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KLICKITAT COUNTY PORT DISTRICT NO. 1 DALLESPORT INDUSTRIAL PARK WATER SYSTEM PLAN

RECOMMENDATIONS AND IMPROVEMENTS
TO MEET
SIX-YEAR REQUIREMENTS - 2008 TO 2014
TWENTY-YEAR REQUIREMENTS - 2008 TO 2028

Prepared for:

Port of
Klickitat

154 East Bingen Point Way, Suite A
Bingen, Washington 98605
(509) 493-1655

First Draft: January 2008
Second Draft: June 2009
Third Draft: May 2010
Adopted: August 2010

wo#12726

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
EASTERN DRINKING WATER REGIONAL OPERATIONS
16201 East Indiana Avenue, Suite 1500, Spokane Valley, Washington 99216-2830
TDD Relay 1-800-833-6388

August 20, 2010

Marc Thornsbury, Executive Director
Port of Klickitat
154 E Bingen Point Way, Suite A
Bingen, WA 98605

Subject: Dallesport Industrial Park Water System; PWS ID #00238 5; Klickitat County Water System Plan; DOH Project #08-0215; **DOH Approval Letter**

Dear Marc:

The Dallesport Industrial Park Water System Plan (WSP) received in this office on February 19, 2008, with revisions submitted on July 6, 2009, June 1, 2010, and August 11, 2010, has been reviewed and in accordance with the provisions of WAC 246-290-100, is hereby **APPROVED**.

An approved update of this WSP is required on or before July 9, 2016, unless the Department of Health (DOH) requests an update or plan amendment pursuant to WAC 246-290-100(9). Approval of this WSP is valid as it relates to current standards outlined in Washington Administrative Code (WAC) 246-290 revised July 2008, WAC 246-293 revised September 1997, and RCW 70.116, and is subject to the qualifications herein. Future revisions in the rules and statutes may be more stringent and require facility modification or corrective action.

The WSP includes capacity information that demonstrates the physical and legal ability of this water system to provide water during the six-year period for which the approval of the WSP is valid. **Based on the analysis presented in the WSP, the approved number of connections for this water system is 539.**

The Dallesport Industrial Park / Port of Klickitat is responsible for adding/permitting new service connections in a manner consistent with the water system plan so that the physical capacity and water right limitations are not exceeded.

This approval does not provide any guarantee and should not be considered to provide any guarantee concerning legal use of water or any subsequent water right decisions by the Department of Ecology (Ecology). A copy of Ecology's letter dated April 24, 2008 regarding your water rights is enclosed. This approval does not affect any uncertainties regarding your water rights or the resolution of those uncertainties. Depending on the resolution of the uncertainties, further planning and/or other action may be necessary.

At this time, the Department of Ecology considers this system not municipal. The Dallesport Industrial Park water system may not expand the water rights place of use through the DOH planning process, nor are they subject to the Municipal Water Law requirements under WAC 246-290-106, -108, and -810.

Standard Construction Specifications for distribution main extensions have been approved as part of this WSP. With this approval and consistent with WAC 246-290-125 (2) the Dallesport Industrial Park may proceed with the installation of distribution main extensions, without DOH approval, provided that:

> The Dallesport Industrial Park / Port of Klickitat maintains on file completed construction completion reports (a copy of which is attached) in accordance with WAC 246-290-125(2) and makes them available for review upon request by DOH.

The approval of this waiver does not include the construction without DOH approval for source related projects, such as but not limited to, new sources, treatment, or transmission main.

Submittal of the WSP included local government consistency determinations from the Klickitat County Planning Department. This WSP meets local government consistency requirements for WSP approval pursuant to RCW 43.20 for these entities.

WAC 246-290-990 authorizes a fee to be charged for the review of water system plans, reports, and construction documents. This fee covers the initial review and the revised submittal review. In the event a third draft is submitted, an additional fee of 25 percent of the original fee will be charged. An invoice for $301.50 is enclosed.

Thank you for your cooperation. DOH recognizes the significant effort and resource commitment involved in the preparation of this WSP. If you have questions or wish to check our records, please contact either of us at (509) 329-2120 or (509) 329-2122, respectively.

Sincerely,

Andres Cervantes, PE
Regional Engineer
Office of Drinking Water
Division of Environmental Health

Christine Collins, MURP
Regional Planner
Office of Drinking Water
Division of Environmental Health

Enclosures: Department of Ecology letter
Construction Completion Report
Invoice for 3rd Draft review

cc: Klickitat County Health District
Klickitat County Planning Department
Department of Ecology, Central Regional Office
Darrin Eckman, PE, Tennison Engineering

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
15 W Yakima Ave, Ste 200 • Yakima, WA 98902-3452 • (509) 575-2490

April 24, 2008

Jared Ladwig
Dallesport Industrial Park
154 E Bingen Point Way #A
Bingen WA 98605

Re: Dallesport Industrial Park Water System Plan (WSP)

Thank you for the opportunity to review and comment on the Dallesport Industrial Park (Port) Water System Plan (WSP) which the Department of Ecology (Ecology) received in our office on February 22, 2008. Based on my review of your submittal, I have the following comments.

1. The current water source is from two wells. Other components of the Port's water system includes one reservoir, a fire booster pump station, a fire suppression distribution system, a potable distribution system, and approximately three miles of pipe.

2. The Port's current water system serves 17 separate active connections, primarily commercial/industrial accounts. These are non-residential connections. The water use of the Port's 17 connections is equivalent to that of approximately 61 single-family homes (ERU).
   a. **"Equivalent residential unit (ERU)"** means a system-specific unit of measure used to express the amount of water consumed by a typical full-time single family residence.

3. According to RCW 90.03.015(4), municipal water supply purposes mean a beneficial use of water for residential purposes through 15 or more residential service connections. Until the water usage for the above system actually serves 15 or more residential service connections, the purpose of use is community domestic supply. When 15 residential connections are served, the water right purpose will become, by operation of law, a municipal water supply right.

4. At this time this water system does not qualify as a Municipal Water System as defined in RCW 90.03.015. Ecology, therefore, has no comments on the water system as it exists at this time.

Feel free to contact me at 509-454-4256 if you have questions. There is an answering system at that number to cover when I am away from my desk.

Sincerely,

Carol Mortensen

Carol Mortensen
Water Resources Program

CM:gg/080437
cc: Christine Collins, Department of Health, Division of Drinking Water, Spokane

DALLESPORT INDUSTRIAL PARK WATER SYSTEM PLAN

RECOMMENDATIONS AND IMPROVEMENTS
TO MEET
SIX-YEAR REQUIREMENTS - 2008 TO 2014
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Prepared for:

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Prepared by:

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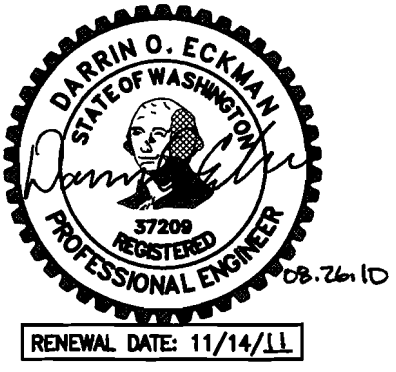

First Draft: January 2008
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TOPIC	DISCUSSION/ASSESSMENT/FINDINGS	ACTION
Attendance	**Commissioner/Staff Present:** Port Commissioners (PCs) James Herman; William Schmitt; and Wayne Vinyard; Executive Director (Exec.D) Marc Thornsbury; Administrative Assistant/Port Auditor (AA/PA) Margie Ziegler; and Maintenance Supervisor (MaintSup)Terry Wroe. **PC/Staff Absent:** None. **Guests Present:** Laura Morris; Paul & Dorie Cothren, Dallesport Log Yard; and Marsha Holliston, Mt. Adams Chamber.	Meeting called to order at 2:05pm at the Dallesport Log Yard.
Tour DIP Dock and Log Yard Walk Through	PC Vinyard started the tour of the Dallesport Log Yard for the purpose of collecting information so the PC can be informed as to current log yard operations when considering terminal facility policy. Paul Cothren, Dallesport Log Yard (DLY), explained the operation of the staging area, bark removal, unloading, scaling, and log barge loading. Cothren said at this time there is a market for the bark that is being removed from the log yard. Storm water run-off was discussed. PC Vinyard adjourned the PC meeting at 3:10pm at the Log Yard. PC Vinyard reopened the meeting at 3:52pm at the Port Office.	
Administrative Matters Consent Agenda	Minutes – July 6, 2010 Payroll Vouchers – July 16, 2010 #23819-23826, $8,619.62 Vouchers – July 20, 2010 #23827-23846, $82,858.22	PC Schmitt M, to approve the consent agenda with changes to the minutes, PC Herman S, MP
Resolution No. 8-2010 Insurance Requirements	(Exec.D) Thornsbury said this resolution combines the elements discussed at previous meetings.	PC Herman M, to approve the Insurance Requirements Resolution No. 8-2010, PC Schmitt S. MP
Resolution No. 9-2010 Disaster Recovery Siting		PC Schmitt M, to approve Disaster Recovery Siting Resolution No. 9-2010, PC Schmitt S. MP

Executive Director's Report: Dallesport Terminal Operating Policy	Water use for dust control was discussed. Boundaries of the Log Yard lots were discussed and the PC considered the need to have them clearly marked. Discussion followed regarding the best utilization of the waterfront properties, current lease details, and making the terminal area attractive and accessible for other users. The PC considered a lease of 3 years with 2 one-year options for lots 44 and 43 and month-to-month for lot 45. The PC discussed making it very clear in the new lease agreement that the Log Yard is a secondary user, that the barge dock is a public use facility, and that if another party should seek to move material over the barge dock, the lot 45 lease would be terminated. The PC considered printing a reminder statement on the invoice each month. (Exec.D) Thornsbury reminded the PC of the negative reaction to the last request the Port made regarding vacating lot 45 to permit aggregate loading. PC Herman stated that Paul at DLY said that he could move out in 30 days with notice. The PC considered rates of $340/acre for lots 43/44 and $400/acre for lot 45. The lease price of the various waterfront parcels was discussed. PC Herman said Lot 45 is more valuable than the other waterfront properties and its lease/use will save DLY money in fuel, equipment maintenance, and time.	

Executive Director's Report: cont.. Dallesport Terminal Operating Policy continued . . .	Needed repairs to the dock were discussed. The PC noted that the damage to the dock may already have occurred before DLY assumed the property lease. A possible engineer's estimate for storm water design and an asphalt lift on the barge dock was discussed. Clean up was discussed. The southwest area of the dock was discussed and the need for a physical barrier by the water's edge. The PC considered removing bark with a back hoe and placing concrete barriers along the waterfront. Requiring a 10 foot buffer from the water was also discussed. (Exec.D) Thornsbury said it is important to start clean up of the waterfront and show progress each year. The west end of the log yard was discussed. PC considered requiring all junk, scrap metal and unused equipment owned by DLY to be removed. The Port would remove material that is not DLY's. The PC noted that the bark loading bunker at the northeast corner of the dock needs to be operated more carefully so as not to spill bark over the concrete bunker. Log wharfage was discussed and the PC considered raising it 3% this year and 4% in subsequent years until 2040. The use of a fixed versus index-based escalator was discussed. (Exec.D) Thornsbury said he did a comparison of the CPI in 2009 covering the last 10 years and the average was approximately 3.1% at that time.	
Harbor Drive Project	(Exec.D) Thornsbury reported that funding for the Harbor Drive Project was awarded by CERB. Thornsbury said bid specifications are being prepared, a pre-bid meeting is set for July 28th and the bid is expected to be awarded on August 10.th	

Executive Director's Report: cont. Water Master Plan Adoption	PC Schmitt reviewed the water master plan.	PC Schmitt M, to adopt the final DIP Water Master Plan as prepared by Tenneson Engineering, PC Herman S. MP
Key Bank 06 Bonds Payoff	(AA/PA) Margie Ziegler said if the 06 Bonds were to be paid off early in October 2010, there would be an interest reduction of $69,143.62 and a prepayment penalty of $28,398.86 for a net savings to the Port of $40,744.76. Ziegler said when the Port took out the bonds in 2006 there was to be a final payment of $1,108,966.68 in October 2011. Ziegler said by managing the IDD funds since 2007, the Port is able to pay the bonds off early. PC Vinyard said he is glad the Port Commission took the IDD Tax dollars very seriously and planned for the bond payoff.	PC Herman M, to pay off the 06 Bonds off early in October 2010. PC Schmitt S, MP
Ramco Salt Cakes	(Exec.D) Thornsbury said that Environmental Quality Management has been hired by the EPA to complete the Ramco Saltcake Disposal Site clean up.	
Miscellaneous Committee Updates	PC Herman: none PC Schmitt: Will be attending the WPPA Commissioners Seminar in Leavenworth, WA July 25-27, 2010. PC Vinyard: Next EDA meeting will be September 9, 2010. PC Vinyard said the EDA committee was sent an email to respond to the Port's Harbor Drive Project. PC Vinyard is very grateful for Klickitat County's support of the Harbor Drive Project. PC Vinyard said the Port has had three impressive successes this week, the award of the EDA and CERB funding for the Harbor Drive Project, determining to pay off the 06 Bonds early, and the EPA clean up at the Dallesport Industrial Park.	

Public Comment	None	
Adjournment	PC Vinyard adjourned the PC Meeting at 6:54pm	

Approved on 8-10-10
(Date)

Marc Thornsbury, Executive Director

Margie Ziegler, Administrative Assistant

Jim Herman, Secretary

This Water System Plan Update was funded
through a grant provided by the
Washington State Department of
Community, Trade and Economic Development.

EXECUTIVE SUMMARY

The 2008 Klickitat County Port District No. 1, Dallesport Industrial Park Water System Plan Update provides a long term planning strategy for the Port's non-municipal, public water utility over both a 6-year and 20-year planning period. It has been prepared in accordance with the Washington State Department of Health requirements specified in Washington Administrative Code Chapter 246-290. The Department of Health considers this Plan to represent a commitment by the Port to follow-up and implement the Plan's recommendations and capital improvements. The Plan consists of ten Sections.

- Sections 1 and 2 of this Plan provide background data, including a description of existing facilities, service areas, service area policies, and projections of population and water use.

- Section 3 represents a description of water system design and water quality standards, and an analysis of water quality. This section also presents a source and storage analysis.

- Section 4 provides for a water use efficiency program to meet the requirements of the current *Water Use Efficiency Guidebook, Appendix K* for a non-municipal system.

- Section 5 provides an overview of the source water protection and Wellhead Protection Program in addition to an evaluation of the system's water rights.

- Section 6 includes a brief overview of the Operation and Maintenance Program, along with water quality and coliform monitoring, cross-connection control and recordkeeping requirements.

- Sections 8 and 9 include the proposed capital improvements, along with an evaluation of the financial capabilities of the water system and possible financing options for the recommended improvements.

- In addition, the appendices provide the remaining support documents, such as the Distribution Facilities Design and Construction Standards and other documents referred to throughout the report.

The Port's current water source is from two groundwater wells. Other components of the Port's water system includes one reservoir, a fire booster pump station, a fire suppression distribution system, a potable distribution system, and approximately 3-miles of pipe.

The Port's current water system serves 17 separate active connections, primarily commercial/industrial accounts. The water use of the Port's 17 connections is equivalent to that of approximately 61 single-family homes.

The Port is anticipating continued growth over the 6-year planning horizon within their core industrial area and the possible water service to the proposed Columbia Gorge Regional Airport Business Park. In 2014, the Port expects to provide water service to 55 commercial/industrial connections with an equivalent usage of approximately 425 Equivalent Residential Units. The 20-year planning projection anticipates 120 water service connections with an equivalent residential usage estimated at 808 units.

An analysis of the water system highlights some of the growth issues that the Port will need to address during the 20-year planning period. The immediate improvements include disinfection of Well S02, replacement of source meters and installation and replacement of individual service meters and double-check valve assemblies where needed. In addition, modifications to the distribution system will combine the fire suppression and potable water distribution systems into one mainline with a separate transmission line being created to transport water from the two sources to the reservoir. Finally, the Port will apply for additional groundwater rights and pursue development of a Wellhead Protection Plan and a System Development Charge fee structure. The possible service to the Airport Business Park will require additional transmission and distribution mains, along with the possible installation of a reservoir depending upon the elevations of the proposed services. It is anticipated that the cost of these expansion improvements within the Future Service Area will be borne by the developer. All other capital improvements outlined within the report will be budgeted and funded by the Port.

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Section 1: Description of Water System

This chapter presents information on the ownership and management of the system, system history, inventory of existing facilities, related planning documents, existing and future service areas and characteristics, and service area agreements and policies.

1.1 Ownership and Management

The Dallesport Industrial Park water system is owned and operated by the Klickitat County Port District No. 1 (Port). The Port is a municipal port district administered by an elected Board of Commissioners. Current Port Commissioners are:

Mr. James Herman -- District #1
Mr. William Schmitt -- District #2
Mr. S. Wayne Vineyard -- District #3

Port Administration duties are performed by Mr. Marc D. Thornsbury, the Executive Director. The Port has entered into an agreement with the Klickitat County Public Utility District No. 1 (KPUD) for operation and maintenance services on the water system. The system is operated by Mr. Timothy Furlong (Water Distribution Specialist #011982). In addition, Mr. Terry Rowe, from the Port also provides maintenance of the water system. The contact information for the Port and KPUD is:

Klickitat County Port District No. 1
154 East Bingen Point Way, Suite A
Bingen, Washington 98605

Phone: (509) 493-1655
Fax: (509) 493-4257

Klickitat County Public Utility District No. 1
1313 South Columbus Avenue
Goldendale, Washington 98620

Phone: (509) 773-5891
Fax: (509) 773-4969

The Port's Washington State Department of Health Water System Identification No. is 00238. A copy of the Port's Water Facility Inventory (WFI) Form and Operating Permit is provided in Appendix A. The Port was issued a "GREEN" operating permit in December 2008. The current color is "YELLOW" based on information as of May 2010, due to the extension of time provided to complete this Water System Plan. The Dallesport Industrial Park water system currently has a total of 108 approved connections with a total number of calculated connections of 56 and no residential population.

1.2 System History and Background

The Industrial Park property covers approximately 640 acres and is located in Dallesport, Klickitat County, Washington (Figure 1). The Binding Site Plan for the Industrial Park and its current water system components are shown in Figure 2. Less than five percent of the Industrial Park property has been developed and is currently being utilized. The water system provides both potable and fire protection water for the developed portions of the Industrial Park. In addition, the water system provides commercial potable water for the adjacent Columbia Hills RV Park through a special agreement. The special agreement was originally entered into in 1994 between the Port and the RV Park to provide for water to the RV Park due to timing constraints involved with the RV Park obtaining a separate water permit from the Department of Ecology. This agreement was renewed in 1996 and 2001 and most recently in March 2007, whereby it was extended indefinitely so long as all terms remain the same as the original agreement and with the caveat that the Port Commission may review this agreement on a yearly basis. A copy of the special agreement is included in Appendix H. Because the water system serves no residential connections and has a non-residential population of approximately 95 persons per day, on average it is classified "Non-Transient, Non-Community, Group A Water System". Water is obtained from two groundwater wells (S01 and S02), shown in Figure 2. The groundwater is pumped from the wells into a 738,000-gallon aboveground steel storage tank, or directly into the potable water distribution system, depending on the water demand and the water surface elevation within the tank. Approximately 2/3's of the storage tank, or 492,000-gallons, is reserved for fire protection. The remaining 1/3, or 246,000-gallons, provides storage for the potable water system. The water distribution system consists of two parallel systems, one providing potable water and the other providing fire protection service. The fire protection system includes a 75 horsepower electric booster pump and a 125 horsepower diesel backup booster pump. The booster pump activates when the pressure in the fire protection distribution system drops below 48 pounds per square inch (psig). Groundwater from Well S01 is disinfected at the wellhead with sodium hypochlorite (NaOCl). The hypochlorite is added using a chemical feed metering pump that operates when the well pump is activated. Groundwater from Well S02 is not disinfected, but is allowed to commingle with water from S01. The free chlorine residual of the commingled water is monitored and maintained between 0.1 and 1.0 milligram per liter (mg/l). Well S01, the storage tank, the fire protection booster pump station, and most of the distribution piping were constructed in 1972. Well S02 was constructed later in 1982 and the disinfection system was added to Well S01 in 1994. The water distribution loop was added on the western portion of the Industrial Park in 2003 in conjunction with a site development project.

1.3 Geographic and Environmental Description

The Industrial Park is located in Dallesport, an unincorporated area of Klickitat County in south-central Washington. This area lies on a peninsula of land directly north of The Dalles, Oregon and the Columbia River, which separates the two states. The proposed Service Area is located within an Urban Exempt Area of the Columbia River Gorge

National Scenic Area. The Industrial Park and surrounding areas can be accessed from State Route 14 and US Highway 197. The general topography slopes downward to the south and the Columbia River with elevations within the service area ranging from 180 to 220 feet above mean sea level (msl). The climate in this region is influenced by the rain shadow effect of the Cascades. Conditions throughout the area are characterized by low humidity, an abundance of sunshine, and low annual precipitation. There is typically some wind movement. The annual precipitation is approximately 13.5-inches per year. Winter temperatures vary from an average low of 28° F to an average high of 66° F. Summer temperatures vary from an average minimum of 41° F to an average maximum of 87° F.

1.4 Existing Facilities

A general description of the existing facilities is provided below. A more detailed description of these existing facilities is also provided in Chapter 3 of this Water System Plan.

a) Water Source – Water is supplied by Wells S01 and S02. Well S01 was drilled to a depth of 210-feet and has a 25 horsepower vertical turbine pump, with a capacity of 225-gallons per minute. Well S02 was drilled to a depth of 292-feet and has a 75 horsepower submersible pump capable of 1,002-gallons per minute. Well S01 is the primary source of water for the system, while S02 is the backup source and, historically, has operated infrequently.

b) Water Treatment Facilities – Prior to distribution, source water from Well S01 is disinfected using a 2.1% (approximate) solution of NaOCl (sodium hypochlorite). The sodium hypochlorite is metered from a 45-gallon storage tank into the source water using a constant rate metering pump that is activated when Well Pump S01 is in operation.

c) Distribution Piping – As mentioned previously, the distribution system is comprised of two separate pipe systems. The potable water system consists of approximately 2,250 lineal of asbestos concrete (AC) pipe and approximately 10,850 lineal feet of polyvinyl chloride (PVC) pipe. The fire protection system includes approximately 2,800 lineal feet of AC pipe and 500 feet of PVC pipe. The potable water system includes five fire hydrants scattered throughout the Industrial Park. The fire protection system includes one fire hydrant located on the south side of Kreps Drive.

d) Fire Protection Booster Pumps – To maintain minimum fire system pressures, the fire distribution system includes a 75 horsepower electric booster pump and a 125 horsepower diesel backup booster pump. The pumps are activated when the pressure within the fire protection distribution line drops below 48 psig and is turned off when the system pressure rises to 50 psig.

e) Meters – Each service connection is equipped with a propeller type flow totalizing meter. The meters are read monthly and are the basis for water billings. Propeller type flow totalizing meters are also installed at the source wells. These meters are read twice each week.

f) Storage Tank – The 738,000-gallon steel storage tank is located above grade and is approximately 79 feet tall and 40 feet in diameter. The storage tank provides storage for both the potable water and fire protection systems. The tank's inlet and potable water outlet is located approximately 58 feet above the bottom of the tank. During periods of emptying (this occurs when the wells are not operating or cannot meet the water demand) this inlet serves as the outlet to the potable water distribution system. The tank's primary outlet is approximately 1.5 feet above the bottom of the tank and serves as the only water inlet to the fire protection system. This configuration reserves approximately 2/3 of the tank's capacity for fire protection and 1/3 for potable water. This configuration results in poor mixing within the storage tank. As a result, stratification of the tank may occur resulting in stagnation and/or low residual chlorine concentrations within the bottom 2/3's of the storage tank.

g) System Controls – The well pumps are controlled by pressure transducer switches located at the storage tank. The transducer switches are directly connected to the well pump controllers, which are located in the well houses. Operation of the fire booster pumps is regulated by a pressure gauge located in the fire protection water main. The pressure gauge sends a condition signal to the booster pump controller. When the pressure in the main drops below 48 psi, the control activates the electric booster pump. In the event of a power outage or failure in the electric booster pump, the diesel fire backup booster pump is activated. The S01 disinfection metering pump is controlled by the S01 pump controller. The controller activates the metering pump simultaneously with the well pump.

