.16	7.55	2.27	43.33	519.96	891.98
2009	27.73	7.55	2.46	46.27	555.28	936.58
2010	29.39	7.55	2.65	49.42	593.04	983.41
2011	31.15	7.55	2.87	52.79	633.43	1,032.58

j. 6% Percent Base Charge Increase Per Year
k. 8.0% Percent Consumption Charge Increase Per Year
l. Average residential consumption based upon 1999-2004 data. 755 cf/mo = 7.55 ccf/mo

Worksheet 3 - Operating Cash Reserve Disclosure Form

Type of account:

_____ bank checking/savings _____ escrow account _____ trustee account

__X__ other (specify) money market account

Name of bank or institution: Mount Rainier National Bank

Worksheet 4 - Emergency Reserve Disclosure Form

Type of account:

_____ bank checking/savings _____ escrow account _____ trustee account

__X__ other (specify) money market account

Name of bank or institution: Mount Rainier National Bank

OR

Type of commitment:

_____ surety bond _____ letter of credit _____ guarantor

_____ other (specify) _____

Name of bank or name and relationship of guarantor_____

_____

Worksheet 5 -Washington State - Small Water System
Financial Viability Test Summary - With Rate Increase

Test 1 - Do you have a budget in place, and are rates sufficient to cover expenses?

		2006	2011
1	REVENUES		
2	Water Rates	79,146.93	126,323.47
3	Total Other Revenues	5,815.00	5,815.00
4	TOTAL REVENUE (Add lines 2-3)	84,961.93	132,138.47
5	EXPENSES		
6	Total O&M & A&G & Depreciation Expenses	52,844.08	69,632.93
7	Taxes (Property, B&O)	5,131.07	7,894.78
8	Debt Service Payments	14,709.00	46,045.90
9	Net CIP from Rates	-2,000.00	-2,000.00
10	Operating Cash Reserve (Increase)	0.00	480.32
11	Emergency Reserve (Increase)	0.00	4,436.60
12	Replacement Reserve (Voluntary Increase)	10,000.00	0.00
13	TOTAL REVENUE REQUIRED (Add lines 6-12)	80,684.14	126,490.53
14	Required Water Rates (Line 13 - Line 3)	74,869.14	120,675.53
15	Is Line 4 => Line 13 If no, raise rates or reduce expenses.	**Yes**	**Yes**

Test 2 - Is the Operating Case Reserve - to or greater than [O&M + G&A budget subotal x 45)/365]

16	Current Operating Reserve (beginning of year)	6,605.51	8,223.80
17	Plus: Budgeted Increase (Line 10)	0.00	480.32
18	Total Operating Cash Reserve Funds (Line 16+17) (end of year)	6,605.51	8,704.12
19	Required Operating Cash Reserve (Line 6 x 0.125)	6,605.51	8,704.12
20	Is Line 18 = > Than Line 19? If no, revise budget.	**Yes**	**Yes**

Worksheet 5 -Washington State - Small Water System Financial Viability Test Summary - With Rate Increase

Test 3 - Is the Emergency Reserve = to or greater than the cost of the most vulnerable facility?

21	Current Emergency Reserve (beginning of year)	73,000.00	88,731.96
22	Plus: Budgeted Increase (Line 11)	0.00	4,436.60
23	Total Emergency Reserve Funds (Line 21+22) (end of year)	73,000.00	93,168.55
24	Cost of most vulnerable facility	73,000.00	93,168.55
25	Is Line 23 = > Than Line 24?	**Yes**	**Yes**
	If no, revise budget.		

Test 4 - Household Income Index; Is 1.5% of Median Household Income = to or greater than the Cost/ERU?

26	Median household Income	53,937	68,839
27	Median Household Income x 0.015 (Line 26*0.015)	809	1,033
28	Cost/ERU (Line 14/Line 31)	416	629
29	Is Line 27 = > Than Line 28?	**Yes**	**Yes**
	If no, consider restructuring options or revise improvement implementation schedule.		

Customer Data

30	Median Household Income	53,937	68,839
31	Total Number of Equivalent Residential Units (ERU) Method	180	192

APPENDIX Q

SEPA Compliance

TOWN OF SOUTH PRAIRIE
STATE ENVIRONMENTAL POLICY ACT (SEPA)
DETERMINATION OF NONSIGNIFICANCE (DNS)

Proponent/Applicant: Town of South Prairie
121 NW Washington Street, PO Box F
South Prairie, WA 98385

Jurisdiction/Lead Agency: Town of South Prairie

Responsible Environmental Official: Mark Kask, AICP, PE, Town Planner

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement is not required under RCW 43.21.C.030 (2)(c). This decision was made after a review of the completed environmental checklist and review of the 2006 Water System Plan. This information is available for review at the Town of South Prairie, *Town Hall,* 121 NW Washington Street, South Prairie, WA 98385.

Date of Issuance: 16 August 2006

Comment Period: This Determination of Non-significance (DNS) is issued under the State Environmental Policy Act (SEPA) as provided in WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days after the issue date. Comments must be submitted to the Responsible Environmental Official by 31 August 2006.

Description of Proposal: This is a non-project action. The Town of South Prairie is adopting its 2006 Water System Plan. Several improvements are proposed as part of this plan, including planning work to address peak hour demands and provide water education programs. The Water plan and SEPA checklist are available for review at Town of South Prairie, *Town Hall,* 121 NW Washington Street, South Prairie, WA 98385.

Location of Proposal: Town of South Prairie

Threshold Determination: Determination of Non-Significance (DNS)

Appeal Process: The project is a non-project action. Any appeals shall be made in writing to the Responsible Environmental Official by 31 August 2006. You should be prepared to make specific factual objections.