1.5 Related Plans

a) Related Planning Documents - The following planning documents were used in preparing this plan update/amendment.

- Kennedy/Jenks Consultants – *Final Water System Plan, Klickitat County Port District #1*, 2003.
- Kennedy/Jenks Consultants – *Dallesport Wastewater Facility Plan*, 2002.
- KCM, Inc. – *Klickitat County Dallesport Area Water System Plan*, 1999.

b) Watershed Planning - The Dallesport peninsula is located in the Klickitat Basin Water Resource Inventory Area (WRIA) 30. A formal watershed plan was prepared for this basin and initiated with the concurrence of Klickitat County, Yakima County, the City of Goldendale, and Public Utility District #1 of Klickitat County (KPUD). While supportive of watershed planning for WRIA 30, Yakima

County elected not to participate in the process and opted out with the concurrence of the other initiating governments in accordance with the provisions of Chapter 90.82 Revised Code of Washington (RCW). This planning document and the initiating governments developed the following Vision Statement for Water Resources within WRIA 30, *"Water resources within Water Resource Inventory Area 30, are managed pursuant to a watershed management plan developed through a community based partnership. The quantity of water available is sufficient to meet the needs of current and future populations and support economic growth and agricultural needs. Aquatic and riparian habitats are properly functioning at levels that enhance fish and wildlife populations and provide recreation and other cultural benefits. The quality and management of water resources are contributing to the quality of life and long term economic well being of the citizenry, community sustainability, and habitats."*

c) Comprehensive Plan - Dallesport is governed by the Klickitat County Zoning Ordinance. The area of the Industrial Park is currently zoned *General Industrial*, while the areas of future expansion include *Industrial Park, Tourist Commercial, Open Space,* and *Airport Development*. The Zoning Ordinances are enforced by the Klickitat County Planning Department, which in turn is overseen by the Klickitat County Planning Commission, an advisory body to the Klickitat County Board of Commissioners. The Planning Commission consists of nine County citizens appointed by the Klickitat County Board of Commissioners, which consists of three elected positions.

1.6 Existing and Future Service Areas

The existing Service Area boundary corresponds to the Retail Service Area boundary. This inclusive boundary includes all properties within the Industrial Park and the adjacent Columbia Hills RV Park (Figure 1 and Figure 2). As noted, currently only approximately five percent of the overall property is developed. At the present time, the Port has indicated their willingness to include a portion of the Columbia Gorge Regional Airport (Airport) in their Future Service Area boundary. The actual area proposed to be served is the 106 acre Airport Business Park. The other location of the Future Service Area would be the existing Port property lying north of the existing Service Area. The Future Service Areas are shown in Figure 2.

1.7 Service Area Agreements and Policies

The State of Washington Department of Ecology has deemed the Dallesport Industrial Park Water System a non-municipal water system as defined in RCW 90.03.015, as noted in their letter dated April 24, 2008, to the Port (Appendix H). Therefore, the Dallesport Industrial Park Water System is not required to comply with all aspects of the Municipal Water Law regarding water use efficiency and water loss control. In addition, the Port is

also not required to provide a Duty to Serve statement pursuant to RCW 43.20.260. The Port does follow the service and connection policies outlined below.

a) Duty to Serve - It is the Port's policy to provide all potable and fire suppression water to customers within the defined Retail Service Area. All water is to be distributed through infrastructure and facilities owned and maintained by the Port. The design and construction of infrastructure and facilities to serve areas that do not have existing infrastructure present is the responsibility of the developer. Design and construction of these facilities is to follow the standards set forth by the Washington State Department of Health and the Port of Klickitat. Once construction of infrastructure and facilities is completed, tested, and deemed satisfactory by the Port, then said facilities must be deeded to the Port.

b) New Service Connections - To establish a new connection within the Port's water system, a prospective customer must submit to the Port, a written request for water service. The request must include an estimate of the anticipated monthly water use, the size of connection requested, the nature of the onsite activities, and the location of the service. The request for water services must then be presented to the Port Commission for approval. The Port allows for connections between 3/4-inch and 6-inches in diameter. New connections are made by a licensed plumbing contractor at the expense of the customer and are to include a readily accessible service meter housed in a meter box. The Port observes each connection prior to burial. All connections are to be made in accordance with applicable plumbing codes and may include a double-check backflow preventer.

1.8 Satellite Management Agencies

The Port is not a Satellite Management Agency (SMA). However, the Port has contracted with the Public Utility District No. 1 of Klickitat County (KPUD) to operate the Port's Dallesport Industrial Park water system.

Section 2: Basic Planning Data

2.1 Current Population & Number of Services

The Dallesport Industrial Water System currently serves 17 commercial/industrial customers. The system typically serves less than 50 persons per day. The service area is non residential in nature and there is no residential customer base.

TABLE 2-1

CURRENT NUMBER OF SERVICE CONNECTIONS

Type of Service	Number of Connections
Single-Family Residential	0
Multi-Family Residential	0
Governmental	0
Commercial/Industrial	17
Agricultural	0
TOTAL CONNECTIONS	**17**

2.2 Water Usage/Data Reporting

The volume of water withdrawn from each well is measured using flow-totalizing meters located at the wellheads. The meters are read twice each week and the total volume of water withdrawn, since the previous reading, is recorded. Each service connection is also equipped with a flow-totalizing meter. These meters are read monthly and the total volume of water delivered to the customer, since the previous reading, is recorded. Quarterly water billings are based on these meter readings. Historical water production and consumption data, from 2000 to 2007, is provided in Appendix B. Using the water consumption data from 2005 to 2007, the average daily demand (ADD), maximum daily demand (MDD), and peak hourly demand (PHD) were calculated. Both the average daily demand and maximum daily were based on the water consumption data and assumed that water consumption occurs during the five-day business week, which results in a conservative (greater) estimate. Both the maximum daily demand and peak hourly demand were calculated utilizing the equations from the Washington State Department Health *Water System Design Manual* (WSDM). Thus, the 2005-2007 current water demands are as follows.

TABLE 2-2

CURRENT WATER DEMANDS

Demand	Flow
ADD	25,313 gallons
MDD (EQN 5-2)	50,626 gallons
PHD (EQN 5-3)	223 gallons per minute

The number of ERUs is equal to the average daily demand, divided by the average daily water produced of the adjacent Dallesport Water Association (PWS #17715). This value of 419.8 gallons/day/ERU equates to 61 Equivalent Residential Units for the existing Industrial Park. This number of ERUs is utilized to calculate the peak hourly demand. In addition, the peak hourly demand was calculated utilizing a 12-hour commercial/industrial day, instead of the 24-hours that would be assumed with typical residential usage.

2.3 Future Growth

The Future Service Area boundary is composed of multiple different developments, ownerships, and land uses. The existing Service Area includes the industrial land located within the Dallesport Industrial Park and that portion of the Columbia Hills RV Park lying directly adjacent to the Industrial Park. The Future Service Area expansion would include similar uses such as serving the rest of the Port property and, possibly, the anticipated commercial/light industrial usage within the Airport Business Park. A brief description of each of the proposed developments is outlined below.

a) Industrial Park - At present, approximately 20-acres of the 640-acre Port owned park has actually been developed and are being utilized by businesses. Historically, growth in the Industrial Park has been slow, which has, in part, been attributed to the lack of sanitary sewer service in the area. With the construction of the Dallesport Wastewater Treatment Facility (owned and operated by Klickitat County), the growth rate at the Industrial Park is expected to increase. Since creation of the municipal sanitary sewer system, the Port and Klickitat County have constructed subgrade for additional lots and roadways, along with extending the sanitary sewer and water service to an area comprising approximately six additional acres. This property has yet to be built upon, but is considered "shovel ready". While it is difficult to predict future growth within the Industrial Park, Port officials anticipate that the core area of the Industrial Park will be 70-percent developed within the 6-year planning horizon and fully developed within the 20-year planning horizon. The core area of the Port comprises approximately 120-acres and is shown in Figure 2. Thus, it is expected that approximately 84-acres will be developed by 2014 and 120-acres by 2028.

b) Airport Business Park - The Future Service Area may include a portion of the Columbia Gorge Regional Airport property. This 965-acre parcel is partially developed with two, full-length runways, assorted taxiways, hanger spaces, and control facilities. This property, which is zoned a combination of *Open Space* and *Airport Development*, is currently contemplating development of a commercial/light industrial business park. The business park development is currently going through the Binding Site Plan process with Klickitat County and is expected to involve the platting of approximately 106-acres of land for light industrial/commercial development. It is expected that initially 35-acres of this area will be developed with the remaining acreage developed by 2028, within the 20-year planning cycle.

c) Cumulative Totals - The following table summarizes the project growth within the Future Service Area. This growth is based upon the development figures provided by the Port and the Airport.

TABLE 2-3

CUMULATIVE DEVELOPMENT TOTALS

Development		2008	2014	2028
Port of Klickitat				
	Development Area (ac)	20	84	120
	Connections (#)	17	38	71
Airport				
	Development Area (ac)	35	35	106
	Connections (#)	2	17	49

2.4 Water Demand Forecast

Water demand forecasts were made for the current, 6-year and 20-year planning horizons, based upon the projected land use and developed acreage as presented above.

Since the Dallesport Industrial Park currently has no residential consumers, establishing the water consumption for an Equivalent Residential Unit (ERU) is impossible. However, water production data for the Dallesport Water Association (DWA) was utilized to establish the average daily demand per ERU. The residences that the DWA serves are in close proximity to the Port's Service Area. The water production rates for July 2007 through October 2008 (Appendix C) indicate an average daily production of 419.8 gallons/day/ERU.

The primary type of water demand involves the light industrial uses of the property. Utilizing the 2003 Kennedy/Jenks *Water System Plan* it appears that a review of

numerous documents was conducted. At present the average daily demand ranges between 1,060 to 1,200 gallons per day, per developed acre. This is somewhat less than the proposed water demand of 1,500-gallons per day, per acre. Therefore, the light industrial land base water system demand is estimated to be 1,500-gallons per day, per developed acre. It is important to note that in the future the Port may be requested to provide water service in excess of the 1,500-gallon per day, per acre estimate. In this event, the ability to serve such a customer would have to be evaluated in light of the available capacity.

The other component of the water demand forecast includes the fire flow. For the water demands associated with the fire flow the Kennedy/Jenks report was based upon a 1,500-gallon per minute flow for 4-hours. This flow duration, while not adopted by the local fire protection authority seems fairly excessive considering the KCM report recommended a 1,500-gallon per minute fire flow to the Port area. The Washington State Administrative Code (WAC) specifies a 1,000-gallon per minute fire flow for 60-minutes to an industrial area where local standards are not adopted, per WAC 249-293-640. In addition, the Insurance Services Office (ISO) recommends a fire flow duration of 2-hours for fire flows of less than 3,000-gallons per minute. The Port has received written confirmation from the local fire authority, the Klickitat County Building Official, that in industrial areas a fire flow of 1,000-gallons per minute for a 120-minute duration may be utilized. In addition, the County noted that the fire suppression storage and the standby storage may be nested. Based upon this information, it is recommended that the Port Commission adopt a Fire Flow Standard of 1,500-gallons per minute for a 2-hour duration. This appears to meet or exceed all of the aforementioned report recommendations.

In summary, the following demand rates for the different land uses was utilized.

TABLE 2-4

DESIGN WATER DEMAND

Usage Type	Flow Rate
Equivalent Residential Unit	419.8 gallons per day
Light Industrial	1,500 gallons per day, per acre
Fire Flow	1,500 gallons per minute, 2 hour duration

2.5 Water Demand Projections

Utilizing the per unit water demand values provided in Table 2-4 and the proposed development sequencing and ERU generation outlined in Section 2.3, the following tables indicate the projections of population, service connections, ERUs, and demand forecasts, both with and without expected efficiency savings.

TABLE 2-5

CALCULATED NON-RESIDENTIAL ERUs

Development	2008	2014	2028
Airport	125	125	379
Port	71	300	429
Totals	**196**	**425**	**808**

The average daily demand listed in Table 2-6 is based upon the unitary water demands listed and the proposed number of water services by classification. The maximum water demand was calculated using Equation 5-2 of the *Water System Design Manual.* Thus, the average daily demand was multiplied by 2.0 to get the maximum day demand in gallons per day. Finally, the peak hourly demand was calculated using Equation 5-3 of the WSDM. The proper coefficients and factors were utilized from Table 5-1 of the WSDM. The following is a tabulation of the calculated water demands.

TABLE 2-6

CALCULATED WATER DEMANDS

Demands	2008	2014	2028
Average Daily Demand (gpd)	82,281	178,415	339,198
Maximum Daily Demand (gpd)	164,562	356,830	678,396
Peak Hourly Demand (gpm)	290	537	903

Based upon a water use efficiency savings of 3% on all user group classifications, the following water demand projections are presented.

TABLE 2-7

CALCULATED WATER DEMANDS WITH 3% EFFICIENCY

Demands	2008	2014	2028
Average Daily Demand (gpd)	79,813	173,063	329,022
Savings (gpd)	<2,468>	<5,352>	<10,176>
Maximum Daily Demand (gpd)	159,626	346,126	658,044
Savings (gpd)	<4,936>	<10,704>	<20,352>
Peak Hourly Demand (gpm)	281	521	876
Savings (gpm)	<9>	<16>	<27>

2.6 Lost and Unaccounted for Water

Lost and unaccounted for water is the difference between metered source production and metered consumption. "Lost water" includes any water loss due to leaks or unauthorized uses, such as illegal service connections. "Unaccounted for water" may result from an accounting error, inaccurate source and customer meters, or water being utilized through unmetered usage, such as flushing of mains and fire flows. The lost and unaccounted for water volumes for 2000 to 2007 are provided in Appendix B.

As can be noted from this data, the Dallesport Industrial Park Water System has an average of over 36% of lost and unaccounted for water, based upon the volume of water produced. This average volume is more than 4,250,000 gallons per year. It is important to note that the unaccounted for and/or lost water in 2007 only amounted to 8.5%, or approximately 630,000 gallons of the 7,400,000 gallons of water produced. This percentage is more in line with the expected unaccounted for volume.

The large amount of unaccounted for water (36%), over the last 7 years of recorded data, is particularly troubling. Due to the industrial/commercial nature of the water system, its remote location, and the lack of permanent full time residences, the possibility and likelihood of water theft is extremely great. It is our opinion that a change in the operation and management of the Port water system has accounted for the dramatic reduction in unaccounted for water use during the 2007 year data. The Port has attempted to educate the onsite consumers to be alert for the presence of water theft and other unusual activity. In the recent past, the Port has caught a local contractor obtaining unmetered water from a fire hydrant. It is likely that this form of theft has occurred for many years and through education and letters that were sent to interested parties, such as the Dallesport Fire Department, the Klickitat County Public Works Department, and the various tenants within the Port (copies attached in Appendix H), this unaccounted for water use has been reduced and is likely reflected in the 8.7% unaccounted for water in 2007. Any leakage within the fire distribution system would be noticed, based upon the fact that this is a pressurized system utilizing booster pumps, and, therefore, once the pressure within the main drops 2 psig, the booster pumps would activate and have inordinate amounts of run time on the meters. This has not been the case. The system operator actively inspects for potable distribution system leakage during their time onsite. Due to the arid ground conditions, typical leaks that occur during the summer time are extremely evident. The system operator has also noted that in the years prior to 2007, when construction water was legally obtained through a standpipe equipped with a meter, during certain times of peak discharge the meter was not accurately recording the volume of water obtained at the standpipe. This inaccuracy has been corrected by relocating the usage meter on that outlet. The system operator will continue to read the source meters on a bi-weekly basis and the consumption meters monthly. These totals will then be compared and any dramatic increase in the leakage will be investigated. Two other tasks that will be accomplished over the next 12-months include having the existing meters calibrated, where possible, to verify their accuracy. The second item is to evaluate the installed meter size versus the actual customers water consumption rate. In some cases, a

larger meter, such as a 2-inch or 3-inch may be installed while the actual water consumption is at the low end or outside of the meter's recommended flow range. Upon cursory examination, it would appear likely that half of the installed meters are too large for their intended users and, therefore, could either be replaced with smaller meters or replaced with a compound meter that reads both low flows and also high demand flows accurately. Finally, it is our opinion that the actual distribution system leakage will be more in line with the 8.7% amount noted in 2007, based upon continued diligent management, meter replacement and verification, and identification of water theft. The Port proposes either recalibrating or replacing the source meters in 2009 and replacement of a majority of the existing service meters beginning in 2009 and ending in 2011. A more detailed study and analysis of the unaccounted for water loss is provided in Section 4.

2.7 Annual Water Usage

The annual water usage volumes, for 2000 to 2007, are provided in Appendix B. The system currently has an industrial and a commercial customer class and supplies water to no other systems.

Section 3: System Analysis

The purpose of this chapter is to determine the ability of the Port's existing water system to meet current and future water quality and system demand requirements. Major sections of this chapter are:

- System Design Standards
- Water Quality Analysis
- System Description & Analysis
- Summary of System Deficiencies
- Selection & Justification of Proposed Improvements

3.1 System Design and Construction Standards

WAC 246-290 contains general criteria and standards that must be followed in development of public water systems. In addition, the Washington State Department of Health *Water System Design Manual* (WSDM) provides specific guidance for water system design.

a) General Design Standards - The Department of Health (DOH) relies on various regulations, publications, and the purveyor to establish design criteria. WAC 246-290 is a primary drinking water regulation used by DOH to assess capacity, water quality, and compliance with drinking water standards. The WSDM serves as guidance for the preparation of plans and specifications for Group "A" public water systems. The WSDM also references the following codes and guidelines.

- International Building Code (IBC)
- Uniform Plumbing Code (UPC)
- Recommended Standards for Waterworks (RSWW)
- Local Codes
- American Water Works Association (AWWA) standards
- American Society of Civil Engineers (ASCE) standards
- American Public Works Association (APWA) standards

Table 3-1 lists the suggested WSDM guidance and the Port's policy with regards to each standard for general facility requirements. The design standards for the following subjects are discussed in the order shown below.

TABLE 3-1

GENERAL FACILITY REQUIREMENTS

Standard	Department of Health *Water System Design Manual*	Port of Klickitat Standard
Average Day & Maximum Day Demand	Average Day Demand (ADD) should be determined from metered water use data. Maximum Day Demand (MDD) is estimated at two times the ADD if metered data is not available.	ADD = Metered Consumption (3 year rolling average, where available) MDD = 2.0 x ADD
Peak Hourly Demand	Peak Hour Demand (PHD) is determined using the following equation: PHD=(MDD/1440)[(C*N)+F]+18	Same as WSDM, Eq 5-3.
Source Capacity Storage	Capacity must be sufficient to meet MDD and replenish fire suppression storage within 72 hours.	Same as WSDM, Chapter 7.
Requirements	The sum of: Operational Storage – Volume sufficient to prevent pump recycling. Equalizing Storage – $ES = (Q_{PH} - Q_S) * 150$ Standby Storage – $SB = (2 * ADD * N) - t_m(Q_S - Q_L)$ Fire Suppression Storage – $FSS = NFF * T$ ADD= average day demand, gpd/ERU N = number of ERUs PHD = peak hourly demand, gpm Q_S = capacity of all sources excluding emergency sources, gpm Q_L = capacity of largest source, gpm t_m = daily pump source run time, min (1440) NFF = needed fire flow, gpm T = fire flow duration	Same as WSDM, Chapter 9.
Minimum System Pressure	The system should be designed to maintain a minimum of 30 psi in the distribution system under Peak Hourly Demand and 20 psi under fire flow conditions during MDD.	Same as WSDM, Chapter 8.
Flow Rate & Duration	The minimum fire flow shall be determined by the local fire authority or WAC 246-293 for systems within a Critical Water Supply Service Area (CWSSA) or with more than 1,000 connections.	Fire flow requirements are based on the (local) Fire District standards. The maximum fire flow requirement is 1,500 gpm for 2-hours.
Minimum Pipe Size	The diameter of a transmission line shall be determined by hydraulic analysis. The minimum size distribution system line shall not be less than 6-inches in diameter.	Same as WSDM, Chapter 8.
Reliability Recommendations	• Sources capable of supplying MDD and replenishing the FSS within a 72-hour period. • Sources meet ADD with largest source out of service. • Standby storage equivalent to ADD*2, with a minimum of 200 gpd/ERU • Low and high level storage alarms • Looping of distribution mains when feasible • Pipeline velocities not to exceed 8 fps at PHD • Flushing velocities of at least 2.5 fps for all pipelines	Same as WSDM, Chapter 5.
Valve & Hydrant Spacing	Sufficient valving should be placed to keep a minimum of customers out of service when water is turned off for maintenance, repairs, or replacement. In general, valves should be provided at least every 1,000-feet on mains 12-inches and smaller. Fire hydrants on laterals should be provided with their own auxiliary gate valves.	Valve and hydrant standards are outlined in the Port's Design and Construction Standards.
Water Quality Standards	The primary drinking water regulation utilized by Health to assess capacity, water quality, and overall compliance with drinking water standards.	WAC 246-290

b) Construction Standards - The Port has adopted a set of construction standards for developers to follow when constructing water system components to be dedicated to the Port. These standards are included in Appendix D.

3.2 Water Quality Analysis

Group "A" Public Community Water Systems must comply with the Drinking Water Standards of the Federal Safe Drinking Water Act and its amendments. The implementation and enforcement of the Act is the responsibility of DOH. The rules and regulations governing the operation of public water systems are provided in Washington Administrative Code 246-290.

a) Analysis of Safe Drinking Water Act Requirements - The Federal Safe Drinking Water Act (Act) established maximum contaminant levels (MCLs) for specific parameters that can adversely affect public health. The Act also requires water quality monitoring, record keeping, and public notifications. The specific parameters being monitored depend on the source of the water and the size and type of water system, but in general they include bacteria, organic, and inorganic chemicals. These parameters were selected for monitoring because they have a potential impact on human health if present at concentrations exceeding the MCL. The Act also requires that laboratories performing the testing are certified by the State. In the event that a monitoring parameter is detected above the MCL, the Act requires the purveyor to notify the public within a specified period of time. The Department of Health has implemented secondary maximum contaminant levels (SMCLs) for various other chemical and physical parameters. These SMCLs are guidelines regulating contaminants that affect the esthetic quality of the water, but do not exhibit threats to human health. Violations of the SMCLs do not require public notification. The reporting requirements and procedures for Group "A" Public Water Systems are extensive and are provided in WAC 246-290. When required by the Act, public notification should be coordinated with the DOH Regional Engineer. The exact wording of such notices will vary with the specific violation. Generally, the notice is to be written in an easily understood format, without using unduly technical language. The EPA document, *Public Notification Handbook for Public Drinking Water Supplies*, is available as a reference for water purveyors. It further explains the notification requirements and gives sample public notices. The EPA requires that specific language be included in public notices for water quality violations. System operators are required to maintain records of operations and analyses for the water system for certain periods of time. Presently, complaints regarding water quality or other aspects of the water system can be made directly to the Port. When received, the Port will record the complaint and take appropriate action. A provision of the Act allows for individual lawsuits to be filed against a water purveyor in violation of the Act. Accurate record keeping is an effective method for reducing liability in such instances.

b) History of Monitoring & Test Results - The Washington State Department of Health issues each system a Water Quality Monitoring Report (WQMR) listing that particular system's reporting requirements. The Port's current WQMR is provided in Appendix E. The following tests are routinely performed on water samples collected from the potable water system.

- Coliform Bacteria – Bacteriological contamination has not been detected in samples collected over the last 7 years.
- Inorganic Chemicals (IOCs) – IOCs have not been detected at concentrations exceeding the maximum contaminant levels.
- Nitrates/Nitrites – Nitrates/Nitrites have not been detected at concentrations exceeding the maximum contaminant levels.
- Volatile Organic Chemical (VOCs) – VOCs have not been detected at concentrations exceeding the maximum contaminant levels.
- Synthetic Organic Chemicals (SOCs) – The Port has received a waiver of testing of SOCs.
- Lead & Copper – Lead and copper concentrations have not exceeded the MCLs or action levels.
- Asbestos – No asbestos has been detected in any of the samples.
- Trihalomethanes (TTHMs) – TTHMs have not been detected at concentrations exceeding the maximum contaminate levels.

3.3 System Description

a) Water Sources - Potable water is supplied by Wells S01 and S02. Detailed information on these wells and pumps are summarized in the following table.

TABLE 3-2

WATER SOURCES

Description	S01	S02
Installation Date	1972	1982/2004
Pump Capacity	225 gpm	1,002 gpm
Pump Horsepower	25 hp	75 hp
Pump/Motor Manufacturer	Johnson	Robbco 9CLE-2 & Franklin
Pump Type	Vertical Turbine	Submersible
Well Depth	210 feet	292 feet
Well Diameter	6 inches	10 inches
Depth to Static Water	70 feet	55 feet
Pump Mounted Depth		210 feet

According to the WSDM and WAC 246-290-222 (4), source production capacity must be sufficient to supply peak day demands. Additionally, peak day and average day demands must comply with the maximum instantaneous and maximum annual withdrawal limitations of the associated water right. The Water Right Self-Assessment Form can be found in Appendix F.

1. Water Rights Capacity – The Port has two water rights that provide for "Community Domestic and Commercial Supply" uses. These rights, Permit #9862 and Permit #G4-23565P, are provided in Appendix F. The total annual and instantaneous water rights in addition to the calculated demands are listed in the following table.

TABLE 3-3

WATER RIGHTS SUMMARY

Year	Annual Demand (ac-ft)	Annual Water Rights (ac-ft)	Surplus/ Deficit (ac-ft)	Instantaneous Demand (gpm)	Instantaneous Water Right (gpm)	Surplus/ Deficit (gpm)
2008	92.2	300	207.8	114	1,450	1,336
2014	199.9	300	100.0	248	1,450	1,202
2028	380.0	300	(80.0)	471	1,450	979

The Port does not currently have sufficient annual water rights to meet its projected demands for the 20-year planning horizon, based upon the Future Service Area expansion.

2. Source Capacity – As indicated, the Port has two sources it can operate to meet the Maximum Daily Demand. As noted in Table 3-3 the Maximum

Day Demand is 471-gallons per minute. The two existing Port sources currently have pumps installed with a combined pumping capability of 1,227-gallons per minute.

3. Summary – As indicated, the Port of Klickitat's existing two sources and water rights allow for adequate capacity through design year 2014. However, with the possible expansion of the Future Service Area to include the entire Airport Business Park in year 2028, the existing water rights do not meet the demands of the system. The Port of Klickitat can address this shortage in several ways, one of those being to apply for an increase in water rights.

   An alternative method, and one that has been preliminarily discussed with Columbia Gorge Regional Airport is to acquire the Columbia Gorge Regional Airport replacement well and/or a portion of their water rights. The Columbia Gorge Regional Airport replacement well is permitted under Water Right Certificate #02105-A and has an instantaneous withdrawal rate of 615 gallons per minute with an annual volume of 750 acre-feet. With a portion of this water right included in the Port's inventory, the Port would have sufficient annual water rights to meet the 20-year planning horizon demands. There is no document or agreement at this time between the Port and the Airport outlining this transfer as this is still in the preliminary stages and based upon the fact that the Port system is only deficient if they serve the Airport Business Park. Any water right transfer would have to follow the proper procedures through the Department of Ecology.

b) Water Treatment Facilities - Prior to distribution, source water from Well S01 is disinfected using a 2.1% (approximate) solution of sodium hypochlorite (NaOCl). The NaOCl is metered from a 45-gallon storage tank into the source water, using a constant rate metering pump that was installed in 1994. The NaOCl metering pump is activated when the well pump is in operation. No source water disinfection is provided at Well S02. The NaOCl solution is prepared onsite by diluting 1-gallon of 12.5-percent NaOCl with 5-gallons of water in the 45-gallon polyethylene storage tank. The NaOCl supply is checked twice each week and refreshed as needed. Residual chlorine concentrations are measured at Well S01, the storage reservoir, and at various points in the distribution system using a colorimeter test. The target residual chlorine concentration is 1.0 mg/l. When residual chlorine concentrations are below the target level, the metering pump is adjusted, or the NaOCl mixture is increased by adding slightly less dilution water.

   1. Water Treatment Facility Capacity- The existing hypochlorination facility at Well S01 is capable of providing adequate disinfection for this source. Additional hypochlorination facilities should be installed at Well S02 or a system-wide hypochlorination facility should be installed near the reservoir to allow one facility to disinfect the water from all sources.

c) Storage - The Dallesport Industrial Park Water System currently has a 738,000-gallon steel storage reservoir, which is approximately 79-feet tall and 40-feet in diameter with a base elevation of 251.0 feet above mean sea level (msl). This storage tank provides storage for both the potable water and fire protection systems. The tank's inlet is approximately 59-feet above the bottom of the tank. During periods of emptying (this occurs when wells are not operating or cannot meet the water demand), this inlet serves as the outlet to the potable water distribution system. The tank's primary outlet is approximately 1.5-feet above the bottom of the tank and serves as the only water inlet to the fire fighting system. This configuration reserves approximately 2/3 of the tank's capacity for fire protection and 1/3 for potable water. The tank was constructed in 1972 and is in good condition. It utilizes pressure transducer switches to activate Wells S01 and S02. The storage tank outlet to the fire system is at 252.5-feet above msl. The potable water system outlet and reservoir inlet elevation is 310.0-feet msl and the overflow elevation is 329.5-feet msl. One of the downsides to reserving the bottom 2/3's of the storage tank for fire flow is the poor mixing within the storage tank. As a result, stratification of the tank may occur, resulting in stagnation or low residual chlorine concentrations within the bottom 2/3's of the storage tank. Based on the current ADD, the turnover rate in the storage tank is about 47 days. To maintain water quality in finished water storage facilities an average turnover rate of 3-5 days is recommended, with a maximum turnover rate of 10 days. Due to the relatively flat terrain, there is only one pressure zone served by this water system. As noted, the well pumps are controlled by pressure transducer switches located at the storage tank. The transducer switches are directly connected to the well pump controllers, which are located in the individual well houses. When the level in the storage tank drops below an elevation of 327-feet msl, S01 is activated. S01 is deactivated when the water level rises above 329-feet msl. S02 is activated when the water level drops below 321-feet msl and deactivated when the water level rises above 329-feet msl. The total storage volume can be identified by the following storage components.

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

Operational Storage (OS) – Operational Storage is the volume of storage devoted to supplying water, while under normal operating conditions, with the source supply in the "Off" status. Operational Storage is recommended to minimize the frequency of cycling "On" and "Off" of the water supply pumps and to provide an extra measure of safety for the Equalization Storage, Standby Storage, and Fire Flow. At present, the controls provide a total Operational Storage volume of approximately 75,000-gallons, based on minimum and maximum operational control levels currently set at 321 and 329 feet msl, respectively.

Equalizing Storage (ES) – Equalizing Storage is the amount of storage capacity needed to supplement the water supply when the peak demand exceeds the pumping capacity of the water sources. Equalizing Storage must also be sized to insure that the distribution system provides a minimum of 30 psig to all service connections. The DOH *Water System Design Manual* recommends Equalizing Storage for call-on-demand systems, i.e. water systems that must include storage facilities to meet peak demand conditions, be sized as follows.

$$ES = (PHD - Q_S) * 150 \text{ minutes}$$

Where:

ES = Equalizing Storage component (gallons)
PHD = peak hourly demand (gpm)
Q_S = total source of supply capacity, excluding emergency sources (gpm)

Standby Storage (SB) – Standby Storage is the amount of storage capacity needed by a water system to meet the water demand when the water source is offline. Standby Storage calculations are based on the assumption that adequate source capacity will be developed to meet average daily demands, with the largest source out of service. Standby Storage must be provided at a minimum pressure of 20 psig.

$$SB = 2 \text{ days} * (ADD) - t_m * (Q_S - Q_L)$$

Where:

SB = Standby Storage component (gallons)
ADD = average daily demand for the design year (gallons per day)
t_m = time remaining sources are pumped when the largest source is unavailable, usually conservatively 1,440 minutes, or 1 day
Q_S = sum of all source capacity, except emergency sources (gpm)
Q_L = largest capacity source available to the system (gpm)

In no case, however, should the Standby Storage volume be less than the following.

$$SB = 200 \text{ gallons/day} * \# \text{ of ERUs} * 2 \text{ days}$$

Fire Suppression Storage (FSS) – The amount of water required for fire fighting purposes is specified in terms of rate of flow in gallons per minute (gpm) and an associated duration. As noted previously, it is recommended that for the Industrial Park a flow of 1,500-gallons per minute be utilized with a duration of 2-hours, which corresponds to that recommended by the Insurance Services Office. Fire flows must be provided at a residual water system pressure of at least 20 psig.

FSS = NFF * T

Where:

FSS = Fire Suppression Storage component (gallons)
NFF = needed fire flow (gpm)
T = duration (minutes)

WAC 246-290-235 (4) allows Standby and Fire Suppression Storage volumes to be combined, or "nested" providing the local fire protection authority does not require them to be additive. The local fire protection authority, Klickitat County, has allowed for such "nesting" to occur. (Appendix H)

Total Storage Requirements – The total storage required was calculated based upon the above-described equations. This total storage requirement includes the operational, equalizing, standby, and fire suppression storage components. The requirements are calculated for the current year, 6-year and 20-year projected water demands. It should be noted that the total well pumping capacity was limited to sources S01 and S02. Table 3-4 shows the storage analysis for the Future Service Area.

TABLE 3-4

CALCULATED STORAGE REQUIREMENTS

Year	Well Pumping Capacity (gpm)	Operational (gallons)	Equalizing (gallons)	Standby (gallons)	Fire Suppression (gallons)	Total Storage (gallons)	Total Nested Storage (gallons)
2008	1,227	75,000	0	78,400	180,000	333,400	255,000
2014	1,227	75,000	0	170,000	180,000	425,000	255,000
2028	1,227	75,000	0	354,396	180,000	609,396	429,396

As demonstrated, it appears that the existing reservoir is of sufficient capacity to allow for both the 6-year and 20-year planning horizon. It should be noted that additional storage may be required at a higher elevation to serve portions of the Future Service Area based upon elevation. It is also recommended that the existing reservoir and piping system be modified such that the outlet to the potable water distribution system is relocated to the tank bottom.

d) Transmission & Distribution - As mentioned previously, the current distribution system is comprised of two separate systems, the potable water system and the fire protection system. The lengths, pressure classes, and pipe materials for each system are summarized in Table 3-5.

TABLE 3-5

EXISTING DISTRIBUTION PIPING

Pipe Material	Pipe Diameter (inches)	Footage (feet)	Pressure Class (psig)	Approximate Year Installed
Potable Water System				
Asbestos Concrete (AC)	12	2,250	150	1972
Polyvinyl Chloride (PVC)	10	5,000	150	2003
	8	2,800	150	1972 / 1982
	6	2,200	150	1982
	2	850	150	1972
Fire Protection System				
AC	12	2,800	250	1972
PVC	12	500	150	1982

The potable water system includes five fire hydrants located within the Industrial Park. The fire protection system includes one fire hydrant located on the South side of Kreps Drive.

e) Booster Pumps - To maintain minimum system pressures, the fire distribution system includes a 75-hp electric booster pump and a 125-hp diesel backup booster pump. The electric booster pump is activated when the pressure in the fire fighting system drops below 48 psig and is turned off when the system pressure rises to 50 psig. The backup diesel booster pump is activated when there is a power failure and the system pressure drops below 48 psig. Either booster pump is turned off when the system pressure rises above 50 psig. The booster pump station equipment specifications are summarized in Table 3-6.

TABLE 3-6

FIRE BOOSTER PUMP STATION EQUIPMENT

75 Hp Electric Pump	125 HP Diesel Backup Pump
Fairbanks Morse	General Motors
75 Hp	125 Hp
Factory Order # K2T1-069412	Model 406IAZ
3 Phase – 60 Hz	Diesel Motor with Battery Start
230 – 460 Volts	550-Gallon Fuel Tank
Fairbanks Morse 8-inch Pump (5823F-D81AH 13" impeller)	Fairbanks Morse 8-inch Pump (5823F-D81AH 13" impeller)
1,500 gpm @ 67 psi increase	1,500 gpm @ 67 psi increase

3.4 Evaluation of Existing System

a) Source Analysis - A detailed description of the Port's current water wells is given in Section 3.3 (a). Table 3-7 is an analysis of the source capacity based upon the Maximum Daily Demand and fire suppression volumes that are consumed during the 2008, 2014, and 2028 design years and WSDM *Reliability Recommendations* in Section 5.7.1. These volumes are then reduced to an average flow rate over 72-hour, 24-hour, and 18-hour periods. As noted in all cases, the existing well pump capacities for S01 and S02 exceed the required pump rates through year 2028 with the exception of the 24-hour pump rate. This is negligible due to the fact that it is less than 11 gallons per minute deficient on paper, and this would assume full build out and usage of all water. It also assumes that with the largest source out of service, the remaining source, Well S01, would be unable to provide minimum flow required for the Average Daily Demand with a calculated deficiency of 11 gallons per minute.

TABLE 3-7

SOURCE ANALYSIS

Description	Units	2005-2007 YR Average	2008 YR Current	2014 YR 6-Year	2028 YR 20-Year
Maximum Day Demand (MDD)	gallons	50,626	164,562	356,830	678,396
Fire Suppression Storage (FSS)	gallons	180,000	180,000	180,000	180,000
Total Daily Demand (MDD+FSS)	gallons	230,626	344,562	536,830	858,396
Recommended 72-hour Pump Rate (WSDM 5.7.1 (1))	gpm	77	156	289	513
Recommended 24-hour Pump Rate (WSDM 5.7.1 (3))	gpm	18	57	124	236
Recommended 18-hour Pump Rate (WSDM 5.7.1 (2))	gpm	47	152	330	628
Well Pump Capacity	gpm	1,227	1,227	1,227	1,227
Port Well S01	gpm	225	225	225	225
Port Well S02	gpm	1,002	1,002	1,002	1,002
Source Deficiency (72-hour)	gpm	0	0	0	11
Source Deficiency (24-hour)	gpm	0	0	0	0
Source Deficiency (18-hour)	gpm	0	0	0	0
Source Adequacy		**OKAY**	**OKAY**	**OKAY**	**MARGINAL**

b) Treatment - Water from S01 is disinfected using NaOCl. The disinfection system is activated simultaneously with the well pump and meters NaOCl into the raw water at the well house. Based on the results of past coliform sampling and residual chlorine analyses, the system appears to provide a sufficient level of disinfection. However, as water demands increase and exceed the capacity of S01, water from S02 will be required to satisfy the increased demand. Under these conditions, residual chlorine present from disinfection at S01 may be consumed by the untreated water. This could result in incomplete disinfection of the water and no chlorine residuals in the distribution system. Thus, additional disinfection should be provided at S02 to ensure all water is fully disinfected and sufficient residual chorine is maintained within the distribution system.

c) Storage Analysis - This section presents an analysis of current and forecasted 6-year and 20-year storage needs. Currently, the system provides about 738,000 gallons of total storage. Of this total, approximately 492,000 gallons are reserved for fire protection and the remaining 246,000 gallons are used for potable water storage.

The storage analysis provided below calculated the total required storage based upon the current flows and the forecasted demands for 2008, 2014, and 2028. The total required storage volume is based upon the calculations provided in Table 3-4.

TABLE 3-8

STORAGE ANALYSIS

Description	Units	2005-2007 YR Average	2008 YR Current	2014 YR 6-Year	2028 YR 20-Year
Operational Storage (OS)	gallons	75,000	75,000	75,000	75,000
Equalizing Storage (ES)	gallons	0	0	0	0
Standby Storage (SB)	gallons	12,000	78,400	170,000	354,396
Fire Suppression Storage (FSS)	gallons	180,000	180,000	180,000	180,000
Total Recommended "Nested" Storage (TRS)	gallons	255,000	255,000	255,000	429,396
Total Existing Storage	gallons	738,000	738,000	738,000	738,000
Reservoir Water Elevation @ TRS	feet (MSL)	301.9	301.9	301.9	283.3
Minimum Static Pressure @ TRS	psig	29.0	29.0	29.0	20.9
Storage Deficiency	gallons	0	0	0	0
Storage Adequacy		**OKAY**	**OKAY**	**OKAY**	**OKAY**

As can be noted, the existing storage reservoir provides adequate capacity for both the current and projected flows through 2028. Table 3-8 also shows the calculated water elevation within the reservoir when the total recommended "nested" storage volume is depleted, along with the minimum static pressure based upon that water elevation and the highest service connection at 235-feet msl. The analysis indicates that the existing water reservoir will meet the storage requirements for the projected demands. Please note that an additional reservoir located at a higher elevation, or a booster pump station may be required in the future to provide adequate pressure as development within the Airport Business Park and the northern Port property occurs. The existing system is capable of providing adequate pressure for all service connections at an elevation of 235 feet msl or less.

d) Hydraulics - A hydraulic analysis of the potable water system was performed using computer modeling software (WaterCAD v8;XM Edition-Bentley Systems) to estimate the water system's capacity under two critical demand scenarios. The potable water system was modeled for years 2008, 2014 and 2028 based upon the following two demand scenarios.

- Maximum Day Demand increasing to the Peak Hourly Demand for a 1-hour duration during the 06:30 to 07:30 time period, with all supply wells available. This scenario assumes that all Equalizing Storage volume has been depleted at the beginning of the Peak Hour event (06:30 hours).

- Maximum Day Demand with a 1,500 gallon per minute fire flow for a 2-hour duration from 06:00 to 08:00 located in the Industrial Park core area with only Well S01 available. This scenario assumes that all of the Equalizing and Fire Suppression Storage has been depleted at the beginning of the fire flow event (06:00 hours).

The model was set up based upon the as-built drawings of the existing system and the possible mainline extensions to the Airport Business Park. The modeling results are provided in Appendix G. The following assumptions and design values were utilized in the modeling.

- Water system demands were calculated based upon the number of ERUs and locations of use. These demands are for years 2008, 2014, and 2028 and are listed in Appendix G.

- The demand at the Airport Business Park was modeled with two connections, therefore, the demand was divided in half at each connection point. The existing Dallesport Industrial Park was modeled with the demands equally distributed over the existing service connections and proposed developable area.

- The correct pipe size and type for all waterlines were utilized along with the correct friction factors for each pipe material. All pipes, down to 4-inch diameter, were modeled.

- The correct pump curves for the well pumps were utilized, based upon the original design data.

- The size, configuration, and elevation of the storage reservoir was modeled per the original design data.

- The model, for all years, assumes use of the existing wells, S01 and S02.

- The model assumed the distribution system outlet piping of the existing storage reservoir is lowered to an elevation of 252.5 feet (msl).

- The model for years 2014 and 2028 assumes replacement of the existing reservoir with a new 761,000-gallon reservoir with a base elevation of 360-feet (msl), a tank diameter of 58.7-feet, and a tank height of 37.6-feet.

- The model assumed a 24-hour flow scenario beginning at midnight and ending at midnight.

- The model utilized the total Maximum Daily Flow at each connection and distributed that flow, within the residential development, over a 24-hour period utilizing an increased flow period from 06:00 to 08:00 hours, from 12:00 to 14:00 hours, and again from 17:00 to 21:00 hours. These increases are offset by a demand rate less than the average flow, during the off-peak periods, with once again the total daily flow volume equaling the Maximum Daily Flow calculated.

- The fire flow demand was assumed to be 1,500-gallons per minute for a two hour duration between the peak period of 06:00 to 08:00 hours. This fire flow demand was tried at various locations, but was found to have the most adverse effect on the system when located at the Airport Business Park. The Peak Hourly Demand scenario included the aforementioned Maximum Daily Demand flows with an increase to the calculated Peak Hourly Demand flow rate during the period from 06:30 to 07:30 hours.

The existing fire protection system, located within the Dallesport Industrial Park, was not modeled in this report, due to the fact that there are no changes to the existing system that would affect the flows within the system. This system is essentially a pressurized booster system with a storage reservoir that has sufficient capacity reserved (178,592 gallons) strictly for the fire protection system.

Based upon these model scenarios, all areas in this system were able to meet the DOH requirement of 30 psi during peak hourly demands and 20 psi during fire

flow demand conditions. There were no significant flow deficiencies within the existing, nor proposed, distribution system, as modeled. A summary of the pressure results are provided in Table 3-9.

TABLE 3-9

HYDRAULIC ANALYSIS SUMMARY

Description	Units	2008 YR		2014 YR		2028 YR	
		MDD + PHD	MDD + FSS	MDD + PHD	MDD + FSS	MDD + PHD	MDD + FSS
Starting Reservoir Volume	gallons	733,223	733,223	733,223	733,223	733,223	733,223
Starting Reservoir Elevation	feet (MSL)	329.0	329.0	329.0	329.0	329.0	329.0
Starting Static Pressure	psig	33.3	33.3	33.3	33.3	33.3	33.3
Reservoir Volume @ 0600 hours	gallons	717,801	553,413	724,758	553,984	719,023	553,417
Reservoir Elevation @ 0600 hours	feet (MSL)	327.4	309.9	328.1	309.9	327.5	309.9
Static Pressure @ 0600 hours	psig	33.1	25.5	33.4	25.5	33.1	25.5
Ending Reservoir Volume	gallons	718,485	717,043	723,400	733,355	719,348	714,350
Ending Reservoir Elevation	feet (MSL)	327.4	327.3	327.9	329.0	327.5	327.0
Ending Static Pressure	psig	33.1	33.0	33.3	33.3	33.1	32.9
Minimum Reservoir Volume	gallons	710,760	535,769	659,856	510,065	646,613	472,300
Minimum Reservoir Elevation	feet (MSL)	326.6	308.0	321.2	305.3	320.9	301.2
Minimum Static Pressure	psig	32.7	24.7	30.4	23.5	30.3	21.7
Minimum Dynamic Pressures							
Dynamic Pressure @ Business Park	psig	39.5	22.6	37.0	21.3	36.4	24.0
Dynamic Pressure in Entire System	psig	39.5	22.4	37.0	21.1	36.4	23.7
HYDRAULIC ADEQUACY		**OKAY**	**OKAY**	**OKAY**	**OKAY**	**OKAY**	**OKAY**

e) Water System Physical Capacity Analysis – Chapter 6 of the WSDM provides a methodology for determining the physical capacity of a water system. The basic unit of a system service capacity is the ERU, or Equivalent Residential Unit. An ERU is defined as the average amount of water used by typical single-family residential household. For purpose of this plan, the verifiable July 2007 through October 2008 Average Daily Demand of the adjacent Dallesport Water Association (Appendix C) was utilized, which is 419.8 gallons per day, per ERU. Historically, the Department of Health has used the physical capacity of a water system (based on the limiting system component) to establish system growth

limits and allowable service connections for the system. This physical capacity analysis is based upon the following assumptions.