Determination of Non-Significance Issued by:
Mark Kask, AICP, PE, Town Planner
Responsible Environmental Official, Town of South Prairie

State Environmental Policy Act (SEPA)
ENVIRONMENTAL CHECKLIST
WAC 197-11-960

PLEASE READ CAREFULLY BEFORE COMPLETING THE CHECKLIST!

Purpose of Checklist: The State Environmental Policy Act (SEPA), Chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply. "Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, contact the Pierce County Planning and Land Services Department for assistance.

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. Refer to the following instructions to assist in completing this checklist.

THE ORIGINAL SIGNED CHECKLIST MUST BE SUBMITTED AT TIME OF APPLICATION

Environmental Policy Act (SEPA)
ENVIRONMENTAL CHECKLIST

Name of Proposed Project: ***2006 Comprehensive Water System Plan for the Town of South Prairie***

Applicant:	***Town of South Prairie***
Address:	***P O Box F***
City/State/Zip:	***South Prairie, WA 98385***
Phone:	***(360) 897-8878***
Agent:	***Parametrix***
Address:	***1231 Fryar Avenue***
City/State/Zip:	***Sumner, WA 98390-1516***
Phone:	***(253) 863-5128***

Location of Project: ***Town of South Prairie water service area, per Pierce County Ordinance 89-148. All or portions of Sections 12 and 13 in Township 19 North, Range 5 East, and Sections 7 and 18, Township 19 North, Range 6 East, W.M.***
Address:
Section: ***12 and 13*** Quarter: _____ Township: ***19 N*** Range: ***5 East***
and ***7 and 8*** ***19 N*** ***6 East***
Tax Parcel Number(s):

Date Checklist Prepared: ***February 22, 2006***

GENERAL INFORMATION

1. Proposed timing or schedule (including phasing, if applicable):

   The water system Capital Improvement Plan schedule proposes construction of improvements from 2006 to 2025.

2. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? ***Yes*** If yes, explain. ***Capital Improvements are scheduled to occur between 2006 and 2025.***

3. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

   SEPA checklist for adoption of the Comprehensive Water System Plan. SEPA checklists will also be prepared as necessary for future projects recommended in the plan.

4. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? ***No – not related to the water system plan. Approvals will be needed for future construction or other land use actions related to specific projects in the plan.***
   If yes, explain.

5. List any government approvals or permits that will be needed for your proposal, if known.

The Water System Plan will need to be approved by the State Department of Health and by Pierce County.

6. Give brief, complete description of your proposal, including proposed uses, size of the project, and site characteristics.

Adoption of the Comprehensive Water System Plan for the Town of South Prairie. This is a non-project action.

7. Location of proposal, and directions to the site. Give sufficient information for a person to understand the precise location of your proposed project.

South Prairie is located in Eastern Pierce County on State Route 162. It is approximately 8 miles northeast of the City of Orting and 4 miles southwest of Buckley.

ENVIRONMENTAL ELEMENTS

1. **EARTH**

   a. General description of the site (circle one): flat, rolling, hilly, steep slopes, mountainous, other:

   b. What is the steepest slope on the site (approximate percent slope)?

   c. What general types of soils are found on the site (for example; clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

   Soils in the South Prairie Water Service Area are Buckley Loam and Kapowsin Gravelly Loam.

   d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

   None known.

   e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

   Not applicable. This is a non-project action.

   f. Could erosion occur because of clearing, construction, or use? If so, generally describe.

   Not applicable. This is a non-project action.

g. What percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Not applicable. This is a non-project action.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Not applicable. This is a non-project action.

2. **AIR**

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, and industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities, if known.

Not applicable. This is a non-project action.

b. Are there any off-site sources of emissions or odor that may affect your proposal? _____ If so, generally describe.

Not applicable. This is a non-project action.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Not applicable. This is a non-project action.

3. **WATER**

Surface:

a. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, salt water, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state the stream or river into which it flows.

South Prairie lies in a valley along South Prairie Creek, a tributary of the Carbon River.

b. 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 for this work.

Not applicable. The project is adoption of a water system plan.

c. 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 and/or the disposal site.

Not applicable. This is a non-project action.

d. Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.

Not applicable. This is a non-project action.

e. Does the proposal lie within a 100-year floodplain? If so, note floodplain location on the site plan.

Portions of South Prairie along South Prairie Creek are located in Zone A3, Area of 100-year floodplain according to Pierce County FIRM maps Community Panel # 530145 0001A, 12/15/81.

f. Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

Not applicable. This is a non-project action.

Ground:

a. Will groundwater be withdrawn, or will water be discharged to groundwater? Give general description, purpose, and approximate quantities of withdrawals or discharges, if known.

Not applicable. This is a non-project action.

b. Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s)is/are expected to serve.

Not applicable. This is a non-project action.

Water Runoff (including storm water):

a. Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Not applicable. This is a non-project action.

b. Could waste materials enter ground or surface waters? _____ If so, generally describe.

Not applicable. This is a non-project action.

c. Proposed measures to reduce or control surface water, groundwater, and runoff impacts, if any:

Not applicable. This is a non-project action.

4. PLANTS

a. Check types of vegetation found on the site and list specific species:

__X__ deciduous tree: alder, maple, aspen; other: _____

__X__ evergreen tree: fir, cedar, pine; other: _____

__X__ shrubs

__X__ grass

__X__ pasture

__X__ crop or grain

____ wet soil plants: cattail, buttercup, bulrush, skunk cabbage; other: _____

_____ water plants: water lily, eelgrass, milfoil; other: _____

_____ other types of vegetation: _____

b. What kind and amount of vegetation will be removed or altered?

Not applicable. This is a non-project action.

c. List threatened or endangered plant species known to be on or near the site.

None known.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Not applicable. This is a non-project action.