- S01 = 225 gpm, S02 = 1,002 gpm, 18-hour operation for Eqn. 6-1 and 24-hour operation for Eqn. 6-2.
- Average Daily Demand (ADD) = 419.8 gallons per day per ERU
- Maximum Day Demand (MDD) = 839.6 gallons per day per ERU
- Total Water Right, Q_a = 300 ac-ft (400 ac-ft in 2014 with improvements)
- Total Water Right, Q_i = 1,450 gpm
- 2028 Estimated ERU's = 808
- Capacity Related Storage = 103,400 gallons (371,316 gallons in 2010 with reservoir modifications)

TABLE 3-10

SYSTEM COMPONENT

PHYSICAL CAPACITY ANALYSIS

YEAR	2008 – 2028	2008	2014	2028	2014 with improvements	2014 with improvements
System Component	Capacity Available (ERU's)	Surplus/Deficit (196 ERUs)	Surplus/Deficit (425 ERUs)	Surplus/Deficit (808 ERUs)	Capacity Available (ERU's)	Surplus/Deficit (808 ERU's)
Source ADD (Eqn. 6-1)	3,157	2,961	2,732	2,349	3,157	2,349
Source MDD (Eqn. 6-2)	2,104	1,908	1,679	1,296	2,104	1,296
Total Storage (Eqn. 6-6)	484/491/491	288	66	<317>	987	179
Water Rights (Q_a)	638	442	213	<170>	850	42
Water Rights (Q_i)	2,487	2,291	2,062	1,679	2,487	1,679
Maximum ERU Capacity		**484**	**491**	**491**		**850**

Table 3-10 indicates that the Klickitat County Port District No. 1, Dallesport Industrial Park Water System, has sufficient capacity in its source, storage, and water rights to meet the 6-year projected demands and is currently deficient in its storage and annual water rights for the 20-year projected demands. The existing system has a capacity to serve 491 ERUs and with the proposed infrastructure improvements, including additional water rights and modifications to the reservoir, the system will have sufficient capacity to provide service to 850 Equivalent Residential Units, which exceeds the 20-year projected demands.

f) System Deficiencies and Proposed Improvements - A summary of the Port water system deficiencies and proposed improvements is presented in Table 3-11. The improvements are sorted by their overall category in order of ascending beginning timeframe date. A more detailed description of the proposed improvements, including cost, is presented in Chapter 8.

TABLE 3-11

SUMMARY OF SYSTEM DEFICIENCIES AND PROPOSED IMPROVEMENTS

System Deficiency	Proposed Improvement	Responsibility	Time Frame		Allowable ERU	
			Begin	Required	Without Improvements	With Improvements
Source Protection						
The Port does not currently have a formal, written, nor adopted, Wellhead Protection Program in place.	The Port must develop and adopt a Wellhead Protection Policy for their two sources.	Port	2009	2010	N/A	NL
Water Treatment						
The Port currently disinfects Well S01 only.	A hypochlorination disinfection system should be installed at Well S02.	Port	2009	2010	484	N/L
Water Rights						
The Port requires additional annual withdrawal rights to meet the 20-year demands.	A portion (approximately 200 acres feet) of the Airport Well may be transferred to the Port water system. As an option, the Port should immediately being making application for additional water rights on their existing wells. This process may take upwards of 10 to 12 years to acquire said groundwater rights.	Port	2009	2014	638	850
)urce Improvements						
The source meters are old and may be inaccurate and by 2014 the capacity from Well S01 will be insufficient based upon WSDM Equation 5.7.1 (1).	Recalibrate or replace existing source meters at Wells S01 and S02.	Port	2009	2010	N/A	NL
	Install a 250 gpm pump in Well S01.	Port	2014	2018	484	987
Distribution System						
The Port has a distribution system capable of supplying the current and future demands. All new system improvements will require proper waterline sizing in accordance with the hydraulic modeling parameters.	Service Metering	Port	2009	2011	N/A	NL
	Combined System Conversion	Port	2010	2012	484	987
	Possible Waterline extensions into the Future Service Area, including distribution mains within the Business Park and industrial area.	Private	N/A	N/A	N/A	NL
Storage						
The Port's storage capacity is sufficient through approximately 2011.	Modifications to distribution systems to combine into one distribution system, thereby increasing the usable storage within the existing reservoir.	Port	2010	2012	484	987
Water Quality						
The Port is currently in compliance with all water quality standards.	No changes are required.	Port	N/A	N/A	NL	NL

Port = Port of Klickitat
N/A = Not Applicable or Needed
Private = Private Party (Developer, Etc.)
NL = Not Limited based on proper design

Section 4: Conservation and Source Supply Analysis

The Klickitat County Port District #1 Dallesport Industrial Park Water System has been deemed by the Washington State Department of Ecology to be a non-municipal water system. As such, the Port is not required to conform to the recently adopted Municipal Water Law regulations (WAC 246-290-800). However, the Port is required to meet certain basic water use efficiency related requirements as outlined in the Department of Health *Water Use Efficiency Guidebook, Appendix K.*

4.1 Water System Characteristics

The Dallesport Industrial Park water system is completely metered with separate meters at the two sources (Well #S01 and Well #S02) and individual consumption meters at each of the consumers. These water meters range in size from 3/4-inch to 6-inch, depending upon the uses served. All new water consumers will be provided with individual meters to record their water usage.

The Port of Klickitat has kept monthly records of both the water produced from each individual well and also the water consumed by the users of the system. For purposes of this report, the data from years 2000-2007 are provided in Appendix B. On average, from 2005 to 2007, Well S01 produced an annual volume of 8,285,700 gallons, while Well S02 produced an annual volume of 206,700 gallons, for a total of 8,492,300 produced annually. For the same period of time, the consumed water totaled approximately 6,671,300 gallons, for a distribution system leakage rate and unaccounted for water loss of approximately 21.4%.

In Section 2 of the Water System Plan, the existing system consumption, future growth projections, and water demand forecasts were completed for both a 6-year and 20-year forecast period. The calculated water demands for the current year, 2014, and 2018 are shown in Table 2-6, while the same water demands assuming a 3% water use efficiency goal, are indicated in Table 2-7.

4.2 Water Supply Characteristics

The Dallesport Industrial Park water system is currently provided source water by two deep groundwater wells. Well #S01, which is the primary source and was constructed in 1972, is located on Dock Road about 1/4 mile east of where it crosses the BNSF rail spur. This well is installed inside a CMU well house that is located approximately 75 feet north and 450 feet east of the Southwest corner of Section 25 in Section 25, Township 2 North, Range 13 East, Willamette Meridian. Well #S02, which is used as a backup well, was drilled in 1982 to a depth of 292 feet and is located in the northeast corner of the intersection of James Avenue and Berry Drive. This well is installed in a below-grade concrete vault lying directly east of the fire booster pump station building. The well is

located approximately 1,660 feet north and 570 feet west of the Southeast corner of Section 26 in Section 26, Township 2 North, Range 13 East, Willamette Meridian.

Well #S01 has an installed pumping capacity of 225-gallons per minute, or approximately 118,260,000 gallons per year, based on a 24 hour/day, 365 day/year cycle. Well #S02, which has an installed pumping capacity of 1,002-gallons per minute, is capable of producing 526,651,200 gallons per year. This provides a combined total production of 644,911,200 gallons per year. These pump rates correspond to an annual volume capacity of 1,979.3 acre-feet. This pumping rate does not vary with seasonal changes, as the water source appears to be a stable groundwater aquifer.

The Port currently has a combined instantaneous water right (Q_i) of 1,450-gallons per minute, which is greater than the current pumping rate of 1,227-gallons per minute (225 + 1,002) and an annual water right volume (Q_a) of 300 acre-feet. This annual water right volume limits the amount of water production available to 300 acre-feet in contrast to the source pump capacity of 1,979.3 acre-feet. Both water rights are for community domestic and commercial supply purposes on all lands served by the Klickitat County Port District No. 1 within Sections 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, and 36, lying North of the north bank of the Columbia River all in Township 2 North, Range 13 East, Willamette Meridian. There does not appear to be any legal constraints to the use of this water, nor possible impact by future users.

With the two sources and water rights that are available, the Port has sufficient capacity through approximately year 2020. At that time, if the growth projections outlined in Section 2 occur, primarily within the Airport Business Park, then the Port will begin seeing a deficiency in the annual withdrawal rate (Q_a) of the water right. This deficiency is projected to increase to approximately 80 acre-feet in year 2028, based upon the Future Service Area expansion. Around that same time, approximately 2028, the Port will also notice a slight deficiency (11 gpm) in the Well S01 pumping capacity based upon the 72-hour pump rate recommendation in WSDM 5.7.1(1). This deficiency can be easily accommodated by installing a larger pump within Well S01.

Due to the consistent nature of the aquifer that the two wells withdraw from, there has not been a natural variation nor impact from either drought or climate change recognized in these wells. While the water rights may be slightly deficient in the 20-year projected period, it is possible that water rights from other groundwater wells in the area or possibly additional rights from upriver sources can be acquired to meet the calculated demands. There is currently no documentation showing a hydraulic connection between the aquifer that the Port withdraws water from and any surface water body. Development patterns near the well heads are dictated by the Port and thus the proper sanitary setbacks can be maintained around the two source wells. While the static water level within the wells is not measured monthly, on the annual basis it has been checked and there has been no indication of a static water decline within the aquifers, nor have the wells or pumps had to be modified to keep them pumping at the desired withdrawal rate.

4.3 Water Supply and Water Right Adequacy

The following capacity table has been prepared indicating the number of ERUs, source production, Average Daily Demand, Maximum Daily Demand, Peak Hourly Demand, and other flow rates and volumes for the current, 6-year, and 20-year projected demands. To be considered okay for purposes of this table, $Q_i \geq$ source capacity $\geq$MDD and $Q_a \geq$ annual source production.

TABLE 4-1
WATER SUPPLY CAPACITY

Time Period	# of ERUs	Annual Source Production (gal/year)	ADD (gal/day)	MDD (gpm)	PHD (gpm)	Source Capacity (gal/day)	Source Capacity (gpm)	Water Rights Q_i (gpm)	Water Rights Q_a (gal/year)	Status
Current	61	9,239,245	25,313	35	223	1,766,880	1,227	1,450	97,748,640	Okay
6-year	425	65,121,475	178,415	248	537	1,766,880	1,227	1,450	97,748,640	Okay
20-year	808	123,807,270	339,198	471	903	1,766,880	1,227	1,450	97,748,640	Inadequate

4.4 Rate Structure Evaluation

Prior to September 2007, the Port of Klickitat utilized a declining block rate schedule that had not changed since 1999. In June 2007, the Port staff conducted a water rate evaluation and presented a proposal to update the Port's water rates to the Port Commission. This proposal, a copy of which is attached in Appendix O, indicates that there was no hookup or System Development Charges prior to the updated rate proposal. In addition, the base meter fee included 7,000 gallons of water per month with a flat rate of $1.30 per 1,000 gallons for all water used above the base rate, up to 500,000 gallons, and then a flat rate of $0.80 per 1,000 gallons for all water usage above 500,000 gallons. Once again, this form of rate structure did not promote water use efficiency or conservation. The Port Commission, in Resolution No. 9-2006, adopted an inclining block rate schedule, a copy of which is attached in Appendix O. This rate schedule allows for a monthly fee and hookup charge with no base water usage. Usage rates are then charged on an increasing scale based upon the level of use, with the breakdowns being at 7,000, 20,000, 100,000, 250,000, and 500,000 gallons. The corresponding charge per 1,000 gallons increases from $0.98 to $1.96, thereby promoting water conservation and efficiency of fixtures by the water users. In addition, this rate schedule includes an automatic rate increase of 3% each year on January 1, which has been implemented in the attached 2008 and 2009 water rates. This inclining block rate schedule change in September 2007 has drastically changed the Port's water system operation status from what was a losing proposition to a utility that generates sufficient revenue to pay for all expenses and provide for ample reserve and operations set asides. This rate increase proposal was provided to all water users within the Port and was adopted by the Port Commission at a public meeting in September 2007. The financial viability of the water system, as outlined in Section 9, is based on the Port's current

inclining block rate schedule and provides corroborating information that this rate schedule is sufficient to cover the Port's anticipated expenses.

4.5 Water Use Efficiency Program

The primary goal of the Water Use Efficiency Program is to establish a formalized method for reducing the water demand exerted on the water system and thereby reduce the need for additional resources in the future. Reduction of the water demand is also expected to result in lower operating costs. The elements of an acceptable efficiency program include water use data collection procedures, water demand forecasting, and conservation measures, which are presented below. The principal goals of this program are as follows:

- Protect water resources
- Promote water conservation
- Provide conservation information to its customers
- Establish long-term goals to monitor distribution system leakage

It is the Port's desire to maintain their distribution system leakage at 10% of the annual produced water or less. Thus, based upon the last three years of information, this will require a reduction in the annual average loss of approximately 10%. Currently the Port uses meters on both the production and consumption side. The Port also utilizes an inclining block water rate method, whereby consumers pay a base monthly rate for the meter and then a usage rate per 1,000-gallons. This usage fee increases as the volume of water consumed increases, thereby promoting water use efficiency. As noted, it is the Port's desire, and that addressed in a public meeting held on March 4, 2008 at the Port offices (minutes in Appendix H), to reduce the distribution system leakage to 10% of the total water produced over the next 6-years.

Water savings goals on the customer side are difficult to develop due to the industrial/commercial nature of the existing water users. Conservation measures that have already been implemented include:

- Water Use Efficiency Program promotion
- Installation of source meters
- Monitoring of distribution system leakage
- Meter replacement/calibration program

At this time, the Port has notified its system users of the need to conserve water through direct contact and mailings. At the time of a service request, new system users shall be advised of the importance of installing water conservation devices and equipment.

Both wells are currently equipped with flow totalizing meters and the Port will continue to maintain these meters and record the volume of production water.

The distribution system leakage will continue to be monitored based upon the new measures implemented by the Port and outlined in Section 2.6. If the distribution system leakage continues to be greater than 20% of the total amount of water withdrawn at the wells, the Port will initiate leak detection procedures, consisting of employment of a leak detection company or other methods as necessary. If leaks are found, the Port will take appropriate steps to repair the leaking pipelines or equipment.

All customer services are equipped with totalizing flow meters. In addition, the Port has identified a customer meter replacement program over the next three (3) years to update all of the older service connections on the system that may be suspect.

In addition to the above requirements, the State of Washington recommends implementing additional conservation measures as possible. These include:

- Conservation pricing rate schedule - Since 1999, the Port had utilized a declining block rate schedule that did not promote water conservation. In September 2007, the Port Commission adopted an inclining block rate schedule that also has built in annual increases. This water conservation measure has been fully implemented by the Port.

- Regular system inspection - The Port regularly inspects the water system for evidence of water leakage and misuse and/or theft of the water by consumers. This water conservation measure has been fully implemented by the Port.

- Billings showing consumption history - The Port has also discussed providing each consumer with a usage history for the same time period of the previous year with each quarterly billing. Thus, the consumer would be able to readily identify the current quarter's water consumption versus the previous year's water consumption in the same quarter. With this information the customer could then relate increases to modifications within their system or possibly identify leakage that is occurring on their side of the water meter. While this water may still be billed and paid for, the customer must realize that this waste of water is not only being paid for but is also wasting a valuable resource in the form of the electricity to pump the water and the actual water itself being withdrawn from the aquifer.

- Landscape management/playfields assistance - New system users will be urged to utilize drought tolerant plantings at the time of new service requests. The Port has no plans for utilizing reclaimed water at this time. However, the Dallesport Wastewater Treatment Facility has provided for the addition of equipment to produce reclaimed water in the future if it should become cost effective.

The conservation of 10% of the annual produced water results in a significant cost savings for the Port. Based upon the budgets for 2005 through 2007, the annual electrical utility cost and chlorination supplies are approximately $4,500. By reducing the system leakage to 10% of the total produced volume, this will also reduce the annual operating

costs by like amount or approximately $500 since less water will have to be pumped and treated. With the anticipated water demands and projected operating costs for the 6-year planning period, this $500 per year cost savings will increase to over $2,500 per year.

This water use efficiency program will be evaluated on an annual basis by examining the annual "unaccounted for water" volume, on a three year rolling average. Currently for years 2005 through 2007, this average is 21.4%. The goal is to reduce that "unaccounted for" volume to no more than 10% over the next 6-year planning cycle. The Port's existing inclining block rate structure promotes water conservation and will be periodically evaluated by the Port with rates being increased as necessitated by operating costs and capital expenditures.

The Port will report to its customers the Water Use Efficiency Programs success in an annual document. This report may be included with one of the quarterly billings or be a standalone document that is provided to all customers.

Section 5: Water Rights and Source Water Protection

This chapter will evaluate the Port's current and proposed water right in addition to reviewing the Port's Wellhead Protection Program.

5.1 Water Rights Evaluation

The right to appropriate groundwater is provided in the Port's Groundwater Permit No.'s 9862 and G4-23565. Copies of the water right certificates are included in Appendix F.

Well S01, drilled in 1970 to a depth of 210 feet, was constructed under Groundwater Permit No. 9862. The permit allocates a maximum instantaneous withdrawal rate (Q_i) of 450 gpm, and a maximum annual withdrawal volume (Q_a) of 300 acre-feet per year for "continuous group domestic supply". The priority date of this certificate is March 23, 1970.

Well S02, drilled in 1982 to a depth of 292 feet, was constructed under Groundwater Permit No. G4-23565. The permit allocates a Q_i of 1,000 gpm. This second permit does not allocate additional groundwater, but rather authorizes an additional point of diversion with a combined Q_a from S01 and S02 of 300 acre-feet per year. The priority date of this certificate is October 18, 1974. These water rights are summarized in the table below.

TABLE 5-1

EXISTING WATER RIGHTS AND CURRENT CONSUMPTION

Source/ Type	Permit No.	Priority Date	Existing Water Rights		Current Consumption	
			Q_i (gpm)	Q_a (acre-ft/yr)	Q_i (gpm)	Q_a (acre-ft/yr)
S01 Groundwater	9862	03/23/70	450	300	225	28.4
S02 Groundwater	G4-23565P	10/18/74	1,000	0	1,002	0
Total			**1,450**	**300**	**1,227**	**28.4**

Based on the above comparison of existing water rights to current production (2000-2007 average), the existing water rights adequately meet the current consumption.

To assess whether the existing water rights are sufficient to accommodate future growth, the water rights were compared with the ADDs forecasted for the 6-year and 20-year planning horizons. These demands and existing water rights are summarized in the following table.

TABLE 5-2

EXISTING WATER RIGHTS AND PROJECTED WATER DEMANDS

S01 and S02 Existing Water Rights		2008 Projected Water Demand		2014 Projected Water Demand		2028 Projected Water Demand	
Q_i (gpm)	Q_a (acre-ft/yr)	Q_i (gpm)	Q_a (acre-ft/yr)	Q_i (gpm)	Q_a (acre-ft/yr)	Q_i (gpm)	Q_a (acre-ft/yr)
1,450	300	114	92	248	200	471	380
S01 and S02 Sufficient		Yes	Yes	Yes	Yes	Yes	**No**
S01, S02, & Airport Sufficient		Yes	Yes	Yes	Yes	Yes	Yes

Based upon the existing water rights, the Port does not have sufficient annual water rights to meet its demands for the 20-year planning horizon based upon the Future Service Area expansion. The Port has discussed with the Columbia Gorge Regional Airport the possibility of acquiring a portion of the water rights, and possibly the Airport replacement well, for use within the system if the Port chooses to provide water service to the Airport Business Park. The Airport replacement well is permitted under Water Right Certificate #02105-A and has a priority date of September 18, 1953 with a permitted instantaneous withdrawal (Q_i) rate of 615-gallons per minute and an allowable annual volume (Q_a) of 750 acre-feet. It is anticipated that the Port of Klickitat would request, at a minimum, an annual volume of 200 acre-feet, which could either be pumped from the Airport well or, with the proper hydrologic studies, could possibly be pumped from the Port's existing two wells. This pumping from the Port's wells could only occur if it is proven that the Airport well taps the same body of water as the Port wells and there is no impairment. With this amount of water right included in the Port of Klickitat's inventory, the Port has sufficient annual and instantaneous water rights to meet all demands within the 20-year planning horizon. The water right permits and self-assessment forms can be found in Appendix F.

If for some reason the transference to the Port of Klickitat of Columbia Gorge Regional Airport well, with its portion of water rights, does not occur, the Port could pursue application for additional groundwater from their existing wells. This application can be made fairly inexpensively and immediately so that it can work its course through the various regulatory agencies. It is anticipated that the new groundwater application would request a minimum of 200 acre-feet to their annual withdrawal volume. This request can always be withdrawn if the transference of the Airport well and its water rights are completed.

5.2 Wellhead Protection

Public water systems obtaining water from wells or springs are required to develop a Wellhead Protection Program (WPP). WPPs are planning documents that assist water purveyors identifying potential risks to their water resources by chemical contaminants and to provide a plan of action to follow in the event the water resource is adversely impacted. The WPP shall, at a minimum, include the following:

- Completed Susceptibility Assessment Forms: This is an important initial step in selecting the appropriate delineation method for wellhead protection areas. Completed Susceptibility Assessment Forms are provided in Appendix I.
- Delineation of Wellhead Protection Areas: Following selection of an appropriate delineation method, based on the susceptibility assessment results, each wellhead protection area is to be plotted on a map. The delineation should also include the methodology used and a listing of the personnel to be notified in the event of a contaminant release. Wellhead Protection Areas are delineated on the Susceptibility Forms.
- Potential Sources of Contamination Inventory: Sources of contamination within the wellhead protection area that may pose a threat to the water-bearing zone (aquifer) used by the well field should be identified and inventoried. The inventory must be updated every other year.
- Documentation of Notifications: This documentation is evidence that the purveyor has notified the appropriate regulatory agencies and local governments of the location of potential and known sources of groundwater contamination within the wellhead protection area boundaries. In addition, all owners/operators of known and potential sources of groundwater contamination are required to be notified of their location within the wellhead protection area boundaries.
- Contingency Plan: A properly prepared and updated contingency plan helps ensure that the water system operators and local officials are prepared to respond to emergency situations and, if necessary, provide alternative sources of drinking water. The contingency plan should address short- and long-term replacement of the wells and the cost of developing a new source of supply.
- Spill/Incident Response Plan: As part of the local WPP, the Spill Response Plan must include documentation of coordination with local emergency responders (e.g. police, Community Trade and Economic Development's Emergency Management Program, the local health department, and any local emergency planning committee); notification of wellhead protection area boundaries; results of susceptibility assessment; inventory findings; and a contingency plan.

A Wellhead Protection Plan has been prepared for the water system and is included in Appendix L.

5.3 Septic Systems

Prior to the development of the Dallesport Wastewater System, wastewater disposal was achieved through individual septic systems. With the development of the wastewater system, each lot in the Service Area with an existing septic system was connected to the wastewater system and the septic systems abandoned. The Port will construct sewer

laterals where necessary to serve areas of the industrial park that do not have access to sewer lines installed as part of the development of the wastewater system. As future development occurs within the industrial park, it will be the responsibility of the developer to connect to the sewer system. The Port, at its sole discretion, may allow the installation of onsite septic systems on property owned or otherwise controlled by the Port if it is technically or financially unfeasible to connect to the wastewater system. Because it is expected to be significantly less expensive to connect to the wastewater system than developing onsite septic systems, it is expected that new development on property within the Service Area, but not owned or otherwise controlled by the Port, will connect to the wastewater system.

5.4 Exempt Wells

Currently, the Port requires that all lessees seek permission for the construction of exempt wells on property owned by the Port. The Port evaluates granting permission for the construction of exempt wells on leased Port property on a case-by-case basis. Permission for allowing such wells are based on the demonstrated need for non-potable supplies and fire suppression needs that cannot be met by the Port's water system. Where the Port grants permission for the construction of exempt wells, the Port will require that such wells be constructed and maintained in accordance with State of Washington standards.

The Port, at its sole discretion, may allow a user to connect to the Port's water system if it is connected to another private water source.

The Port will encourage developers of property within the Service Area, but not owned by the Port to rely solely on the Port's water system and not develop exempt wells.

Section 6: System Operation and Maintenance

This chapter presents information on the current system operation and maintenance activities, such as routine procedures, water quality monitoring, etc.

6.1 Responsible Persons

Port administration duties are performed by Mr. Marc D. Thornsbury, the Executive Director. The Port has entered into an agreement with the Klickitat County Public Utilities District No. 1 (KPUD) for operation and maintenance services on the water system. Because the water system is a Non-Transient, Non-Community Group A water system, it is required to have a State-certified operator in charge at all times. The contact information for the Port and KPUD is as follows:

Port Executive Director:	Marc D. Thornsbury	(509) 493-1655
Port Maintenance:	Terry Wroe	(509) 637-3875
KPUD Water/Wastewater Manager:	Tim Furlong	(509) 250-0454
KPUD Operator:	Tim McMurrin	(541) 980-1956
KPUD Operator:	Greg Watson	(509) 250-2262

Mr. Timothy Furlong is the recognized system operator, as certified by the State of Washington, Water Distribution Specialist #011982.

6.2 Routine Operation Procedures

Routine operation consists of the following tasks:

- Water Quality Monitoring
- Refreshing Consumables (NaOCl and diesel fuel)
- Reading Service and Source Meters
- Blowoff/Flushing
- Pump Maintenance and Repair
- Miscellaneous Maintenance

Routine maintenance of the booster pump system generally consists of exercising the booster pumps (for about 20 minutes), including the diesel back-up motor, once each week; refilling consumables (e.g., diesel fuel); changing the oil in the diesel motor; checking electrical systems; and generally checking for proper operation.

The Port of Klickitat and the KPUD have established a monitoring and maintenance schedule, which is presented in their Facilities and Maintenance Manual dated February 24, 2009. An excerpt of this manual is attached in Appendix K. Any other maintenance and repair operations not presented within the manual are generally performed in accordance with the various manufacturers' recommendations for frequency and procedures.

6.3 Water Quality Monitoring

Federal and state regulations require public water systems to implement a comprehensive water quality monitoring program. DOH is responsible for enforcement of the monitoring requirements. The water purveyor is responsible for monitoring, reporting, and maintaining water quality.

Drinking water contaminants that require monitoring are divided into two classifications, primary contaminants and secondary contaminants. The primary contaminants are those that present potential health risks. As discussed in Section 3.2, the EPA has established MCLs for the primary contaminants (individual MCL concentrations are presented in WAC 246-290-310). If a primary MCL is violated, the purveyor must take immediate and necessary steps to reduce the contaminate concentrations.

The secondary contaminants are those that are related to the aesthetic quality of the water and do not present health risks. SMCLs have been established for these contaminants and are also presented in WAC 246-290-310. When a SMCL has been violated, the water purveyor must notify DOH and take appropriate action as directed by DOH.

In accordance with DOH requirements, the following contaminants must be monitored in accordance with the requirements of WAC 246-290-300:

1. Coliform Bacteria: One sample must be collected and analyzed every month. Samples must be collected from representative points in the distribution system. In the event of bacteria detection, repeat sampling must be performed in accordance with WAC 246-290-320.

2. Inorganic Chemicals (IOCs): One sample must be collected at each source, after treatment (if any), but prior to entry into the distribution system. Samples must be collected and analyzed once every three years. The most recent testing was in September 2007.

3. Nitrate and Nitrite: Samples must be collected from a point representative of each source, after treatment (if any), but prior to entry into the distribution system. Samples must be collected and analyzed once every year. Sampling frequency increases to quarterly if any sample contains more than 50% of the MCL.

4. Volatile Organic Chemicals (VOCs): Samples must be collected at each source, after treatment (if any), but prior to entry into the distribution system. Samples must be collected and analyzed once every three years. The most recent testing was in April 2006.

5. Synthetic Organic Chemicals (SOCs): Samples must be collected at each source, after treatment (if any), but prior to entry into the distribution system. Samples must be collected and analyzed once every three years. The Port has received a monitoring waiver for SOC's through December 2007.

6. Lead and Copper: Samples must be collected from the distribution system at targeted locations. Samples must be collected and analyzed at the intervals specified in 40 CFR 141.86. Sampling may be performed annually if reduced monitoring has been authorized.

7. Radionuclides: Samples must be collected from a point representative of the source. Samples must be collected for four consecutive quarters every four years.

8. Trihalomethanes: The Port has monitored the water from source S01 for total Trihalomethanes (TTHM) and halo-acetic acids (HAA) in August of 2006. Only source S01 was monitored due to it being the only one where a disinfection agent is used. Based upon the TTHM and HAA results, the Port must sample and perform the disinfection byproducts (DBP) testing once every three years.

9. Residual Chlorine: Samples must be collected from representative points in the distribution system. Samples are collected weekly and measured for residual chlorine.

10. Asbestos: Samples must be collected from a point in the distribution system served by asbestos concrete pipe. Samples must be collected and analyzed once every nine years. The most recent testing was in June 1999.

Analyses are to be performed by a State-certified laboratory and the results submitted to DOH along with the water system identification number and the DOH source number(s).

Modifications to the sampling frequency may be granted by DOH, if the purveyor submits a monitoring waiver request and shows that the contaminant(s) covered by the waiver have not been detected previously. Water system operators are required to maintain monitoring records in accordance with WAC 246-290-480. These recordkeeping requirements are summarized in the table below.

TABLE 6-1

RECORDKEEPING REQUIREMENTS

Type of Record	Retention Time
Bacteriological	5 Years
Chemical	Life of System
Source Meter Readings	10 Years
Records of Action, Violations, and Public Notices	3 Years
Reports, Summaries, etc.	10 Years
Project Reports, Construction Documents, Drawings, Inspection Reports	Life of System
Chlorine Residuals, Type and Quantity of Treatment Chemicals Used	3 Years

6.4 Emergency Response Procedures

All water supply systems are subject to damage and service interruption from unusual circumstances or emergencies. The degree of damage and the capacity to respond to the damage determine the vulnerability of the system.

The most effective means of responding to an emergency situation is through pre-planning. The Port of Klickitat has established and adopted an Emergency Response Plan (Resolution No. 02-2009) that identifies personnel contact information and procedures to follow under typical system failures. This emergency response plan and adopting ordinance is provided in Appendix L.

6.5 Public Notification

Water system operators are required by state and federal regulations to notify customers when the following situations occur:

- A primary contaminant concentration exceeds the MCL
- The water system is identified by DOH as a source of waterborne disease
- The water system has been issued a "category red" operating permit
- The water system is operating under a variance or exemption
- The water system has been issued a departmental order
- The water system fails to comply with:

- Treatment requirements under WAC 246-290-495, Part 6
- Monitoring requirements under WAC 246-290-300, 246-290-664, 246-290-674 or 246-290-694
- Analytical requirements of WAC 246-290-638
- A departmental order
- A variance or exemption schedule prescribed by DOH.

The table below identifies reasons for notification and the required method of notification and timing for distribution.

TABLE 6-2

NOTIFICATION REQUIREMENTS

Reason for Notification	Required Distribution Method	Timing	Comments
Acute violation of nitrate and/or fecal/e-coli detections	Radio and Television Notification Public Posting	Within 24 hours of violation	Purveyor shall provide a posted public notice and Boil Water Advisory in conspicuous locations, along with radio and television notification. Copies of the notifications shall be provided to DOH.
Violation of primary MCL, treatment technique, or variance/exemption schedule	Newspaper Notification	Within 14 days of violation	Purveyor shall substitute a posted notice in the absence of a newspaper or newsletter (to be posted immediately). The posting shall be in conspicuous locations. Copies of notifications shall be provided to DOH.
	Direct Mail Notification	Within 45 days of violation	
	Radio and Television Notification	Within 72 hours of violation	
	Repeat Mail Notification	Every three months until violation is corrected	
Violation of monitoring requirements or testing procedures			Newspaper notification shall be in a daily publication with a general circulation or in a weekly publication with general circulation if daily publication does not serve affected area. Copies of notification shall be provided to DOH.
Receipt of a category red operating permit	Newspaper Notification	Within 3 months	
Receipt of a departmental order			
Granting of a variance or exemption			

The water system operators shall refer to WAC 246-290-495 during development of notifications to ensure that content, mandatory language, and distribution methods are followed.

Water system operators are required to notify the customers of the results of annual testing. The notification shall consist of informing the customers that the water quality data is available and providing a contact name and telephone number for obtaining the results. Notifications shall be made within three months of receipt of the data and may be made by:

- Inclusion with water bills
- Newspaper notification one day each month for three consecutive months
- Direct mail.

Notifications shall be written in a manner consistent with WAC 246-290-495. In addition, many emergency plans call for the notification of the public regarding emergency conditions and require consumption curtailment measures. Sample announcements are provided below for three levels of severity.

Low Severity Example:
The Port of Klickitat's water system has experienced a loss in its production capacity. System users are directed to stop all irrigation activities and make every possible effort to conserve valuable water. Everything is being done to correct the situation, and a public announcement will be made when the problem has been rectified.

High Severity Example:
This is a Community Emergency Announcement. The Port of Klickitat has experienced a major loss of its production capacity and, therefore, is unable to maintain normal water deliveries. It is mandatory that all irrigation and non-essential water use be discontinued immediately. Water must be conserved for sanitary and potable use only. Your cooperation is urgently requested. Everything is being done to correct this situation, and a public announcement will be made when the problem has been rectified.

Coliform Bacteria Violation:
In the event of a coliform bacteria violation, DOH can provide a public notification form that contains the required language.

6.6 Most Vulnerable Facilities

The water system consists of several facilities that would be considered vulnerable. The failure of these facilities could significantly impair the system's ability to meet water demands. The following table summarizes the most vulnerable facilities and presents the likely impact on the water system if the facilities were to fail.

TABLE 6-3

MOST VULNERABLE FACILITIES AND IMPACT OF FAILURE

Facility	Impact
S01 (Well 1) Pump	System capacity would be limited to 1,002 gpm and system would not be disinfected. System will still be able to meet average daily demand until stored supply is depleted (the time to deplete storage is dependant on the amount of stored at time of failure and the demand).
S02 (Well 2) Pump	System capacity would be limited to 225 gpm. System should still be able to meet average daily demand until stored supply is depleted (the time to deplete storage is dependant on the amount of storage at time of failure and the demand).
Storage Tank	Current system configuration allows flows to bypass the storage tank and enter distribution system directly. However, the system flow rate would be limited to 1,227 gpm. The fire protection system is entirely dependent on storage capacity. If the storage tank were off-line, the fire protection system would be offline.
Disinfection System	Because there have been no historical problems with bacterial contamination, disinfection is not necessarily required for health and safety. Therefore, this condition may not affect water system operations. However, problems with the disinfection system should be corrected as soon as practical.
Booster Pumps	A failure in the booster pump system could result in lower pressures and flow rates in the fire protection system. Fire flows, however, would still be available, but at a rate below the level-of-service goal.
Control Systems	There are two electronic control systems, one for the wells, and one for the booster pumps. A failure in the well controls could result in one or both wells not turning "on" or possibly not turning "off". A failure in the booster pump controls could result in the booster pumps not responding to a low-pressure condition, or not turning off following a low-pressure condition. A failure of the control system would have the same basic effect as a failure of the facilities it controls, such as the booster pump or the well pumps. The controls of the pumping systems can be operated manually if necessary.
Distribution System	A failure (e.g., line break or valve failure) in the distribution system, which consists of several dead-ends, could result in portions of the service area being without water service or a loss of flow, particularly during repair.

Of the facilities presented in the table above, the most vulnerable facilities include the wells, system controls, booster pumps, and storage tank. If any one of these facilities fail, the water system would still be able to provide water, but at a reduced capacity. These failures, however, could significantly impact the ability of the fire protection system to provide fire flows.
The estimated costs to replace these facilities are as follows:

S01 (Well 1) Pump	$20,000
S02 (Well 2) Pump	$30,000
Storage Reservoir	$750,000
Well Pump Control System	$10,000
Fire Booster Pump Control System	$10,000
Fire Booster Pump (electrical)	$20,000
Fire Booster Pump (diesel)	$35,000

6.7 Cross Connection Control

A cross connection is defined as any physical arrangement whereby a public water supply is connected, either directly or indirectly, to a non-potable or unapproved water system or a device, which contains or may contain contaminated water, liquid, gases, sewage, or any other constituent that may contaminate a public water supply as a result of backflow. Washington State regulations place the primary responsibility for control of cross connections with the water purveyor. The purveyor may be held legally liable for any problem that may arise due to an unprotected cross connection (WAC 246-290-490). There are no known cross connections in the water system.

To minimize the potential for cross connections, annual inspections will be made to check for actual or potential cross connections. Any cross connection identified as a result of an inspection will be ordered corrected. If a cross connection appears to present an immediate health hazard, water services to the premises may be discontinued until the problem is corrected.

Failure by a customer to install, maintain, test, inspect, or comply with enforcement for a cross connection control device is grounds for termination of water service or the installation of a backflow preventor or air gap separation. Authority to terminate water service is provided by State regulations (WAC 246-290-490 (2)(j)).

The Port of Klickitat does have a written cross-connection control policy in place. The Port has adopted (Resolution No. 14-2008) the *American Waterworks Association, Pacific Northwest Section, Cross-connection Control Manual* (Appendix M). Adoption of the cross-connection manual allows the Port to conduct an assessment of existing water users and require premise isolation devices where the potential of cross-connection

exists. These devices have been installed at the Dallesport Wastewater Treatment Plant, at the Dallesport Foundry, at the Underwood Fruit Facility, and at the Port Entry Irrigation System. These devices are tested annually. The Port is currently waiting for the pet crematory to install the necessary premise isolation device.

None of the remaining facilities are known to have premise isolation devices. None of these facilities have irrigation systems. The need for premise isolation devices at these facilities will be evaluated as part of the implementation of the Cross Connection Control Plan. Facilities that require premise isolation per WAC 246-290-490 will be required to install such devices.

6.8 Coliform Monitoring Program

The Klickitat County Port District No. 1 has prepared and adopted (Resolution No. 01-2009) a Coliform Monitoring Plan (Appendix J) for their system. By regulation, the system requires one monthly routine sample and a minimum of three sample sites to represent the distribution system.

a) System Information:

System Owner:	Klickitat County Port District No. 1
System Name:	Dallesport Industrial Park Water System
System Type:	Non-Transient, Non-Community Group A
System Location:	Dallesport Industrial Park, Dallesport, WA
PWSID #:	00238
Source of Water:	DOH Source Number S01 (well) DOH Source Number S02 (well)
Storage:	738,000 gallons
Treatment:	Disinfection (NaOCl) at S01 only
Population Served:	No residential population (less than 50 persons per day)
Number of Connections:	17 Industrial and Commercial

All water for the system is supplied by wells S01 and S02. The system contains only one pressure zone.

b) Sampling Information - Routine sampling is required and is performed on a monthly basis. Because the total population served by the water system is less than 1,000 people, a minimum of one sample must be collected for coliform monitoring (WAC 246-290-300) each month. Five sampling sites have been identified as representative of the water system. Routine sampling should alternate between the following sites:

- Wastewater Treatment Plant
- Columbia Hills RV Park
- James Dean Construction
- Underground Specialties
- Pellissier Trucking

As development increases the number of connections, the sampling sites should be re-evaluated. At the time of sampling, chlorine residual should also be measured in accordance with WAC 246-290-451.

In the event coliform is detected in a sample, the sample shall be analyzed for fecal coliform or E. coli. When a sample with a coliform presence is not analyzed for E. coli or fecal coliforms, the sample shall be considered as having a fecal coliform presence for MCL compliance purposes. The Port shall then notify DOH per WAC 246-290-480 and the customers per WAC 246-290-495, and collect four repeat samples. One sample must be collected from the sampling site with the detection. Of the remaining three samples two shall be collected within five active service connections upstream and downstream of the sampling site with the detection and the other at an active service or location most susceptible to contamination.

During the month following a coliform detection, five sites shall be sampled during the routine sampling. The sites shall be selected from the list of sites where repeat samples were collected.

The completed Coliform Monitoring Plan is provided in Appendix J.

6.9 Safety Procedures

Routine maintenance performed by Port personnel are primarily simple tasks: re-supplying sodium hypochlorite; maintaining the booster pump's diesel motor; reading meters; and simple minor repairs. Safety precautions to be implemented while performing these tasks may include wearing gloves and safety glasses when working with chemicals, properly disposing of oily rags, maintaining good housekeeping, and following appropriate lock-out/tag-out procedures when working on mechanical or electrical equipment. The only confined space associated with the water system is the storage tank. Port policy is to not allow Port personnel to enter the storage tank.

Significant repairs are performed by qualified repair technicians contracted for the type of repair needed. Safety precautions implemented by such contractors are the responsibility of the contractor, however, the Port requires that all work performed by contractors be performed in a safe, responsible manner. The Port requires its contractors to make modifications to their practices when the Port identifies unsafe operations.

a) Asbestos-Containing Pipe - The distribution system includes asbestos-containing (AC) pipe materials. When work on this pipe material is needed, the Port contracts with a contractor to provide the necessary repair or maintenance work. Prior to any contractor performing any pipeline work, the Port will inform the contractor of the presence AC piping. When working with AC pipe, the Port requires the contractor conform to all state and federal regulations pertaining to work with asbestos-containing materials. When removed, AC pipe material is disposed of at an offsite disposal facility approved to accept such asbestos-containing materials.

Section 7: Distribution Facilities Standards

The Klickitat County Port District No. 1 has adopted (Resolution No. 03-2009) a set of design and construction standards to be utilized when distribution facilities are constructed within their approved Service Area boundary. These standards and specifications can be found in Appendix D.

With adoption of these design and construction standards, the Port is hereby requesting a document submittal exception for distribution related projects. These distribution related projects must be designed, constructed, and inspected by a Washington State Registered Professional Engineer and will be reviewed by the Port or their retained consultant. The Port District will keep a copy of the Construction Completion Report on file showing the project was completed as designed and inspected. Copies of all of the standard specifications, details, and testing, disinfection and completion reports are included within Appendix D.

The design of projects for reservoirs, booster pumps, transmission mains, and source development will be completed by a Washington State Registered Professional Engineer and submitted for review and approval to the Department of Health. These transmission, booster pump, reservoir and source projects will be reviewed by the Port and their retained consultant. However, final approval will rest with the Department of Health.

Section 8: Capital Improvement Program

This Section presents the Capital Improvement Plan (CIP) for the 6-year and 20-year planning periods. Financing of these improvements is discussed in Chapter 9 and cost estimates for the improvements are presented in Appendix N. All cost estimates were developed using 7% sales tax on construction, a 10% contingency fee, and 0% to 20% for engineering, inspection, and administrative fees. In addition, a 6% annual increase was used to account for inflation and material and price increases until the proposed year of construction. In the future, other projects may arise which are not identified as part of the Port's CIP. Such projects may be deemed necessary for ensuring water quality, preserving emergency water supply, accommodating improvements proposed by other agencies, or addressing unforeseen problems with the Port's water system. Budgetary constraints may require that the proposed completion dates for projects in the CIP be rescheduled. The Port retains the flexibility to reschedule proposed projects and to expand or reduce the scope of the proposed projects as best determined by the Port staff, commissioners, and consultants when new information becomes available for evaluation. Each capital improvement project should be reevaluated to consider the most recent planning efforts as the proposed completion date for the project approaches. This chapter provides a summary of the improvements outlined in previous chapters, their relative priority, and their associated cost.

8.1 Capital Improvements

Capital improvements for source, storage, distribution, and other water system components are summarized in this section.

a) Source Improvements - With the projected Airport Business Park and continued growth within the Industrial Park, the Port will have sufficient source production capacity and water rights through 2014 based upon the projected demands. However, by year 2028, the Port will be deficient in their annual amount of withdrawal water right and marginally in the source production. Source production can easily be upgraded through the installation of a larger pump within Well #1. Acquisition of additional water rights, however, becomes a more pressing issue. It is anticipated that the Port must begin application for additional groundwater rights immediately through the Washington State Department of Ecology. These applications can be completed for minimal expense. As year 2014 approaches, the Port will have to decide to either increase production from their existing well, if additional water rights are granted, or acquire additional water rights and source production through acquisition of the Airport well. The installation of a larger well pump is expected to cost $20,000 and should be done in year 2015. If additional water rights are pursued, there would be a minimal cost of approximately $4,000 for the applications.

   In addition, the Port intends to either recalibrate or replace the existing propeller type meters at wells S01 and S02. If the meters are replaced, a meter that could

be utilized in the future to supply an electrical output would be installed for future connection and control by a SCADA telemetry system. The anticipated construction cost of the source meter improvement is $5,500 and the work would be anticipated to be completed in 2009.

b) Storage - The existing 738,000-gallon reservoir has sufficient capacity through the 6-year planning horizon. At that time, the demands of the system will exceed the existing storage capacity based upon the dual potable/fire suppression distribution systems. Therefore, in approximately 2012, modifications must be made to the existing reservoir that converts the distribution system to a more conventional single combination system that provides for both potable and fire suppression water. In conducting this conversion, modifications will be made to the reservoir that allows for withdrawal from the reservoir utilizing the existing fire suppression system outlet with the existing potable water outlet being converted to an inlet only from the wells on a separate transmission line. This conversion will require few modifications inside the tank but instead require piping modifications exterior to the tank, which will be fully described in the transmission and distribution system section of the plan. It should be noted that if new development occurs within the Future Service Area at an elevation greater than 235 feet msl, then it is possible that a new or additional reservoir will have to be installed at a higher location than the current system to provide for gravity service to said facility. The other option would be installation of a localized booster pump system for each particular facility. The complete design of any system would be based upon more detailed development plans.

c) Disinfection - The existing water works includes a sodium hypochlorite disinfection system located at Well S01 only. As the water demands increase and exceed the capacity of Well S01, water from Well S02 will be required to satisfy the increased demand. Thus, an additional disinfection system should be provided at Well S02 to ensure that the source waters are fully disinfected and sufficient residual chlorine is maintained within the distribution system. The estimated cost for the disinfection system at Well S02 is $45,000. This improvement should be completed in year 2009.

d) Transmission and Distribution System - The hydraulic model of the Port's existing water system indicates that the existing distribution system is generally adequate to serve the maximum day, peak hourly, and fire flow demands. The possible areas of development within the Future Service Area, lying to the north of the existing Industrial Park, and also including the Airport Business Park, will require separate main line extensions, likely in a "loop" configuration to serve these areas. The design of these facilities is outside the scope of the current Water System Plan. At such time that these developments proceed forward; then detailed construction plans will be provided.

It is the intent of the Port to convert the existing separated distribution systems into a combined distribution system providing both fire suppression and potable

water service to all existing facilities. This conversion will provide for better flow in a majority of the areas due to the fact that it will use the fire suppression system, which consists mostly of 12-inch diameter pipe, primarily for the distribution network instead of the co-existing potable system, which consists mostly of 6-inch and 8-inch pipe. In addition, portions of the existing 8-inch pipe will be converted to a separated transmission main that directly connects Well S01 to Well S02 to the reservoir, thus eliminating connections prior to chlorination and providing sufficient contact time for disinfection. It is anticipated that this conversion work will be done during the period of 2009 through 2012. At the same time that this conversion is taking place, the Port will be installing double check valve assemblies and new meters at the various tenants within the water system where either cross-connection potential exists or where the existing meter is improperly sized for the current usage. The Port has developed a 4 year schedule to do these conversions and meter replacements. It is as follows:

2009

- Install 1-inch double check valve assembly at Underground Specialties (Port personnel).

- Install 1-inch meter and 2-inch double check valve assembly at 101 Parallel Building (Port personnel).

2010

- Install electronic flow meter on existing 12-inch fire line downstream of the fire booster pump and convert fire booster pump system to flow control switched instead of pressure switched (contractor personnel).

- Install a 6-inch compound meter and 6-inch double check valve assembly at the Dean Construction parcel (Port personnel).

- Replace existing meter to the Pellisier Office with a 1-inch meter and 2-inch double check valve assembly (Port personnel).

- Replace existing meter to the Pellisier Trailer with a 1-inch meter and 2-inch double check valve assembly (Port personnel).

- Disconnect and cap 8-inch potable water line at the intersection of Berry and James (contractor personnel).

- Connect 8-inch potable line into the 12-inch fire line and Berry and Parallel (contractor personnel).

2011

- Replace existing meter to Dallesport Foundry with 1-inch meter and 2-inch double check valve assembly (Port personnel).

- Replace existing meter at Dallesport Lumber with 1-inch meter and 2-inch double check valve assembly (Port personnel).

- Changeover potable service to fire line at Parcels 5, 39, 40, Dallesport Foundry, and Dallesport Lumber (contractor personnel).