5. ANIMALS

a. Circle any birds or animals that have been observed on or near the site, or that are known to be on or near the site:

Birds: hawk, heron, eagle, songbirds; other:
Mammals: deer, bear, elk, beaver; other:
Fish: bass, salmon, trout, herring, shellfish; other:

b. List any threatened or endangered animal species known to be on or near the site.

None known.

c. Is the site part of a migration route? _____ If so, explain.

None known.

d. Proposed measures to preserve or enhance wildlife, if any:

Not applicable. This is a non-project action.

6. ENERGY AND NATURAL RESOURCES

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Not applicable. This is a non-project action.

b. Would your project affect the potential use of solar energy by adjacent properties? ____ If so, generally describe.

Not applicable. This is a non-project action.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Not applicable. This is a non-project action.

7. ENVIRONMENTAL HEALTH

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire, explosion, spill, or hazardous waste, which could occur because of this proposal? If so, describe.

Not applicable. This is a non-project action.

b. Describe special emergency services that might be required (for example, chemical spills or explosions).

Not applicable. This is a non-project action.

c. Proposed measures to reduce or control environmental health hazards, if any:

Not applicable. This is a non-project action.

d. Noise

1. What types of noise exist in the area, which may affect your project (for example: traffic, construction, or production equipment)?
Not applicable. This is a non-project action.

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, or production equipment)? Indicate the hours that noise would be generated by the site.
Not applicable. This is a non-project action.

3. Proposed measures to reduce or control noise impacts, if any:
Not applicable. This is a non-project action.

8. **LAND AND SHORELINE USE**

a. What is the current use of the site and adjacent properties?

The existing and proposed land use for South Prairie and its growth area is residential, commercial, industrial, recreational vehicle park, and agricultural/business.

b. Has the site been used for agriculture? If so, describe.

Yes. Portions of town support pastureland and farming.

c. Describe any structures on the site.

Housing, commercial uses, agricultural buildings.

d. Will any structures be demolished? _____ If so, what?

Not applicable. This is a non-project action.

e. What is the current zoning classification of the site?

Zoning is R (Residential Single Family), R/CUP (Residential, Conditional Use), M (Duplex, Multifamily), C (Commercial), AGB (Agricultural Business) and I (Industrial).

f. What is the comprehensive plan designation of the site?

The comprehensive plan designations are R (Residential Single Family), R/CUP (Residential, Conditional Use), M (Duplex, Multifamily), C (Commercial), AGB (Agricultural Business), Parks/Trails/Open Space, Government/Utilities, and I (Industrial).

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable.

h. Has any part of the site been classified an "environmentally sensitive" area?_____ If so, please specify.

South Prairie Creek and portions of the area are in a 100-Year flood plain.

i. Approximately how many people would reside or work in the completed project?

Not applicable. This is a non-project action.

j. Approximately how many people would the completed project displace?

Not applicable. This is a non-project action.

k. Proposed measures to avoid or reduce displacement impacts, if any

Not applicable.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The South Prairie Water System Plan is consistent with previous water system plans and relevant plans adopted by the Town of South Prairie and Pierce County.

9. **HOUSING**

a. Approximately how many units would be provided, if any? _____ Indicate whether it would be high, middle, or low-income housing.

Not applicable. This is a non-project action.

b. Approximately how many units, if any, would be eliminated? _____ Indicate whether it would be high, middle, or low-income housing.

Not applicable. This is a non-project action.

c. Proposed measures to reduce or control housing impacts, if any:

None needed.

10. **AESTHETICS**

a. What is the tallest height of any proposed structure(s), not including antennas or chimneys?

Not applicable. This is a non-project action.

b. What views in the immediate vicinity would be altered or obstructed?

Not applicable. This is a non-project action.

c. Proposed measures to reduce or control aesthetic impacts, if an

None needed.

11. **LIGHT AND GLARE**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Not applicable. This is a non-project action.

b. Could light or glare from the finished project be a safety hazard, interfere with views, or affect wildlife?

Not applicable. This is a non-project action.

c. What existing off-site sources of light or glare may affect your proposal?

Not applicable. This is a non-project action.

d. Proposed measures to reduce or control light and glare impacts, if any:

Not applicable. This is a non-project action.

12. **RECREATION**

a. What designated and informal recreational opportunities are in the immediate vicinity?

Third Street Park and Veterans Park. The Foothills Trail also runs through the Town, connecting with the City of Orting.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Not applicable. This is a non-project action.

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**

a. Are there any places or objects listed on, proposed for, or eligible for listing in national, state, or local preservation registers on or next to the site? _____If so, generally describe.

None known.

b. Generally describe any landmarks, or evidence of historical, archaeological, scientific, or cultural importance known to be on or next to the site.

None known. The Third Street Park was formerly the site of the South Prairie School and has historic significance to the town.

c. Proposed measures to reduce or control impacts, if any:

None needed.

14. **TRANSPORTATION**

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

South Prairie is located on SR 162.

b. Is the site currently served by public transit? _____If not, what is the approximate distance to the nearest transit stop?

Pierce Transit Route 406 travels between Bonney Lake and Buckley. The nearest transit stop is in Buckley, approximately 4 miles to the northeast of South Prairie.

c. How many parking spaces would the complete project have? _____ How many would the project eliminate? _____

Not applicable. This is a non-project action.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

Not applicable. This is a non-project action.

e. Will the project use (or occur in the immediate vicinity of) water, or air transportation? If so, generally describe.

Not applicable.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

Not applicable.

g. Proposed measures to reduce or control transportation impacts, if any

None needed.

15. **PUBLIC SERVICES**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools)? If so, generally describe:

Not applicable. This is a non-project action.

b. Proposed measures to reduce or control direct impacts on public services, if any.

None needed.