2012

- Disconnect potable 8-inch potable line from well transmission line at Kreps and James (contractor personnel)

- Connect the existing potable line lying to the south to the fire line at Lot 42 and Parallel Avenue (contractor personnel).

8.2 Capital Improvement Schedule

Table 8-1 below lists the Capital Improvement Projects that the Port plans to complete within the next 6-year planning period. An approach to financing these projects is presented in Chapter 9.

TABLE 8-1

CAPITAL IMPROVEMENT PLAN

Project	Time Frame	Estimated Construction Cost	Project Cost
Apply for groundwater rights	2009	$4,000	$4,960
Well S02 disinfection	2009	$45,000	$65,350
Replace source meters at Well S01 and S02	2009	$5,500	$7,700
Install two double check valve assemblies and one meter	2009	$1,500	$1,860
Install flow meter on fire line and convert booster pump system	2010	$15,000	$23,090
Install compound meter and double check valve assembly	2010	$12,000	$18,470
Replace two existing meters with correct meter and double check valve assembly	2010	$3,000	$3,940
Distribution system conversion	2010	$12,500	$19,240
Replace two existing meter and double check valve assembly	2011	$3,000	$4,180
Renew service at five locations to new distribution main	2011	$10,000	$15,720
Distribution system conversion	2012	$12,500	$21,620
Install 250 gpm pump in Well S01	2014	$20,000	$37,450
TOTAL	–		**$223,580**

*These costs reflect the current year (2008) construction estimate, plus a 6% annual increase until the proposed construction year. This is to account for inflation and volatile material pricing.

As mentioned at the beginning of this section, the completion of the aforedescribed improvement projects are somewhat dependent upon development pressure. While modifications to the existing water reservoir and addition of a disinfection system to Well S02 must be completed by the Port in the near period, the remaining improvements, such as the Future Service Area waterline is entirely dependant upon private development. To that end, it is highly likely that the private development will have to finance the cost of at least the Service Area transmission and distribution mains, and then at the Port's discretion, they may or may not finance the Airport Well improvements and the construction of a new reservoir (if required) and connecting waterlines. Once again, if the Airport Business Park does not go forward then the Future Service Area transmission main, the Airport Well, and new reservoir improvements will not be required.

Section 9: Financial Program

The improvements proposed by this plan have been evaluated as to their potential financial impact on the Port's current water revenue structure. The evaluation consists of a summary of the existing rate structure, past and present financial status, and a plan for financing the capital improvements described.

9.1 Improvement Costs (6-Year)

The estimated costs for the construction of the proposed improvements were summarized in Table 8-1.

9.2 Annual Operation and Maintenance (O&M) Expenses

Operation and maintenance for the water system includes the following activities:

- Twice weekly meter readings
- Flush/blow off water system once every three months
- Pump maintenance once per year
- Disinfection system maintenance twice per month
- Quarterly water testing
- Miscellaneous maintenance activities
- Quarterly billings
- Administration activities

The anticipated cost for operation and maintenance of the water system over the years from 2008 through 2013 are summarized in the table below.

TABLE 9-1

PROJECTED ANNUAL O&M COSTS (2008 THROUGH 2013)

Description	2005-2007 YR Average	2008 YR	2009 YR	2010 YR	2011 YR	2012 YR	2013 YR
Electrical [a]	$3,867	$9,554	$12,829	$16,105	$19,380	$22,656	$25,932
Salaries / Benefits [b]	$22,785	$23,469	$24,173	$24,898	$25,645	$26,414	$27,206
Supplies / Fuel [b]	$1,700	$1,751	$1,804	$1,858	$1,913	$1,971	$2,030
Monitoring / Tests / Permits [b]	$1,613	$1,661	$1,711	$1,763	$1,815	$1,870	$1,926
Repairs	$6,350	$6,350	$6,350	$6,350	$6,350	$6,350	$6,350
Other / Misc.	$3,333	$3,333	$3,333	$3,333	$3,333	$3,333	$3,333
TOTAL	**$39,648**	**$46,118**	**$50,200**	**$54,306**	**$58,437**	**$62,594**	**$66,777**

Notes:

(a) Projected electrical costs include costs associated with increased pumping to meet increasing demand. No inflation in the cost of electrical service was included.

(b) A 3% annual inflation adjustment was used to project these operation and maintenance costs.

9.3 Revenue Plan for All Expenses

Historically, user fees have been the primary source of revenue for funding the operation, maintenance, and improvements to the water system. Due to the limited number of current users, the Industrial Park has typically had a limited budget for infrastructure projects such as the proposed water system improvements.

Projected revenue estimates, which includes a variety of funding sources, were developed and are based on the water demand forecasts presented in Section 2.5 and an estimate of the total number and type of connections. The revenue estimates presented are based on the current rate structure (Appendix O). A breakdown of revenues, current expenses and proposed future expenses are summarized in the table below.

TABLE 9-2

PROJECTED REVENUE AND EXPENSES (2008 THROUGH 2013)

Description	2005-2007 YR Average	2008 YR	2009 YR	2010 YR	2011 YR	2012 YR	2013 YR
Cumulative Non-Residential Connections	17	21	28	35	43	50	57
Cumulative Non-Residential ERU's	61	75	101	127	153	179	205
Sale of Water [a]	$28,311	$34,809	$48,282	$62,532	$77,594	$93,503	$110,297
Other Revenue [a]	$---	$58,180	$104,869	$108,016	$127,150	$114,594	$118,031
System Development Charges [b]						$87,790	$90,423
TOTAL REVENUES	**$28,311**	**$92,989**	**$153,151**	**$170,548**	**$204,744**	**$295,887**	**$208,454**
O & M Expenses	$39,648	$46,118	$50,200	$54,306	$58,437	$62,594	$66,777
Groundwater Right Application			$4,960				
Well S02 Disinfection			$65,350				
Replace Source Meters			$7,700				
Meter and DCVA Replacement			$1,860				
Flow Meter and Booster Pump Conversion				$23,090			
Compound Meter and DCVA				$18,470			
Meter and DCVA Replacement				$3,940			
Distribution System Conversion				$19,240			
Meter and DCVA Replacement					$4,180		
Renew 5 Services					$15,720		
Distribution System Conversion						$21,620	
Port Funded Projects			$79,870	$64,740	$19,900	$21,620	
TOTAL CAPITAL IMPROVEMENTS			**$79,870**	**$64,740**	**$19,900**	**$21,620**	
TOTAL EXPENSES	**$39,648**	**$46,118**	**$130,070**	**$119,046**	**$78,337**	**$84,214**	**$66,777**
BALANCE [c]		**$48,871**	**$69,952**	**$121,454**	**$247,861**	**$459,534**	**$601,211**

Notes:

(a) Both the "Sale of Water" and "Other Revenue" fees have been increased by 3% per year based upon the Port's current rate structure and historic use of water. The "Other Revenue" item includes the Port's current hookup fees, utilizing a 2-inch service for non-residential connections.

(b) The System Development Charge provided is based upon a proposed fee of $3,000 per ERU. This final amount and year of establishment will be based upon a more detailed System Development Charge analysis, to be conducted by the Port.

(c) This is the calculated cash balance of the Water System based upon a zero balance for the current year.

9.4 Water Rates: Proposed Increases and Rate Structure

The Port, in Resolution No. 6-2007 (Appendix O), adopted a set of standardized monthly fees and hookup charges in addition to usage rates. These rates will automatically increase by 3%, on January 1 of each year.

The rate structure established by the Port of Klickitat has a varying monthly fee based upon the meter size. In addition, for new connections, a hookup fee also varies based upon meter size, with an increase in both the monthly fee and hookup fee for larger meters. The Port of Klickitat also utilizes an inverted tier usage rate schedule, whereby the first 7,000 gallons used are billed at $0.98/gallon. The next 13,000 gallons used are billed at $1.41/1,000 gallons. The next 80,000 gallons utilized are billed at $1.54/1,000 gallons, so on and so forth as outlined within Resolution No. 6-2007. The monthly fees and usage rates are assessed on a monthly basis but billed quarterly.

This inverted tiered usage rate structure highly promotes water conservation. Users who have leaking or inefficient internal systems are charged at an increasing rate for the overage used by their facility. As such, savvy consumers will adopt internal water conservation measures such as reduced landscaping irrigation, limiting outside watering or wash downs, and upgrading equipment with more efficient systems.

Based upon an average consumption of 419.8 gallons per day, per ERU and a quarterly billing period, the current rate structure provides for the following revenue.

TABLE 9-3

LIMITED RATE SCHEDULE PROJECTION

Connection Size	Hookup Fee	Monthly Fee	Usage Rate	Total Quarterly Billing
3/4-inch	$2,559	$22	$53.51	$119.51
1-inch	$3,614	$30	$53.51	$143.51
1 1/2-inch	$4,915	$51	$53.51	$206.51
2-inch	$14,121	$82	$53.51	$299.51
4-inch	$54,955	$122	$53.51	$419.51
6-inch	$94,441	$151	$53.51	$506.51

The Port does not currently have a System Development Charge for new connections. The Port intends to perform a System Development Charge analysis to establish the correct SDCs based upon the estimated construction cost of the infrastructure improvements outlined in the Capital Facilities Plan and the estimated ERUs to be served.

9.5 Financial Viability Test

The financial viability test (FVT) for Group A water systems with fewer than 1,000 connections consists of four individual tests. The first three tests examine the adequacy

of the water system's operating budget, operating cash reserve, and emergency reserve. The fourth test, the household income index analysis, provides an evaluation of the impact water rates have on customers.

a) Test 1-Operating Budget - This first test requires the development of an operating budget that demonstrates sufficient revenue to meet all expenses incurred in the operation of the water system over a 6-year period.

TABLE 9-4

OPERATING BUDGET (2008 THROUGH 2013)

Description	2005-2007 YR Average	2008 YR	2009 YR	2010 YR	2011 YR	2012 YR	2013 YR
Cumulative Non-Residential Connections	17	21	28	35	43	50	57
Sale of Water	$28,311	$34,809	$48,282	$62,532	$77,594	$93,503	$110,297
Other Revenue [a]	$---	$58,180	$104,869	$108,016	$127,150	$114,594	$118,031
System Development Charges [b]	$---	$---	$---	$---	$---	$87,790	$90,423
TOTAL REVENUES	**$28,311**	**$92,989**	**$153,151**	**$170,548**	**$204,744**	**$295,887**	**$208,454**
O & M Expenses	$39,648	$46,118	$50,200	$54,306	$58,437	$62,594	$66,777
CIP Projects	$---	$---	$79,870	$64,740	$19,900	$21,620	$---
TOTAL EXPENSES	**$39,648**	**$46,118**	**$130,070**	**$119,046**	**$78,337**	**$84,214**	**$66,777**
Net Revenue (Loss)	**$(11,337)**	**$46,871**	**$23,081**	**$51,502**	**$126,407**	**$211,673**	**$141,677**
Reserve Account Balance	**$---**	**$---**	**$10,000**	**$10,000**	**$20,000**	**$20,000**	**$20,000**
Operating Account Balance	**$---**	**$46,871**	**$59,952**	**$111,454**	**$227,861**	**$439,534**	**$581,211**

Notes:

(a) Both the sale of water and other revenue fees have been increased by 3% per year based upon the Port's current rate structure and historic use of water. The other revenue item includes the Port's current hookup fees, utilizing a 2-inch service for non-residential connections.

(b) The System Development Charge provided is based upon a proposed fee of $3,000 per ERU. This final amount and year of establishment will be based upon a more detailed System Development Charge analysis, to be conducted by the Port.

(c) The Reserve Account and Operating Account Balances shown are based upon end of year revenue amounts. They do not take into account any interest that may be earned on these accounts nor on the overall reserve funds of the Klickitat County Port District No. 1, which are approximately $1,000,000.

The projected revenue and expenses listed in the operating budget suggests that the Dallesport Industrial Park Water System will operate at a profit based upon the current Water Rate Schedule and hookup fees. However, with the proposed improvements in 2012 and beyond, the Port should perform a study to establish the System Development Charges for all new services that will benefit from the improvements.

b) Test 2-Operating Cash Reserve - The operating cash reserve is a reserve fund used to withstand cash flow fluctuations. There can be a significant length of time between when a water system provides a service and when it receives payment for that service. A 45–day payment delay is the standard length of time for payment delay utilized by the industry. However, a study of the system's cash flow can be performed to determine the amount of reserve cash needed. DOH recommends that water systems maintain an operating cash reserve equal to one-eighth of the annual O&M and G&A costs.

Based on these criteria, the recommended minimum operating cash reserve for the Port is about $8,000 over the 6-year planning horizon. Within our budget, under Test #1, Tenneson Engineering has recommended that the Port set aside a $10,000 cash reserve account balance for years 2009 and 2010, then increase that to $20,000 for year 2011 and going forward. As the cost of repairs to vulnerable facilities increases, the Port should reevaluate this cash reserve account balance as needed. In addition to this water system account balance, the Port maintains a general fund reserve amount of approximately $1,000,000 to cover all of its operations.

c) Test 3-Emergency Cash Reserve - The emergency cash reserve is for replacing the most vulnerable water system component (e.g., water source, key transmission main, well pump, etc.) in the event of its failure. Establishment of an emergency cash reserve can be achieved by one of two methods; developing and funding an emergency cash reserve or obtaining an alternative financing arrangement.

The most vulnerable water system component for the Port's system is the water source. The cost to develop a new well would be about $250,000, depending on the nature of the facility. The Port's general fund reserve is sufficient to cover the cost of development of a new well in addition to the operating cash reserve.

d) Test 4 – Household Income Index Analysis - The Household Income Index Analysis is used to measure the ability of a community to pay for water service. In general, the water rates should be less than 1.5% of the county's annual median household income (MHHI). According to the Washington Office of Financial Management (OFM), the projected 2007 MHHI for Klickitat County is $43,642. This results in a maximum water service rate of $54.55 per month ($163.65/quarter) for the year 2007. However, the Port's customer base consists of commercial and industrial users. Such users can bear significantly higher

water service rates than residential customers. A limited summary of the current water rates are presented in Section 9.4.

9.6 Potential Funding Sources to Maintain Financial Viability

There are several potential funding sources from which the Port may seek financial assistance for funding Capital Improvement Projects. These potential funding sources are presented below.

a) Drinking Water State Revolving Fund - The Drinking Water State Revolving Fund (DWSRF) is administered by the Washington Public Works Board and DOH and provides low-interest loans for improving public and private water systems to protect public health. DWSRF funding is intended for projects that address problems with drinking water quality standards, replace aging infrastructure to maintain compliance with drinking water quality standards, and planning efforts related to these conditions.

   Loan terms are usually about 20 years. Interest rates may range between 0.5 to 1.5%. Local matching funds are typically not necessary. The loan limit for 2007 was $4 million. Applications can be obtained from DOH and are usually due in the early summer.

b) Klickitat County - Klickitat County may provide funds in grant form for projects within the county that foster economic development. Providing a source of water that supports commercial and industrial development is an activity Klickitat County may consider in the interest of the county and may possibly provide funding assistance for capital improvement projects to foster commercial and industrial development. For assistance in determining funding availability, the Port should contact Klickitat County Economic Resource Development.

c) Washington State Department of Community Trade and Economic Development (CTED) - The Community Economic Revitalization Board (CERB) is Washington's only economic development infrastructure program targeted to support business and industrial job growth in partnership with rural communities. CERB provides low-interest loans and occasionally grants to port districts to help finance the construction of public facility projects required by private sector expansions and job creations. However, in order to qualify for CERB assistance, a prospective tenant must be identified that will bring new jobs to the area.

   Eligible public facilities include bridges, roads, domestic and industrial water, sanitary sewer, storm sewer, railroad spurs, telecommunications, electricity, natural gas, general purpose industrial buildings, and port facilities. Pre-development and feasibility studies are only eligible in specific areas of the state.

The Community Economic Assistance Center (CEAC) provides staff support to CERB. Prior to submitting a project proposal, applicants are encouraged to contact CEAC/CERB staff to discuss the project to evaluate if CERB thresholds are met.

d) Revenue Bonds – Another source of funds for construction of major utility improvements is the sale of Revenue Bonds. The tax-free bonds are issued by the Port. The major source of funding for the debt service on these Revenue Bonds is from water fees and System Development Charges. In order to qualify to sell Revenue Bonds, the Port must show that it is net operating income (gross incomes less expenses) is equal to or less than a factor, typically 1.2 to 1.4, times the annual debt service on all par debt. If a factor has not been specified, it will be determined at the time of any future bond issuance. This factor is commonly referred to as the Debt Coverage Factor and is applicable to Revenue Bonds sold on the commercial market.

e) Developer Financing – Developers typically fund the construction of water system extensions to properties within the Service Area boundaries. Upon completion, the infrastructure is then turned over to the Port for ownership, operation, and maintenance. Here the developer funds the construction of said improvements they are usually exempt from any System Development Charges that are directly related to these improvements. However, they still may be eligible for System Development Charges that are generated based upon Port funded improvements.

Section 10: Miscellaneous Documents

This section presents additional information regarding special agreements, mutual understandings, and other information relevant to the Dallesport Industrial Park Water System.

10.1 Special Agreements

The Port entered into a Special Agreement with the Columbia Hill RV Park on October 19, 1994, to provide temporary use of potable water from the Dallesport Industrial Park's water supply to the RV Park. The Port Commission has subsequently granted additional extensions of this Special Agreement. The most recent extension was for an indefinite period with the ability of the Port to review and either continue or modify service on an annual basis. A copy of the most recent Agreement is attached in Appendix H.

The Port has also entered into a Mutual Understanding (Appendix H) with the Columbia Gorge Regional Airport and the Dallesport Water Association in a conceptual plan to interconnect their associated water systems within the Dallesport Peninsula. While this agreement includes provisions for interconnections of the systems, currently none of the systems are capable of that connection due to absence of distribution piping and/or incompatible configurations of their operating systems that do not allow a reasonable interconnection.

10.2 Service Area Overlap

Portions of the existing Airport facilities are served water by the Dallesport Water District. While the proposed Future Service Area expansion of the Port Water System could encompass the Columbia Gorge Regional Airport and all facilities involved, it is not the intent of the Port to take over water service to the existing facilities unless:

a) The Port has developed water system infrastructure to serve said facilities; and

b) The Dallesport Water District agrees to discontinue their service to these facilities.

If either one of these two conditions is not met, then the Dallesport Water District, unless other agreements are reached, will continue to provide potable water service to these facilities. In addition to these existing facilities, the proposed Future Service Area includes overlaps with the Dallesport Water District within the Airport Business Park. As such time when this area requests service, the Dallesport Water District and the Port of Klickitat may discuss terms for the service and preferred provider in this area.

10.3 State Environmental Protection Agency

All of the improvements to the water system to serve the Airport Business Park have been included in a proposal to the Klickitat County Planning Department as the lead agency. This proposal included all of the improvements outlined, including the new storage reservoir, the Airport replacement well, and the various water distribution lines. This proposal, Klickitat County Environmental Checklist #SEP2007-54, was issued a Mitigated Determination of Non-Significance on December 27, 2007, by the County Planning Director (Appendix H). The lead agency for this proposal, in the Mitigated Determination of Non-Significance, has determined that the project does not have a probable significant adverse impact on the environment and, therefore, an Environmental Impact Statement (EIS) is not required.

PORT PROPERTY

FUTURE SERVICE AREA BOUNDARY

EXISTING SERVICE AREA BOUNDARY

EXISTING CORE AREA

FUTURE SERVICE AREA BOUNDARY

AIRPORT BUSINESS PARK

1" = 2000'±

FIGURE 1

VICINITY MAP

DALLESPORT INDUSTRIAL PARK WATER SYSTEM
KLICKITAT COUNTY, WASHINGTON

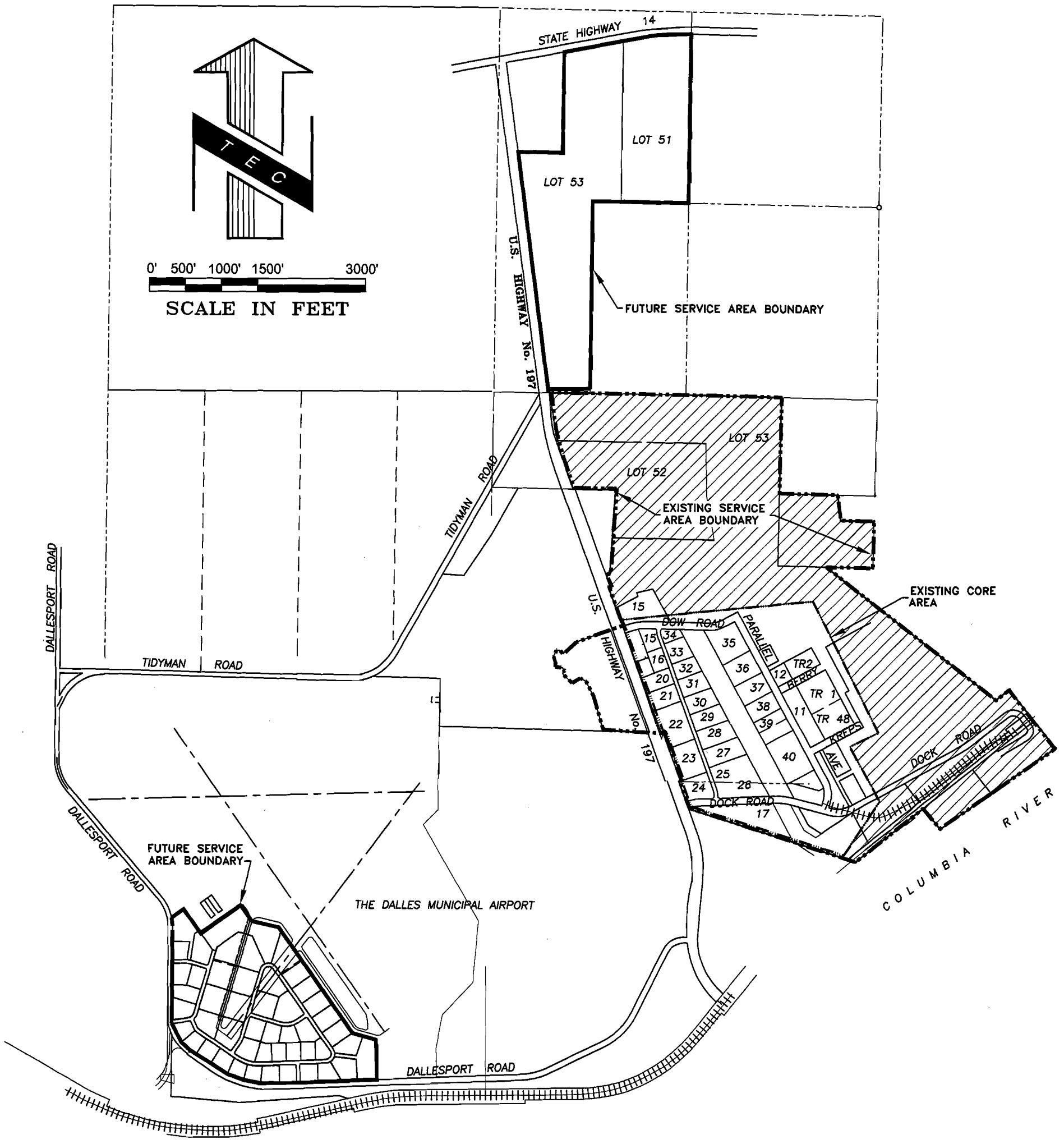
LEGEND:

- FUTURE SERVICE AREA BOUNDARY (252 AC.±)
- EXISTING SERVICE AREA BOUNDARY (565 AC.±)
- EXISTING CORE AREA BOUNDARY (191 AC.±)

Plot Date: 5/26/2010 9:01 AM

12726exhibit

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3313 WEST SECOND STREET, SUITE 100
THE DALLES, OREGON 97058
541-296-9177 FAX 541-296-6657



SYSTEM SERVICE AREAS

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

KLICKITAT COUNTY, WASHINGTON

FIGURE 2

LEGEND:

- FUTURE SERVICE AREA BOUNDARY (252 AC.±)
- EXISTING SERVICE AREA BOUNDARY (565 AC.±)
- EXISTING CORE AREA (191 AC.±)

Plot Date: 5/26/2010 9:02 AM

12726exhibit

TENNESON ENGINEERING CORP.

CONSULTING ENGINEERS

3313 WEST SECOND STREET, SUITE 100

THE DALLES, OREGON 97058

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TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3313 WEST SECOND STREET, SUITE 100
THE DALLES, OREGON 97058
541-296-9177 FAX 541-296-6657

0' 500' 1000'
SCALE IN FEET

Dallesport Industrial Park #2
Pellissiers trailer and office Dallesport Industrial Park #2
James Dean Crushing
CORE AREA BOUNDARY
EXISTING 750,000 GAL. RESERVOIR
56'R. (10 YEAR TIME OF TRAVEL)
DOW ROAD
6" DIST.
Columbia Hills RV #1
U.S. HIGHWAY No. 197
BMI INC
PUMP STATION
SUPPLY WELL #2 1002 GPM
Columbia Hills RV #2
ETERNAL REST
FUTURE ALPINE AVENUE
8" DIST. PARALLEL 12" FIRE
BERRY DRIVE
12" FIRE
8" DIST.
12" DIST.
1105'R. (5 YEAR TIME OF TRAVEL)
Underground Specialties Shop
8" DIST. AVENUE
KREPS DRIVE
494'R. (1 YEAR TIME OF TRAVEL)
349'R. (6 MONTH TIME OF TRAVEL)
The Dalles Fruit Company
12" FIRE
DOCK ROAD
Dallesport Lumber
10" DIST.
101 Parallel Building
Dallesport Foundry
SUPPLY WELL #1 225 GPM
RIVER
COLUMBIA
DIP Entry Irrigation
EXISTING SERVICE AREA BOUNDARY
Dallesport Industrial Park #2
Waste Water Treatment Facility

LEGEND:

- 12" WATER LINE
- 10" WATER LINE
- 8" WATER LINE
- 6" WATER LINE

EXISTING SYSTEM LAYOUT

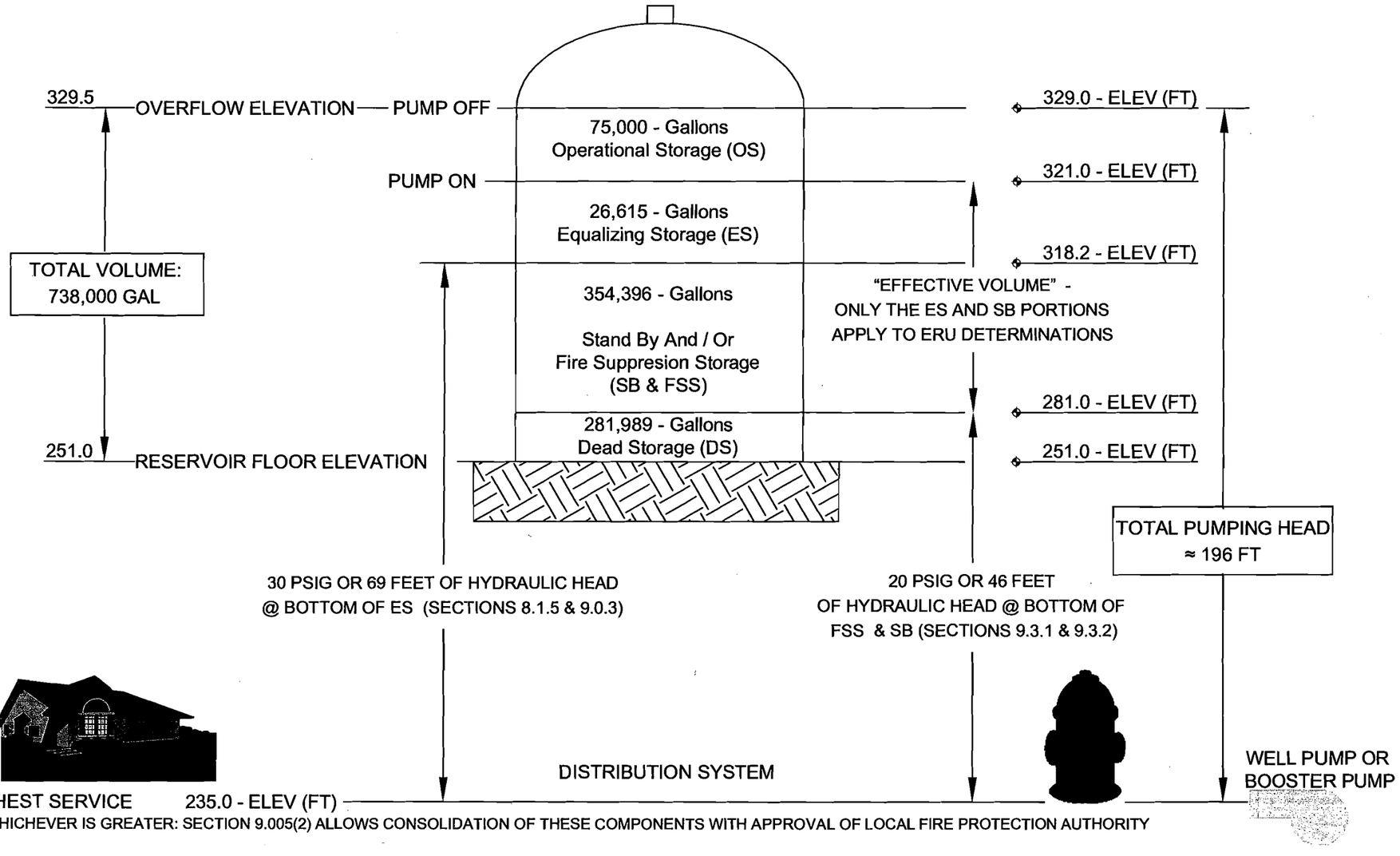
DALLESPORT INDUSTRIAL PARK WATER SYSTEM
KLICKITAT COUNTY, WASHINGTON

FIGURE 3

Plot Date: 5/26/2010 9:02 AM

12726exhibit

RESERVOIR STORAGE COMPONENTS



*WHICHEVER IS GREATER: SECTION 9.005(2) ALLOWS CONSOLIDATION OF THESE COMPONENTS WITH APPROVAL OF LOCAL FIRE PROTECTION AUTHORITY

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3313 WEST SECOND STREET, SUITE 100
THE DALLES, OREGON 97058
541-296-9177 FAX 541-296-6657

12726exhibit

RESERVOIR STORAGE COMPONENTS
DALLESPORT INDUSTRIAL PARK WATER SYSTEM
KLICKITAT COUNTY, WASHINGTON

FIGURE 4

Plot Date: 5/26/2010 9:03 AM

Appendix A

WFI and Operating Permits

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

WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 3
Updated: 02/19/2009
Printed: 06/16/2009
WFI Printed For: On-Demand
Submission Reason: Contact Update

RETURN TO: Eastern Regional Office, 16201 E Indiana, Suite 1500, Spokane Valley, WA, 99216

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
00238 5	DALLESPORT INDUSTRIAL PARK	KLICKITAT	A	NTNC

6. PRIMARY CONTACT NAME & MAILING ADDRESS

TIMOTHY T. FURLONG [MANAGER]
KLICKITAT CO PUD #1
1313 S COLUMBUS AVE
GOLDENDALE, WA 98620

7. OWNER NAME & MAILING ADDRESS

KLICKITAT COUNTY PORT DISTRICT
MARC THORNSBURY TITLE: EXEC DIRECTOR
154 E BINGEN PT WY, STE A
BINGEN, WA 98605

8. Owner Number: 007884

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION

Primary Contact Daytime Phone:	(509) 773-7639	Owner Daytime Phone:	(509) 493-1655
Primary Contact Mobile/Cell Phone:	(509) 250-0454	Owner Mobile/Cell Phone:	(503) 201-1193
Primary Contact Evening Phone:	(509) 773-7807	Owner Evening Phone:	(509) 637-0309
Fax: (509) 773-3227	E-mail: tfurlong@klickpud.com	Fax: (509) 493-4257	E-mail: mthornsbury@portofklickitat.com

10. OWNER CONTACT INFORMATION

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

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

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

SMA NAME: _____ SMA Number: _____

12. WATER SYSTEM CHARACTERISTICS (mark ALL that apply)

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

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

750,000

15	16	17	18										19			20	21						22	23	24			
Source Number	SOURCE NAME LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE INTERTIE SYSTEM ID NUMBER	WELL	WELLFIELD	INFILTRATION GALLERY	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN INTERVAL IN FEET	CAPACITY (GALLONS PER MINUTE)	QTR/QTR SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	Well #1 - AFL872		X										X					X					210	160		26	02N	13E
S02	Well #2 - AFL871		X										X				X						292	1000	NE SE	26	02N	13E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
00238 5	DALLESPORT INDUSTRIAL PARK	KLICKITAT	A	NTNC

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)	0	0	0
A. Full Time Single Family Residences (Occupied 180 days or *more* per year)	0		
B. Part Time Single Family Residences (Occupied *less than* 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied *more than* 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied *less than* 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	42	42	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	14	14	108
28. TOTAL SERVICE CONNECTIONS		56	108

29. FULL-TIME RESIDENTIAL POPULATION	
A. How many residents are served by this system 180 or *more* days per year?	0

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

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	930	840	930	900	930	1350	1395	1395	900	930	900	930
B. How many days per month is water accessible to the public?	31	28	31	30	31	30	31	31	30	31	30	31

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students daycare children and/or employees are present each month?	50	50	50	50	50	50	50	50	50	50	50	50
B. How many days per month are they present?	31	28	31	30	31	30	31	31	30	31	30	31

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	1	1	1	1	1	1	1	1	1	1	1	1

35. Reason for Submitting WFI:

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

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

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____ **TITLE:** _____

Washington State Department of Health

Division of Environmental Health
Office of Drinking Water

HELP

Individual System View - DALLESPORT INDUSTRIAL PARK - Water System Id - 00238

Compliance Actions	Operating Permits	Operators	Reports
General Information	Source Information	Monitoring Requirements Summary	Samples	Exceedances

Last Permit Color Issued: Green Last Permit Issued Date: 12/1/2008

Last Permit Issued Definition: Green: Systems in this category are considered adequate for existing uses and adding new service connections up to the number of approved service connections.

Current Color: Yellow Current Color is what the calculated permit color would be based on information as of 6/19/2009

Current Color Definition: Yellow: Systems in this category are considered adequate for existing uses and new service connections up to the number of approved service connections unless otherwise limited by a compliance agreement.

Override Comments:

Current Permit Conditions:

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

Department of Health, Office of Drinking Water

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

Mail:
PO BOX 47822
Olympia, WA 98504-7822

Phone: (360) 236-3100

Send inquiries about DOH and its programs to the Health Consumer Assistance Office
Comments or questions regarding this Web site? Send email to EH Help Desk or call 360-236-3113.

Last Update : 10/16/2008

STATE OF WASHINGTON
Public Water System

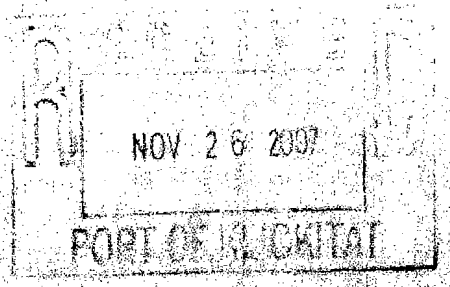
Operating Permit

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

DALLESPORT INDUSTRIAL PARK (ID# 00238 5)

to owner: KLICKITAT COUNTY PORT DISTRICT County: KLICKITAT

KLICKITAT COUNTY PORT DISTRICT
154 E Bingen Pt Wy #A
Bingen, WA 98605



This permit is valid through Nov 2008

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

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

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

System is substantially in compliance with applicable drinking water requirements

Washington State Department of Health

DOH 331-336 (Rev)

Report Date: 11/13/2007

Explanation of Permit Categories

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

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

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

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

If you have questions or if you wish to obtain material required to formally contest a modified permit, contact the appropriate Division of Drinking Water Regional Office:

Northwest Regional Office
Kent
(253) 395-6750

Southwest Regional Office
Olympia
(360) 664-0768
effective Summer 2006
(360) 236-3030

Eastern Regional Office
Spokane
(509) 456-3115

Non-Trans
Non Comm

Appendix B

2000-2007 Port Water Records

Appendix B

HISTORIC DALLESPORT INDUSTRIAL PARK
WATER PRODUCTION AND CONSUMPTION

	2000	2001	2002	2003	2004	2005	2006	2007	AVERAGE	2005-2007 AVERAGE
WATER PRODUCED (1,000 Gallons)										
WELL #SO1 (Annual)	**6,947.0**	**11,100.0**	**17,162.0**	**16,367.0**	**7,928.0**	**7,670.0**	**9,480.0**	**7,707.0**	**10,545.1**	**8,285.7**
January	219.0	644.0	1,101.0	401.0	297.0	99.0	209.0	527.0	437.1	278.3
February	304.0	505.0	2,088.0	352.0	397.0	164.0	344.0	389.0	567.9	299.0
March	374.0	589.0	2,755.0	485.0	513.0	342.0	347.0	374.0	722.4	354.3
April	260.0	435.0	1,958.0	399.0	718.0	572.0	1,371.0	319.0	754.0	754.0
May	556.0	841.0	1,237.0	1,634.0	682.0	641.0	1,116.0	560.0	908.4	772.3
June	845.0	615.0	1,365.0	2,859.0	947.0	1,382.0	845.0	678.0	1,192.0	968.3
July	863.0	867.0	1,540.0	4,535.0	1,235.0	1,508.0	1,214.0	1,058.0	1,602.5	1,260.0
August	1,212.0	833.0	1,143.0	1,940.0	995.0	1,018.0	1,138.0	1,018.0	1,162.1	1,058.0
September	918.0	760.0	1,316.0	1,354.0	24.0	939.0	1,296.0	948.0	944.4	1,061.0
October	470.0	1,685.0	964.0	1,141.0	661.0	458.0	810.0	754.0	867.9	674.0
November	423.0	2,049.0	969.0	537.0	657.0	230.0	352.0	767.0	748.0	449.7
December	503.0	1,277.0	726.0	730.0	802.0	317.0	438.0	315.0	638.5	356.7
WELL #SO2 (Annual)	**0.0**	**0.0**	**1,803.5**	**3,666.7**	**4,368.7**	**434.7**	**172.2**	**13.1**	**1,307.4**	**206.7**
January	0.0	0.0	0.0	0.0	32.2	276.0	5.2	0.0	39.2	93.7
February	0.0	0.0	0.0	0.0	13.4	41.0	0.0	0.0	6.8	13.7
March	0.0	0.0	0.0	0.0	19.1	23.5	3.4	0.0	5.8	9.0
April	0.0	0.0	727.0	0.0	96.4	1.9	53.6	0.0	109.9	18.5
May	0.0	0.0	375.2	194.9	0.0	20.4	12.8	13.1	77.1	15.4
June	0.0	0.0	176.2	968.7	0.0	0.0	0.0	0.0	143.1	0.0
July	0.0	0.0	84.9	2,017.8	0.0	5.1	0.0	0.0	263.5	1.7
August	0.0	0.0	26.6	377.0	536.6	58.8	97.2	0.0	137.0	52.0
September	0.0	0.0	329.8	51.9	3,661.7	0.0	0.0	0.0	505.4	0.0
October	0.0	0.0	83.8	30.6	0.0	8.0	0.0	0.0	15.3	2.7
November	0.0	0.0	0.0	0.0	9.3	0.0	0.0	0.0	1.2	0.0
December	0.0	0.0	0.0	25.8	0.0	0.0	0.0	0.0	3.2	0.0
TOTAL	**6,947.0**	**11,100.0**	**18,965.5**	**20,033.7**	**12,296.7**	**8,104.7**	**9,652.2**	**7,720.1**	**11,852.5**	**8,492.3**
WATER CONSUMED (1,000 Gallons)										
COMMERCIAL	2,383.9	3,175.4	2,689.9	4,226.7	1,702.4	3,554.4	4,223.6	4,208.3	3,270.6	3,995.4
INDUSTRIAL	2,169.3	1,058.8	9,924.7	10,940.8	2,129.0	2,195.3	2,994.9	2,837.1	4,281.2	2,675.8
TOTAL	**4,553.2**	**4,234.2**	**12,614.6**	**15,167.5**	**3,831.4**	**5,749.7**	**7,218.5**	**7,045.4**	**7,551.8**	**6,671.2**
LOST AND UNACCTD. FOR WATER	2,393.8	6,865.8	6,350.9	4,866.2	8,465.3	2,355.1	2,433.7	674.7	4,300.7	1,821.2
DSL (%)	**34.5%**	**61.9%**	**33.5%**	**24.3%**	**68.8%**	**29.1%**	**25.2%**	**8.7%**	**36.3%**	**21.4%**

Appendix C

Dallesport Water Association
Water Records

DALLESPORT WATER ASSOCIATION
WATER USAGE RECORDS

YEAR	ERU	MONTH	WELL #2 (GALLONS)	WELL #3 (GALLONS)	WATER PUMPED (GALLONS)	WATER PUMPED (GPD/ERU)	WATER USED (GALLONS)	D.S.L. (%)
2005	221							
		ANNUAL	33,939,123	0	33,939,123	420.7		
2007		JAN			0			
		FEB			0			
		MAR			0			
		APRIL			0			
		MAY			0			
		JUNE			0			
	243	JULY			6,269,000	832.2		
	243	AUG			5,674,400	753.3		
	243	SEPT			5,636,400	773.2		
	243	OCT			1,586,400	210.6		
	243	NOV			1,021,400	140.1		
	243	DEC			1,456,900	193.4		
		ANNUAL			21,644,500			
2008	243	JAN			1,244,600	165.2		
	243	FEB			1,422,680	201.9		
	243	MAR			1,101,500	146.2		
	243	APRIL			2,241,200	307.4	1,677,260	25.2%
	243	MAY			4,131,600	548.5		
	243	JUNE			5,001,300	686.0		
	243	JULY			6,950,400	922.7	6,136,520	11.7%
	243	AUG			5,797,600	769.6		
	243	SEPT			5,209,500	714.6		
	243	OCT			2,356,400	312.8	2,321,040	1.5%
		NOV			0			
		DEC			0			
		ANNUAL			35,456,780			

AVERAGE DAILY DEMAND (JULY 07 – JUNE 08)	36,787,380	413.2
AVERAGE DAILY DEMAND (AUG 07 – JULY 08)	37,468,780	420.7
AVERAGE DAILY DEMAND (SEPT 07 – AUG 08)	37,591,980	422.1
AVERAGE DAILY DEMAND (OCT 07 – SEPT 08)	37,165,080	417.2
AVERAGE DAILY DEMAND (NOV 07 – OCT 08)	37,935,080	425.7
AVERAGE DAILY DEMAND (JULY 07 – OCT 08)		419.8

Appendix D

Design and Construction Standards

RESOLUTION NO. 03-2009

BY

KLICKITAT COUNTY PORT DISTRICT NO. 1,

A RESOLUTION ADOPTING THE DALLESPORT INDUSTRIAL PARK WATER SYSTEM DESIGN AND CONSTRUCTION STANDARDS

WHEREAS, the Klickitat County Port District No. 1 ("Port") owns a public water supply system in Dallesport, Washington in order to provide water to tenants of its Dallesport Industrial Park and adjacent properties; and

WHEREAS, the Port is responsible for insuring that equipment and facilities attached to the water system meet or exceed industry standards and state requirements; and

WHEREAS, the Port desires to limit maintenance costs and insure that future expansion is consistent with all other elements of the system;

NOW, THEREFORE BE IT RESOLVED, that the Klickitat County Port District No. 1 hereby adopts the Design and Construction Standards described in detail in the Port's Water System Master Plan dated January 2008 and subsequently revised and submitted to the Washington Dept. of Health in June 2009.

ADOPTED IN OPEN SESSION this 2nd day of June 2009.

KLICKITAT COUNTY PORT DISTRICT NO. 1
Board of Commissioners

Norman Deo, President

Rodger Ford, Vice-President

S. Wayne Vinyard, Secretary

ATTEST

Margie Ziegler
Administrative Assistant

PORT SEAL

TENNESON
ENGINEERING CORPORATION
CONSULTING ENGINEERS • SURVEYORS • PLANNERS

3313 WEST SECOND STREET, SUITE 100
THE DALLES, OR 97058

PHONE (541) 296-9177
FAX (541) 296-6657

WATER SYSTEM DESIGN AND CONSTRUCTION STANDARDS FOR THE PORT OF KLICKITAT DALLESPORT INDUSTRIAL PARK

wo#12726

Water System Design and Construction Standards

Section 1: Project Review Procedures

1.1 General

All reports, final plans, specifications, and design criteria should be submitted at least 60-days prior to the date on which action by the Port of Klickitat (Port) is desired. Environmental assessments and permits for construction to take water, for waste discharges, for waterline crossings, etc., may be required from other Federal, State, or local agencies. Preliminary plans and the Engineer's Report should be submitted for review 30-days prior to the preparation of final plans. No approval for construction can be issued until final complete detailed plans and specifications have been submitted to the Port and found to be satisfactory. The Port assumes no liability for delays, additional costs, or non acceptance due to any failure to comply with the standards set forth by the Port. No water service or main extension shall take place until all other requirements are addressed. Documents submitted for formal approval shall include, but not be limited to:

a) Engineer's Report, where pertinent
b) Summary of the design criteria
c) Operational requirements, where applicable
d) General layout
e) Detailed plans
f) Specifications
g) Other information as required by reviewing authority.

The Port of Klickitat will contract the design review service with a Washington Registered Professional Engineer as required or submit the plans to the Washington State Department of Health for review. The design engineer cannot review their own work.

1.2 Engineer's Report

The Engineer's Report for water works improvements shall, where pertinent, present the following information:

a) General information, including description of existing facilities, identification of area served, name and mailing address of owner, and design engineer.
b) Extent of proposed water works.
c) Water use data, including projected average and maximum daily demands and fire flow demand for proposed development.
d) Flow requirements, including possible hydraulic analysis based on flow demands, pressure requirements, and design fire flows when fire protection is provided.

1.3 Plans

Plans for water works improvements shall, where pertinent, provide the following:

a) General layout, including title area to be served, scale, north point, data used, name and boundary of area to be served, date, name, and address of design engineer, and seal, location and size of existing facility.

b) Detailed plans, including surface water crossings, profiles having a horizontal scale of not more than 100-feet to the inch and a vertical scale of not more than 10-feet to the inch, with both scales clearly indicated, reasonable topographic information, size, length, and materials of proposed water mains, location of existing or proposed streets, water sources, etc., and an adequate description of any features not otherwise covered by the specifications.

1.4 Specifications

The design engineer is to provide complete detailed technical specifications for the proposed project where the Port's standard specifications do not cover certain items.

1.5 Revisions to Approved Plan

Any substantial deviations from approved plans or specifications must be approved by the Port before such changes are made. These include, but are not limited to, deviations in capacity, hydraulic conditions, or operating units. Revised plans or specifications should be submitted in time to permit the review and approval of such plans or specifications before any construction work, which would be affected by such changes, has begun. The Port assumes no liability for delays, additional costs, or non acceptance due to any requested or required revision.

1.6 Additional Information Required

The Port, or other reviewing authority, may require additional information, which is not a part of the construction drawings, such as headloss calculations, proprietary technical data, copies of deeds, copies of contracts, easements, etc.

Section 2: Water System Policies

2.1 General

The Port of Klickitat's Dallesport Industrial Park water system mains are designed to provide adequate flows for domestic and commercial uses and for fire protection, to protect the quality of the public water system, and to maintain the integrity and reliability of the distribution system

2.2 Service Areas

The Port's water system comprises one pressure zone to serve the entire area. All newly served areas are to be served by one combination domestic, commercial, and fire protection distribution system.

2.3 Provisions for Future Extension

In new developments, water mains shall be constructed in public rights-of-way or easements to the limits of the development to provide for future extension of the system. Temporary dead end water mains should terminate with temporary hydrant assemblies or blow-offs, as applicable.