16. **UTILITIES**

a. Identify existing utilities by name including: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system; other:

Electricity:	***Puget Sound Energy***
Natural Gas:	***Puget Sound Energy***
Water:	***Town of South Prairie***
Telephone:	***Century Tel***
Sewer:	***Town of South Prairie***

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general utility construction activities on the site or in the immediate vicinity that might be needed.

Not applicable. This is a non-project action.

SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Date Submitted: June 20, 2006

D. SUPPLEMENTAL SHEET FOR NON-PROJECT ACTIONS
(Do not use this sheet for project actions.)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or 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?

   Replacement of pipes and other repairs to the system in the future will result in normal construction noise. Construction vehicles and equipment would also temporarily increase emissions to the air.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

   The improvements recommended in the plan are not anticipated to affect plants, animals, fish or marine life.

3. How would the proposal be likely to deplete energy or natural resources?

   An increase in groundwater withdrawal may occur with future growth. However, water use will be within established water rights.

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?

   Neither the plan nor improvements recommended in the plan are anticipated to affect environmentally sensitive or protected areas.

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 plan is consistent with land use plans adopted by South Prairie and Pierce County and will not allow or encourage incompatible uses.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

   The improvements recommended in water system plan are primarily infrastructure improvements of the existing system, although they also are planned to meet the anticipated needs of growth. It is not expected to increase demand.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

It is not anticipated that improvements recommended in the plan will conflict with existing regulations. All improvements will be coordinated with local, state and federal agencies for appropriate permits.

APPENDIX R

Chlorine Contact Calculations

Town of South Prairie: Potable Water Source

Chlorine Contact Time Product (CT) Calculations

Well #1 (School Yard Well) Estimated CT at first customer

A. EXISTING (no changes to system)

		Pipe Dia. =	8	inch										
		Length =	100	linear feet										
		Flowrate=	55	gpm										
		Area =	0.35	square feet										
Source Capacity[1] (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)		Flowrate (CF/min)		Baffling Factor (T10/T) 1.0		Detention Time (Min)	Total Detention Time T10 (Min)		FREE Residual Chlorine (mg/l)		CT (mg/l)(min)
55	7.4	34.9	/	7.4	x	1	=	4.75	4.7	x	0.25	=	1.2

B. MODIFICATION: Increase Free Residual to Meet Minimum 6.0 CT (mg/l) (min)

		Pipe Dia. =	8	inch										
		Length =	100	linear feet										
		Flowrate=	55	gpm										
		Area =	0.35	square feet										
Source Capacity[1] (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)		Flowrate (CF/min)		Baffling Factor (T10/T) 1.0		Detention Time (Min)	Total Detention Time T10 (Min)		FREE Residual Chlorine (mg/l)		CT (mg/l)(min)
55	7.4	34.9	/	7.4	x	1	=	4.75	4.7	x	1.27	=	6.0

C. MODIFICATION: Implement Project #S6 (Replace existing 8-inch with 10-inch, lengthen transmission into distribution) and #S1b (Increase physical source capacity to maximum proposed water right pf 100 GPM)

		Pipe Dia. =	10	inch										
		Length =	670	linear feet										
		Flowrate=	100	gpm										
		Area =	0.55	square feet										
Source Capacity[1] (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)		Flowrate (CF/min)		Baffling Factor (T10/T) 1.0		Detention Time (Min)	Total Detention Time T10 (Min)		FREE Residual Chlorine (mg/l)		CT (mg/l)(min)
100	13.4	365.4	/	13.4	x	1	=	27.33	27.3	x	0.22	=	6.0

Town of South Prairie: Potable Water Source

Chlorine Contact Time Product (CT) Calculations

Well #2 (Tubbs Road Well) Estimated CT at first customer

(USING BAFFLING FACTOR OF 1.0 ASSUMING WATER ENTERS DISTRIBUTION DIRECTLY, BYPASSES RESERVOIR)

A. EXISTING (no changes to system)

Pipe Dia. =	8 inch
Length =	1660 linear feet
Flowrate=	325 gpm
Area =	0.35 square feet

Source Capacity[1] (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)		Flowrate (CF/min)		Baffling Factor (T10/T) 1.0		Detention Time (Min)	Total Detention Time T10 (Min)		FREE Residual Chlorine (mg/l)		CT (mg/l)(min)
325	43.4	579.4	/	43.4	x	1	=	13.34	13.3	x	0.25	=	3.3

B. MODIFICATION: Increase Free Residual to Meet Minimum 6.0 CT (mg/l) (min)

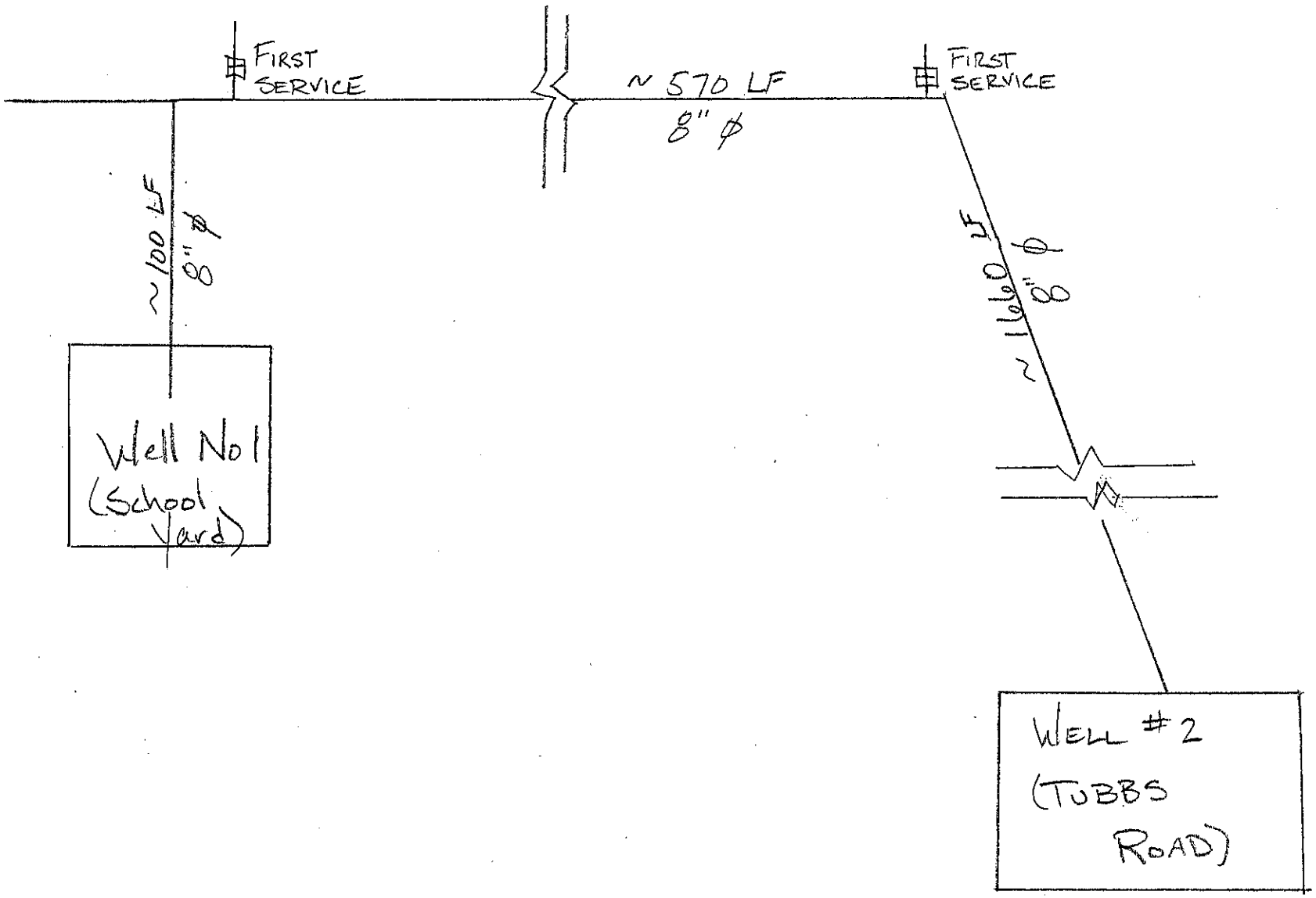
Pipe Dia. =	8 inch
Length =	1660 linear feet
Flowrate=	325 gpm
Area =	0.35 square feet

Source Capacity[1] (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)		Flowrate (CF/min)		Baffling Factor (T10/T) 1.0		Detention Time (Min)	Total Detention Time T10 (Min)		FREE Residual Chlorine (mg/l)		CT (mg/l)(min)
325	43.4	579.4	/	43.4	x	1	=	13.34	13.3	x	0.45	=	6.0

C. MODIFICATION: Implement Project #D3 (New 12" transmission main)

Pipe Dia. =	12 inch
Length =	1660 linear feet
Flowrate=	325 gpm
Area =	0.79 square feet

Source Capacity[1] (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)		Flowrate (CF/min)		Baffling Factor (T10/T) 1.0		Detention Time (Min)	Total Detention Time T10 (Min)		FREE Residual Chlorine (mg/l)		CT (mg/l)(min)
325	43.4	1,303.8	/	43.4	x	1	=	30.01	30.0	x	0.2	=	6.0


FIRST SERVICE
~ 570 LF
8" ϕ
FIRST SERVICE
~ 100 LF
8" ϕ
~ 1160 LF
8" ϕ
Well No 1
(School Yard)
WELL #2
(TUBBS ROAD)

Parametrix

PROJECT South Prairie WSP SHEET 1 OF
BY J. Drorak DATE 7/12/06 CHECKED DATE
SUBJECT CT Product JOB NO. PHASE TASK

CT Product Required = 6.0 (mg/L) min

Detention time @ existing configuration = 4.7 min

∴ Required residual R

$6.0 = 4.7 \text{ min} \times R$

$R = 1.27 \text{ mg/L}$ SAY 1.3 mg/L

12.5% NaOCl Specific gravity = 1.165

$$\frac{1.165 \text{ g soln}}{\text{ml soln}} \times \frac{1000 \text{ ml}}{\text{L}} \times \frac{0.12 \text{ g NaOCl}}{\text{g soln}} \times \frac{\text{lb}}{454 \text{ g}} \times \frac{3.785 \text{ L}}{\text{gal}}$$

$$= 1.165 \frac{\text{lb NaOCl}}{\text{gal soln}}$$

Hypochlorite ion weight

Na	22.9898	
Cl	35.453	$OCl^- = 51.45$
O	15.9994	
NaOCl	74.44	

OCl^- fraction = 51.45/74.44 = .691

This represents % compound available as OCl^- for each unit of NaOCl and therefore available for HOCl formation.

Parametrix

PROJECT _____ SHEET ____ OF ____
BY _____ DATE _____ CHECKED _____ DATE _____
SUBJECT _____ JOB NO. _____ PHASE ____ TASK ____

$$\text{Feed rate} = \frac{\text{Residual (R)} \times \text{Flowrate (Q)}}{\text{Purity (P)}}$$

$R = 1.3 \text{ mg/L}$

$Q = 60^{*} \text{ gal/min} \times \frac{3.785 \text{ L}}{\text{gal}} = 227.1 \text{ L/min}$

$P = \text{Chemical purity} \times OCl^{-} \text{ fraction}$

$= (0.95^{**}) \times (0.691) = .66$

* Actual source production is 55 gpm, use 60 gpm for more conservative estimate.

** Assume 95% purity.

$$\text{Feed rate} = \frac{1.3 \text{ mg/L}_{H_2O} \times \frac{227.1 \text{ L}_{H_2O}}{\text{min}}}{.66}$$

$= 447.31 \text{ mg/min}$ (@ 60 gpm)

$447.31 \text{ mg/min } (NaOCl) \times \frac{g}{1000 \text{ mg}} \times \frac{lb}{454 \text{ g}}$

$= 9.85 \times 10^{-4} \frac{lb (NaOCl)}{min}$

APPENDIX S

DOH/Ecology/County Review Comments and Responses

Larry
Mayor
RECEIVED DEC 11 2006

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
20435 72nd Ave. S., Suite 200, K17-12• Kent, Washington 98032 -2358

December 5, 2006

LARRY HARTER
SOUTH PRAIRIE, TOWN OF
PO BOX F
SOUTH PRAIRIE WA 98385

COPY

RE: South Prairie Water System, ID# 82300
Pierce County
Water System Plan - 2006
Submittal #06-0901

Dear Mr. Harter:

Thank you for submitting the draft Water System Plan (WSP) for the South Prairie Water System received in this office on September 1, 2006. We have reviewed the plan and offer the following comments. The comments must be adequately addressed prior to approval.

Water System Description

1. Please provide a signed *Consistency Statement* from the appropriate Town of South Prairie official and from Pierce County local government (see attachment).

Water Demand

2. Please provide actual water use figures for 2005.

✓3. Provide water use on an annual basis for the years 2006 to 2012, average day and maximum day demand, with and without water conservation assumptions.

System Analysis

✓4. Page 2-6. The Peak Hour Demand was expressed as 220 gpm/ERU. The units seem to be incorrect. Please clarify this.

5. Page 4-9. Please clarify that nitrate sampling is required on an annual basis for each source. There is no reduction in frequency from annual testing.

✓6. Page 4-10, Section 4.2.1. In light of the potential exceedence of the new arsenic standard by Well No. 1 please update the last sentence of the first paragraph to indicate that the more stringent criteria is 0.010 mg/L and not 0.05 mg/L.

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Source of Supply/Conservation

✓ 7. Attached is a copy of Department of Ecology's review of the Town's water rights for your files.

✓ 8. Page 2-3. New water use efficiency regulations should be in effect at the end of the year. It is anticipated that the maximum allowable amount of leakage will be 10%. It appears the six year average is 21%. Be aware that the draft *Water Use Efficiency Rule* would require that all municipal water suppliers maintain their distribution system leakage at or less than 10 percent of their annual production. Systems not meeting the leakage standard would be required to develop and implement a Water Loss Control Plan.
See page 2-7

Operations & Maintenance

9. Please include a map of the routine sample site locations for the Coliform Monitoring Plan. A map could not be found.

✓ 10. Page 7-3. Please clarify the operating permit definitions. It appears that the Blue and Yellow definitions have been transposed.

✓ 11. Table 7-3. A number of recommendations are proposed for a routine maintenance program. Which of these recommendations will actually be adopted by the Town?
Appropriate programs have been noted.

✓ 12. Table 7-6. Please update the NWRO phone number. It is 253-395-6757.

13. Page 7-14, Public Notification. Public Notification (PN) rules have a breakdown of notification requirements based on a three tiered system. For example a Tier 1 violation such as an acute coliform MCL violation requires a 24-hour notice. A Tier 2 violation, such as a non-acute coliform MCL violation, requires notice as quickly as possible but no longer than 30 days. It is recommended that the notification section be restructured to reflect the tier structure of the PN rule.

Improvement Program

14. Table 9-1. If project S1b would be used to address an arsenic exceedence for Well #1, it would need to be completed within 4 years of an actual MCL violation. It appears that the proposed schedule would not allow for this to happen. Please update the potential scheduling for S1b to take this into account.

Other Documentation

15. Please include some construction details if they are available. Does the Town have details for items such as meter settings, hydrants, concrete blocking, etc.?

16. Water systems with greater than 1000 connections are required to prepare a SEPA checklist as a part of the WSP. SEPA is not required for this document.

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We hope that you have found these comments to be clear, constructive and helpful in the development of your final draft WSP. We ask that you submit the revised WSP on or before March 5, 2007. In order to expedite the review of your revised submittal, please include a cover letter summarizing how each of the above comments was addressed in the revised WSP and where each response is located (i.e., page numbers, Appendices, etc.)

Regulations establishing a schedule for fees for review of planning, engineering and construction documents have been adopted (WAC 246-290-990). Please note that we have included an invoice in the amount of $1,167.00 for the review of the Water System Plan. This fee covers our cost for review of the initial submittal, plus the review of one revised document. Please remit your complete payment in the form of a check or money order within thirty days of the date of this letter to: **DOH, Revenue Section, and P.O. Box 1099, Olympia, WA 98507-1099.**

Thank you again for submitting your draft Water System Plan for our review. If you have any comments or questions concerning our review, please contact me.

Sincerely,

Richard Rodriguez
Regional Planner
(253) 395-6771

cc: John Ryding, DOH
Deb Hunemuller, DOE, SWRO
Mary Ausburn, Pierce County Dept. of Public Works
Gary Porter, TPCHD
Jennifer Dvorak, P.E., Parametrix

RECEIVED DEC 1 2006

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

October 5, 2006

Richard Rodriguez, Regional Planner
Department of Health
20435 72nd Ave S., Suite 200
Kent WA 98032

Dear Mr. Rodriguez:

Re: Town of South Prairie Water System Plan, ID# 82300, Pierce County, ODW # 06-0901

Thank you for the opportunity to review the Water System Plan (WSP) for the Town of South Prairie Water System. Consistent with the Memorandum of Understanding between our agencies, I reviewed the relevant portions of the Plan and offer the following comments.

The water right assessment is generally consistent with Ecology's records. The South Prairie Water System has adequate instantaneous and annual quantity as well as source capacity for the projected 20 year planning period.

Please contact me at (360) 407-0290 if you have questions regarding my comments.

Sincerely,

Deb Hunemuller
Water Resources Program
Southwest Regional Office

DH:th

cc: John Ryding, DOH

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DEPARTMENT OF ECOLOGY
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Larry Mayor

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Attachment 5: Water System Plan and Small Water System Management Program Consistency Statement Checklist

This checklist is intended to ensure consistency of water system planning documents with adopted local comprehensive plans and development regulations. Each local planning jurisdiction in which the water utility provides service will review the relevant water system planning information and provide a signed consistency statement to the utility for submittal to the Department of Health. If the local planning agency will not respond, the highest authority within the utility (chair of governing body, executive director of private companies, etc.) must sign to verify consistency of the plan information.

Water System Name: _____ PWS ID: _____

Planning Document Title: _____ Plan Date: _____

Local Planning Jurisdiction: _____

The retail service area, and any other areas not served by a separate public water system, and land use identified in the WSP is consistent with the *adopted comprehensive plan and adopted development regulations and policies.*		
For WSPs only: The growth projection used to forecast water demand for the retail service area is consistent with the adopted city/county's population growth projections (and commercial development projection if applicable). If a different growth projection was used, the alternative growth projection and methodology proposed is acceptable based on explanation given.		
For WSPs only: New potential large water users (that may have a significant impact on the water system) that the city/county is aware of have been identified in the WSP.		
For city-owned systems only: All policies regarding water service outside the corporate boundaries are included in this WSP. These policies are consistent with the adopted *comprehensive plan* and *development regulations.*		
Where the local planning agency is unable to sign a Consistency Statement: Provide documentation of efforts to coordinate with local agencies with a 60-day timeline for local agency to respond. Include: name of contact, date, type of effort attempted, and response from local agency.		

I certify that the above statements are true to the best of my knowledge and that these statements support the conclusion that the subject-planning document is consistent with adopted comprehensive plans, development regulations, and other policies.

_____ _____

Signature Date

_____

Printed Name, Title, & Jurisdiction

****For any issues of inconsistency, please provide comments on how they can be resolved. ****

Direction below is provided as guidance for consistency verification. This list is not comprehensive.

For service area:

A copy of the adopted land use/zoning map that corresponds to the service area should be included. The uses provided in the WSP should be consistent with the adopted land use/zoning map.

Water systems may have policies on extensions of water service outside of their existing boundaries. These must be consistent with the local planning jurisdiction's (both city and county) adopted comprehensive plan and development regulations.

Under the Growth Management Act (GMA), domestic water service is considered both an urban and rural service. Unless the comprehensive plan and development regulations specifically limit water service or have an alternative definition of rural service than what is provided in the GMA, water service is allowed anywhere within the county.

For demand forecasting:

Water demand forecasts for the next six years and the 20-year planning horizons should be included. These forecasts should be consistent with the local population growth rate projections.

If the local population growth rate projections are not used, provide a detailed explanation on why the projections chosen more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

Potential large water users may be identified by the following sources of information:

- Local planning agency
- Water utility
- Economic Development Council

D R A F T

February 5, 2007
U#_____

Jennifer Dvorak, Project Engineer
Parametrix
1231 Fryar Avenue
Sumner, WA 98390-0946

RE: Town of South Prairie – August 2006 Water System Plan Update

Dear Ms. Dvorak:

As the lead agency in the implementation of the Pierce County Coordinated Water System Plan (CWSP), Pierce County Public Works and Utilities is responsible for reviewing water system plans for consistency with the CWSP and the Pierce County Comprehensive Plan. This review process, although already occurring in Pierce County due to CWSP requirements, was emphasized by the Municipal Water Supply – Efficiency Requirement Act, Chapter 5 Laws of 2003 (Municipal Water Law) through the requirement of obtaining a "Consistency Statement" from the local planning agency.

I have reviewed the Town of South Prairie WSP and offer the following comments:

1. The maps showing the service area and land use to do identify Pierce County zoning for those areas outside the Town limits. Please amend the maps by adding this information.

2. The County acknowledges and concurs with the "near zero" growth projection for the duration of the sewer moratorium (estimated to be another 4-6 years). The projected growth rate of 9.5% for several years following the lifting of the moratorium should be re-evaluated during the next Plan update.

3. A couple of the Town's policies/regulations may be inconsistent with the CWSP. **1.8.4** is proposed to be amended to prohibit any new construction of "Group B" systems within the South Prairie Water Service Area. The CWSP identifies the circumstances under which new public water systems may be approved. For example, if it was determined that South Prairie was unable to provide timely and reasonable service to a new development and no other water system was willing or able to provide service.

1.8.8 Urban Growth Area. This policy addresses the requirement for urban levels of service within the corporate limits and UGA and that new development within the UGA or in any portion of the Town's water service area must pay for extension to the water utility. Areas outside the Town's corporate limit have been identified as low density residential and agricultural land. Development within these areas must be consistent with the County's zoning and development regulations. In addition, as noted previously, if it were determined that South Prairie was unable to provide timely and reasonable service to new development within its Water Service Area, a new well/public water system could be allowed (pursuant to the CWSP).

Once the land use and zoning map has been amended to include the portion of the South Prairie Water Service Area that is located within Pierce County and the relevant zoning designations and the policies have been amended to show consistency with the CWSP, the County will provide a signed Consistency Statement.

Should you have any questions, I can be reached at 253.798.6169.

Sincerely,

Mary Ausburn, AICP
Senior Planner

cc: Richard Rodriguez, DOH

Parametrix

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March 29, 2007
PMX No. 216-4101-003 (01/011)

Mr. Richard Rodriguez
Department of Health
Suite 200, K17-12
20435 72nd Avenue South
Kent, WA 98032-2358

Re: South Prairie Water System, ID # 82300
Pierce County
Water System Plan – 2006
Submittal #06-0901

Dear Mr. Rodriquez:

Thank you for your review comments dated December 5, 2006, for the draft South Prairie Water System Plan. The following responses are offered:

1. *Comment: Provide a signed "Consistency Statement" from the appropriate South Prairie official and from Pierce County local government.*

   Response: We received Pierce County review comments on February 5, 2007, a copy of which is attached to this letter. The comments have been addressed in this revision to the Water System Plan, and the plan has been forwarded to Pierce County for the requested Consistency Statement. We anticipate receipt of this Consistency Statement during your second review of this plan and will forward it to you upon receipt.

2. *Comment: Provide actual water use figures for 2005.*

   Response: This comment was discussed with John Ryding in a phone conversation on January 9, 2006, with Jennifer Dvorak from Parametrix. The historical data which was used to calculate future water demand projections included 1999 – 2004 for a total of six years. Water demand information for 2005 was not available at the time the original calculations were performed and presented in the water system plan. Mr. Ryding indicated that documentation of the 2005 data could be developed in this response letter rather than propagating the minor modifications throughout the current water system plan.

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The following information, which affects all projected water demand calculations, indicates the inclusion of 2005 data will decrease the projections. As such, use of the 1999 – 2004 data (omitting 2005) will provide more conservative projections than use of the 1999 – 2005 data.

	Units	1999-2004	1999-2005
Total System ERU's		180	182
Annual Daily Demand per ERU	gpd/ERU	239	235
Average Peak Factor		2.80	2.76
Maximum Day Demand	gpd/ERU	670	649
Peak Hourly Demand	**gpm**	**220**	**216**

3. *Comment: Provide water use on an annual basis for the years 2006 to 2012, average day and maximum day demand, with and without water conservation assumptions.*

   Response: These numbers have been included in Tables 2-8 and 2-9.

4. *Comment: Page 2-6. The Peak Hour Demand was expressed as 220 gpm/ERU. The units seem to be incorrect. Please correct.*

   Response: The unit has been corrected to read 220 gpm.

5. *Comment: Page 4-9. Please clarify that nitrate sampling is required on an annual basis for each source. There is no reduction in frequency from annual testing.*

   Response: The text has been modified to indicate testing once a year.

6. *Comment: Page 4-10, Section 4.2.1. In light of the potential exceedance of the new arsenic standard by Well No. 1, please update the last sentence of the first paragraph to indicate that the more stringent criteria is 0.010 mg/L, and not 0.05 mg/L.*

   Response: The sentence has been corrected.

7. *Comment: Department of Ecology's review of the Town's water rights is attached.*

   Response: Acknowledged. The documents will be collected, in addition to other official correspondence relating to this water system plan, and included in a new Appendix S.

8. *Comment: Page 2-3. New water use efficiency regulations will require municipal water suppliers to maintain distribution system leakage at or less than 10% of their annual production.*

   Response: Acknowledged. Page 2-7 of the Water System Plan discusses this and references a leak detection program as detailed in Section 5: Conservation, Water Rights, System Reliability and Interties. A leak detection program has also been developed as part of the improvement program, Project OM4, Leak Detection Program.

9. *Comment: Please include a map of the routine sample site locations of the Coliform Monitoring Plan.*

   Response: The requested document has been provided and is included in Appendix F.

10. *Comment: Page 7-3. Clarify the operating permit definitions. It appears that the Blue and Yellow definitions have been transposed.*

    Response: The permit definitions have been corrected in the plan.

11. *Comment: Table 7-3. Indicate which routine maintenance operations will be adopted by the Town.*

    Response: All of the maintenance operations will be adopted by the Town with the adoption of this Water System Plan. Funding for the maintenance operations has been provided in the Financial Plan in Chapter 8.

12. *Comment: Table 7-6. Update the NWRO phone number.*

    Response: The phone number has been updated.

13. *Comment: Page 7-14, Public Notification. Restructure the three-tiered notification requirements to match Public Notification rules.*

    Response: The text has been modified to reflect the three-tiered system. Because of the extensive notification requirements, the reader has been referenced to DOH's *Public Notification Handbook* dated June 2000 for specific implementation actions.

14. *Comment: Table 9-1. Update the scheduling for Project Sb1 to address the arsenic problem in Well No. 1 within 4 – years of the MCL violation.*

    Response: Project S6, Increase Chlorine Contact Time, Well No. 1, serves a dual purpose in that it increases chlorine contact time, but it also serves to blend water from Well No. 1 (high concentrations of arsenic) with water from Well No. 2 (low concentrations of arsenic). This project has been scheduled within four years of the anticipated MCL violation so as to address the arsenic concentrations. The feasibility of this solution was discussed briefly on page 4-11 of the plan. Additional possibilities have been documented in the Capital Improvement Plan in the event the Town wishes to pursue additional treatment prior to blending. As such, Project S6 still remains the Town's primary means for addressing arsenic at Well No. 1.

15. *Comment: Include construction details if they are available.*

    Response: The requested document has been provided and is included in Appendix N.

16. *Comment: Water systems less than 1,000 connections are not required to prepare a SEPA checklist.*

    Response: Acknowledged.

Please contact me regarding any additional questions about this Water System Plan at (253) 863-5128.

Sincerely,

PARAMETRIX

Jennifer Dvorak, P.E.

JD:dd

Enclosure

cc: Project File