2.4 Tapping Restrictions

Taps for customer service piping can be made to any water main, up to and including, 16-inches in diameter. All service taps shall be made by the Port of Klickitat or a Port approved contractor. Service taps of 3/4-inch through 2-inch sizes are made using a corporation stop. All service taps larger than 1-inch are made using a tapping sleeve and valve. The minimum tap valve size shall be 4-inches.

2.5 System Separate When Two Sources Supply Same Premises

On premises where water is supplied from two or more sources, the Port water main being one of them, the systems shall be kept entirely separate, using an air gap or RPBA, to prevent any possibility of other supplies mixing with the municipal water supply. The Port of Klickitat will seek to ban new domestic drinking water wells within its Retail Service Area boundary by the end of 2009. Irrigation wells will still be allowed, but a physical separation or RPBA must be installed to allow continued service by the Port.

2.6 Easements

Permanent easements are required for all public water mains not located within the public street right-of-way. The minimum easement width is 15-feet. Easements wider than that may be required when conditions warrant. Where the water main is located near structures, the easement must provide 10-feet lateral clearance between the main and the structures. If that clearance cannot be obtained, the water main must be installed in an approved encasement pipe. Blanket easements are not acceptable. Easements granted for public mains should be specifically described with dimensions and angles sufficient to allow the easement to be accurately located. The dedication of any easement shall prohibit the location of permanent structures on, under, or over the easement, and shall allow the Port access to the easement for construction, reconstruction, replacement, repair, operation, and maintenance purposes, and shall hold the Port harmless for the cost of replacement or damage to any improvement or vegetation within the easement. Other appropriate or necessary requirements may also be included.

2.7 System Reliability

Looped water mains are desirable for fire flow, system reliability during maintenance, and for water quality. Dead ends shall be avoided, except as needed to provide for future service and for cul-de-sacs and fire hydrants. Water main loops shall be completed wherever possible. An extension to provide for future looping may be required even if such extension is not required to serve adjacent properties.

2.8 Reviewing Agencies

All plans for construction of improvements or extensions to the distribution system, within the defined service area boundary, shall be reviewed and approved by the Port of Klickitat and their consulting engineer. All other improvements, which include source development, storage, transmission main, or other complex facilities shall be reviewed by both the Port and the Washington State Department of Health prior to construction.

2.9 Developer Responsibilities

Projects involving installation of new water system infrastructure will require that the developer bear the cost of all such construction, inspection, Port review, testing, and other associated costs. The developer will be responsible for any faulty material and workmanship for one year from the date of formal acceptance of the water infrastructure installation. Said acceptance shall be in writing. The warranty

shall comprise of a bond or other approved security in a minimum value of ten percent of the original improvement construction cost.

2.10 Contractor Requirements

The contractor for all projects shall comply with all terms and conditions of applicable governmental rules and regulations pertaining to the work. The design and construction of all proposed facilities shall be in conformance with the Port of Klickitat's standards. The person or firm doing the work shall maintain Construction Public Liability Insurance during the life of the work. All contractors performing work on water system infrastructure must be properly registered with the Washington State Department of Labor and Industries.

The Port of Klickitat and their agents shall be held harmless from any liability of any kind resulting from or in connection with activities connected with the project. The Port of Klickitat and their agents shall be named as "additional insured" and a Certificate of Insurance with 10-day cancellation notice shall be filed with the Port of Klickitat prior to the start of construction if so required by the Port.

Any construction activity that impedes or interrupts any existing public service shall require that the public be notified of that interruption at least 24-hours prior to such impediment or interruption. Each notification shall be the responsibility of the contractor performing the work for the developer and shall be coordinated with Klickitat County Public Works and the Port of Klickitat to ensure adequate notification. Failure to adequately notify the public may result in an immediate suspension of the contractor's activities.

Section 3: Design Standards

Design standards are to follow the State of Washington "Water System Design Manual" (WSDM) unless modified by the Port of Klickitat herein. Facilities and system components may utilize these accepted design standards and/or other design standards such as those provided by the American Water Works Association (AWWA), the American Public Works Association (APWA), and/or the Recommended Standards for Water Works (Ten State Standards).

3.1 Pipe Sizing

The minimum water main size should be established by a hydraulic analysis using the appropriate land use designation to develop both domestic and fire flow requirements. The minimum main size is 6-inch diameter for residential areas, 8-inch diameter for commercial areas, and 12-inch diameter for industrial areas. The maximum velocity within the pipeline shall be 8-feet per second under maximum calculated flow conditions.

3.2 Fire Flow Requirements

The water main sizing and hydraulic analysis should be based upon the following required minimum fire flows and design criteria.

TABLE 3-1
REQUIRED MINIMUM FIRE FLOW

Land Use Classification	Minimum Fire Flow Requirements (*)
Residential	500 gpm
Commercial (**)	1,000 gpm
Industrial (**)	1,500 gpm

(*) Minimum fire flow requirements that are in addition to maximum daily domestic demand.
(**) Commercial and industrial buildings may be subject to higher flow requirements when evaluated on an individual basis by the local fire protection authority.

a) Water Pressure - Water system extensions shall be hydraulically designed to provide a maximum pressure range of 30-100 psi with the desired range of 40-80 psi. A minimum residual pressure of 30 psi, under peak hour design flow, is required. A 20 psi residual pressure shall be maintained throughout the system under combined fire flow and maximum day demand conditions at the meter.
b) Hydrant Maintenance - Public fire hydrants shall be installed in compliance with these minimum standards and located within publicly owned easements and rights-of-way. The Port shall be responsible for mechanical maintenance.
c) Variance from Standards - The local fire protection authority (LFPA) may require, or allow, and shall approve any variance in required fire flow and/or other requirements in consideration of factors not encompassed within this standard.

3.3 Valving

Valves shall be installed at all crosses and tees, equal to the number of connecting pipes, minus one, except in cases of short blocks of under 100-feet, thereby eliminating the need for one of the valves. In addition, unvalved lengths of pipe should not exceed 500-feet in an industrial, commercial, or multi-family area, and 800-feet in residential areas where customers are being served.

3.4 Fire Hydrants

Installation of hydrants will be initially required on all developments of six service connections or more, or as required below. Hydrant locations are to be specified by the local fire department and coordinated through the LFPA. Blind flange connections will be provided on distribution piping at suitable locations for future installation of fire hydrants on smaller systems once they reach six service connections. Fire hydrants shall be connected to a 6-inch minimum diameter main. A minimum 6-inch diameter lateral pipe is required for connecting to hydrants located 50-feet or less from the mainline and a minimum 8-inch diameter lateral pipe is required where hydrants are located more than 50-feet from an 8-inch or larger main. Fire hydrant location shall be determined by the appropriate local fire authority. In general, hydrants shall be predicated on the location of street intersections, wherever possible, and located to minimize the hazard of damage by traffic. They shall have an average spacing of 600-feet within residential areas measured along the street frontage. In no case shall hydrants be placed farther than 700-feet apart, and no building shall be more than 350-feet from the nearest hydrant. In commercial or industrial areas, the maximum hydrant spacing shall be 400-feet.

3.5 Facility Placement

All piping, pumping, source, storage, and other facilities shall be located on public rights-of-way or dedicated utility easements. Utility easements must be a minimum of 15-feet in width and piping shall

be installed no closer than 5-feet from the easement edge. Water mains should be typically placed 2-feet outside the roadway edge of any public street right-of-way that is being served.

3.6 Pipe Cover

A 3-foot minimum cover and a maximum 6-foot cover are required from the finished and/or existing ground surface to the top of pipe for all installed transmission and distribution water mains. Service piping may have a minimum 2-foot cover at the meter location.

3.7 Air or Air-Vacuum Relief Valve

Air or combination air-vacuum relief valves shall be located at designated points of high elevation throughout the system.

3.8 Blow-Off Assembly

A blow-off assembly shall be installed on all permanent, dead end runs and at designated points of low elevation within the distribution system. The blow-off assembly shall be installed in the utility right-of-way or easement. In no case shall the design or location be such that there is a possibility of back siphonage into the distribution system. Wherever possible, a fire hydrant shall be used for a distribution system blow-off.

3.9 Separation Distances

Transmission and distribution water piping shall be separated at least 10-feet horizontally from onsite waste disposal piping, drainfields, and/or wastewater gravity or force mains. If 10-feet of separation is impossible, lesser separations may be approved utilizing a sealed, water tight encasement sleeve or concrete encasement, these exceptions would be based upon Port staff review and on the guidance from the Washington Department of Ecology Water Quality Program *"Criteria for Sewage Works Design"*. All parallel and crossing installations of water and sewer lines shall be installed in accordance with the provisions of WAC 246-290 and the *"Recommended Standards for Water Works"* – Ten State Standards.

3.10 Thrust Blocks and Restrained Joints

Bends, valves, and all reducers 6-inches in diameter or larger shall be supported from separation by thrust blocks or restrained joints. Restrained joints are the preferred method. Where restrained joints are used in lieu of thrust blocks, there must be no unrestrained joints within a sufficient distance from the fitting to provide the necessary earth support and frictional resistance. This distance must be calculated by accepted engineering methods. Restrained joints must be Megalug or an approved equal. Tie rods may not be used for buried water mains. Isolation valves for hydrants shall be restrained such that the hydrant can be removed for maintenance without the closed valve being displaced due to water pressure. Underground flange joints are only allowed for restraining valves installed for live taps, fire hydrants, or fire protection services. They can only be used elsewhere with the addition of a flanged coupling adapter because of the difficulty of achieving the precise alignment needed for flange joints during field repair. All of the joints on fire hydrant mains, including the tee, are to be restrained. Thrust blocks for hydrants shall not be allowed.

3.11 Water Service Sizing

All service lines shall be installed so that each residential, commercial, and industrial structure will have a separate metered service for domestic water received from the Port. If approved by the Port, domestic

water consumption may be measured by a master meter for service to a complex under single ownership and where water utility line subdivision is impractical. Service lines providing fire flow may be required to be equipped with a fire detection check, or other appropriate metering devices as directed by the Port. Guidance for the safe maximum operating capacity and the recommended rate for continuous operation of water meters can be found in the American Water Works Association Standards C-700 through C-710 and in their manual M22 *"Sizing Water Service Lines and Meters"*. The minimum diameter for a new service pipe is 3/4-inch.

3.12 Cross Connection Control

Where the possibility of contamination of the supply line exists, water services shall be equipped with appropriate cross connection control devices in accordance with WAC 246-290. The Port's cross connection control program shall determine the need, size, type, and location of each device. The Port's cross connection program shall be based on the guidelines established in the Pacific Northwest Section – *AWWA Standards for Cross Connection Control.*

Section 4: Material Specification

4.1 General

All pipe, valves, meters, hydrants, fittings, and special materials shall be new, undamaged, and designated for use in potable water systems. Material used on water projects shall comply with each project's detailed plans and specifications. In general, all materials and specifications shall be in conformance with the current *"Standard Specifications for Road, Bridge, and Municipal Construction"*, as published by the Washington State Department of Transportation (WSDOT) and the Washington Chapter of the American Public Works Association (APWA) and the specifications of the American Water Works Association (AWWA), except as modified herein. All material and products in contact with domestic water shall meet the requirements of the National Sanitation Foundation (NSF) Standard 61.

4.2 Pipe, Joints, and Fittings

a) General - All distribution and transmission water mains may be ductile iron or PVC AWWA C900. All domestic service lines shall be a minimum of 3/4-inch copper tube size (CTS) polyethylene tubing. All fire service lines shall be ductile iron.

One type of pipe shall be used throughout the entire project, except as necessary to match existing pipe or as otherwise specified.

b) Ductile Iron Pipe (DIP) - Ductile iron pipe shall conform to the requirements of AWWA C151 specifications. Pipe thickness shall be that of Class 52 or greater if required in accordance with the criteria specified in AWWA C150. Ductile iron pipe shall be cement lined and sealed in accordance with AWWA C104. In addition, all pipes shall have push-on rubber gasket joints, conforming to AWWA C111 and shall be furnished in 18 to 20 foot lengths, unless design conditions dictate otherwise.

c) Polyvinyl Chloride (PVC) - Polyvinyl chloride pipe shall conform to the requirements of AWWA C900 specifications. Pressure class pipe shall exceed the anticipated operating pressures by a minimum of 50 psi. All pipes shall have push-on rubber gasket joints, conforming to AWWA C111 and shall be furnished in 18 to 20 foot lengths, unless design conditions dictate otherwise.

d) Polyethylene Pipe (PE) - All polyethylene pipe 2-inch diameter and smaller shall be rated for a maximum working pressure of 200 psi, with a standard dimension ratio (SDR) of 7. This pipe shall comply with ASTM D-2239 and D-1248. Pipes shall bear the NSF seal, signifying that it is used for potable water. The pipe shall be copper tube size (CTS) and connected with standard brass or bronze fittings by use of a pack joint, with approved insert stiffeners.

e) Fittings - All mainline fittings shall conform to the requirements of AWWA C110 or C153. Fittings shall be of the size and type of joint as called for on the plans. All fittings shall have a pressure rating of 250 psi minimum. All fittings shall be ductile iron, unless approved by the Port. All ductile iron fittings shall be cement or epoxy lined. All compact fittings shall be ductile iron, cement or epoxy lined, and have a pressure rating of 350 psi. All rubber gasket joints for ductile iron fittings shall conform to the requirements of AWWA C111. All fittings shall meet the requirements of NSF 61. All reducers 6-inches and larger shall be restrained.

4.3 Valves

a) Gate Valves - System gate valves shall be resilient wedge, NRS (non rising stem) with "O" ring seals. Valve ends shall be mechanical joint or flanged. Valves shall conform to AWWA 509 or C515 and shall be epoxy coated on the inside. All valves shall be furnished with an underground manual operating nut (AWWA 2-inch square), opening with a counterclockwise rotation.

b) Butterfly Valves - Butterfly valves shall meet or exceed all AWWA C504 specifications and shall be Class 150-B with a short body, which is suitable for direct bury. When they are installed, they shall have a position indicator, which clearly shows the position of the disk. All valves shall be equipped with an underground manual operator with AWWA 2-inch square operating nut, and shall open with a counterclockwise rotation. Butterfly valves may only be used for flow-rate control situations.

c) Check Valves - Check valves 3-inches or larger shall be iron bodied, iron disk, bronze mounted, swing type clearway, quiet closing, lever and spring valves with flanged ends. All valves shall comply with AWWA C508 specifications.

d) Air and Air-Vacuum Relief Valves - Air and air-vacuum relief valves shall have cast iron bodies and covers and stainless steel floats. Float guides, bushings, and lever pins shall be stainless steel or bronze. Valves shall be designed for operating service to 150 psi.

e) Pressure Reducing Valves - This valve shall maintain a constant downstream pressure regardless of varying inlet pressure. It shall be a hydraulically operated, pilot controlled, diaphragm type, globe or angle valve. The main valve shall have a single removable seat and a resilient disk. The stem shall be guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. No external packing glands are permitted and there shall be no pistons operating the main valve or any pilot controls. The pilot controls shall be direct acting, adjustable, spring loaded, normally open diaphragm valve designed to permit flow when control pressure is less than the spring setting. The control system shall include a fixed orifice. All valves shall be equipped with mechanical joints or flanged ends.

4.4 Valve Boxes

Valve boxes shall be a Fort Vancouver Pattern #910 cast iron or approved equal. Valve box extensions shall be one piece and constructed of 6-inch ASTM D3034, SDR 35, PVC pipe. Valves boxes not set in paved areas shall be set in a concrete or asphalt pad, 24-inches square by 4-inches thick.

4.5 Fire Hydrants

Fire hydrants shall conform to AWWA C502 for post type, dry barrel, self-draining hydrants suitable for at least a 36-inch burial depth. Each hydrant shall be quipped with a 6-inch inlet, a minimum valve opening of 5-1/4 inch, two 2-1/2 inch hose connections, and one 4-1/2 inch pumper Port. All hose connections and pumper ports shall have National Standard Threads. All valves and caps shall open counterclockwise and have 1-1/2 inch flat point, pentagon operation and cap nuts. Hydrants shall be breakaway traffic models. Hydrants shall be Mueller Centurion or Clow Medallion.

4.6 Tapping Sleeves and Valves

Tapping sleeves shall be rated at 150 psi working pressure with AWWA C207 Class D 150# flanges, or equivalent stainless steel pattern. All sleeves shall be designated by the manufacturer as suitable for the service proposed. All fabricated steel tapping sleeves shall have a fusion applied epoxy coating. All bolts for the sleeve body shall be the drop-in type, not welded. All nuts and bolts shall be stainless steel with nuts or bolts treated to prevent galling or high-strength, low alloy steel bolts with the steel meeting AWWA C111 specifications. Tapping sleeve gaskets shall be NSF approved for potable water and sleeves shall be tested on the pipe at 150 psi for 15 minutes with no pressure drop prior to making the tap. Tapping valves shall have the same construction as specified for gate valves.

4.7 Cross Connection Control Devices

All cross connection control devices will be specified on a case-by-case basis by the Port, based upon the degree of potential hazard. Such devices will comply with models approved the Washington State Department of Health in accordance with WAC 246-290.

Section 5: Construction Standards

5.1 General

Installation of water systems shall conform at a minimum to the most current version of the *"Standard Specifications for Road, Bridge, and Municipal Construction"* as prepared by the WSDOT/APWA. In addition, installation must meet the specifications of the American Water Works Association (AWWA)

Standard C600 and in accordance with the recommendations of the manufacturer of the material or equipment concerned.

5.2 Waterline Installation

In general, waterlines shall be laid to the line and grade shown and established. Ductile iron pipe shall be installed to AWWA C600 and the manufacturer's recommendations. PVC pipe shall be installed according to AWWA C605 and the manufacturer's recommendations. Clean all parts of the pipe ends, couplings, fittings, and appurtenances to remove oil, grit, and other foreign matter from the joint. Keep the joint from contacting the ground. When assembling gasketed joints, apply an approved lubricate as specified by the pipe manufacturer. Install 14-gauge copper color-coded toning wire over all waterlines, including service connections. The toning wire shall be duct taped to the top of the waterline at the time of installation with the ends of the wire readily accessible within all meter and/or valve boxes. In addition, the detectable marking tape may be required wherever the waterline lies parallel and within 3-feet of any other utility. The detectible marking tape shall be installed at time of installation approximately 1-foot above the top of the waterline. All wire splices are to be silicon filled, waterproof connectors.

5.3 Fire Hydrant Installation

Hydrant installation shall conform to AWWA C600 specifications. Fire hydrants shall stand plumb and be set to the finish grade. The center of the lowest outlet of the hydrant shall be not less than 18-inches above finish grade. In addition, all hydrants shall be installed with a minimum of 36-inches of unobstructed radius around the hydrant. Hydrants shall be aligned so that the pumper port faces toward the road, or most probable route of access if roads are not available, as determined by the Port.

5.4 Trench Excavation, Bedding and Backfill

All permits for roadway cuts or right-of-way work shall conform to the requirements of the Klickitat County Public Works (KCPW) Road Department. Developers and/or contractors shall be responsible for obtaining all KCPW permits and inspections. The existing road surface shall be cut in a neat line by saw or wheel cutting prior to removal. Trench backfill shall be according to the specifications. All excess material not used for trench backfill shall be removed and disposed of by the contractor. Placement of backfill shall be brought up at substantially the same rate on both sides of the pipe and care shall be taken so that the pipe is not floated or displaced. During construction, the contractor shall stockpile the excavated trench material so as to do the least amount of damage possible to adjacent lawns, gardens, shrubbery, trees, or fences regardless of the ownership of these areas. All excavated material shall be removed from these areas and these surfaces shall be left in a condition equivalent to or better than their original condition and free from all rock, gravel, boulders, or other foreign material. Replace topsoil areas as specified. All existing drainage ditches and culverts shall be reopened, graded, and original drainage restored. All damage to irrigation, house drainage pipe, drain tiles, sewer laterals, and culverts shall be repaired or replaced. All clearing, grubbing, and stripping shall be performed in advance of excavation operations. All asphalt rubble, rocks, trash, or debris shall be hauled away. Asphalt pavement shall be neatly saw cut at designated limits and shall be removed and hauled away.

5.5 Leakage Testing

Leakage shall be defined as a quantity of water necessary to restore the specified test pressure at the end of the test period. No pipe installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formulas below. Should any test of pipe laid disclose leakage

greater than that allowed by the formulas, the contractor shall, at contractor's own expense, locate and repair the defective joints or pipe until the leakage is within the specified allowance. No piping or jointing having visual leakage will be accepted.

C900 PVC: Allowable leakage shall be determined by the formula.

$$L=ND\sqrt{P}\div 7400$$

Where: L= allowable leakage (gal/hr)
N=number of joints in the section tested
D =nominal diameter of pipe (inches)
P=average test pressure (psi)

Ductile Iron: Allowable leakage shall be determined by the formula.

$$L=SD\sqrt{P}\div 133200$$

Where: L= allowable leakage (gal/hr)
S=length of pipe tested (feet)
D =nominal diameter of pipe (inches)
P=average test pressure (psi)

Note the average test pressure is equal to two times the system working pressure, but not less than 150 psi.

5.6 Hydrostatic Pressure Test

A hydrostatic pressure test will be applied to all newly constructed water mains, fire lines, fire hydrants leads, and stub outs in accordance with the following procedures. The test shall be conducted on buried pipe after the trench has been backfilled. If partial backfill (spot load) is desired, contractor will be responsible for securing pipe during test. Where any section of pipe is provided with concrete thrust blocking, the pressure test shall not be made until at least 5 days have elapsed after the concrete thrust blocking is installed. If high early cement is used for the concrete thrust blocking, the time may be reduced to two days, instead of the five previously specified. Duration of the test shall be two hours with an allowable leakage not greater than the allowance calculated from the formulas in Section 5.5 and a pressure drop not exceeding 5 psi. All visible leaks shall be repaired before the pipe trench is completely backfilled. Any and all testing necessary for final acceptance may be performed by the contractor under the observation of the Port of Klickitat inspector. This work shall conform to procedures set forth by the Port of Klickitat as outlined in Section 5.8.

5.7 Disinfection and Bacteriological Testing

All newly constructed water mains, fire lines, fire hydrants leads, stub outs, reservoirs and appurtenances shall be flushed and disinfected prior to use. Sterilization of new facilities shall be completed prior to normal operations in conjunction with existing systems. Approval by the Port of Klickitat must be acquired prior to this work and said work must be performed by an approved individual under the observation of the Port of Klickitat. This work shall conform to procedures set forth by the Port of Klickitat and identified within Section 5.8

5.8 Leakage/Hydrostatic Testing & Disinfection Procedures

Scope – The testing of waterlines for conformance with the requirements of the Port of Klickitat and Washington Division of Health shall be the responsibility of the contractor. This testing includes chlorination, flushing, bacteriological testing and pressure testing. An approved, independent, State Certified laboratory must run all tests according to approved procedures. The Port of Klickitat inspector will monitor and observe all testing procedures and collection of water samples for bacteriological testing.

Qualifications – The contractor or contractor's representative shall prove knowledge and skill to the Port of Klickitat's satisfaction of the steps required for chlorinating, flushing, testing, and, if necessary, a field demonstration of their technique.

Materials – Equipment used for testing will be kept clean and disinfected at all times. Tanks, hoses, pumps, or any equipment directly in contact with potable water or Port of Klickitat facilities shall be dedicated to potable water use only. Equipment is subject to inspection and/or testing by the Port at any time to prove compliance. The contractor will supply all water and chemicals used for test procedures. The chlorine used will be approved by the Port of Klickitat prior to use. In some cases, although not guaranteed, the Port of Klickitat may be able to provide water. The method of chlorination will be by injection. Slug chlorination will not be allowed. The contractor will also be responsible for the safe disposal of chlorinated water at the completion of the test.

Procedures – Testing procedures shall be conducted during normal working hours (7am to 4pm, Monday thru Friday). Pressure testing will be scheduled so completion will be within these normal working hours. Chlorine and pressure tests will not be performed when the temperature is expected to be less than 33° Fahrenheit, between those hours. Chlorine tests require a minimum of 24-hours. The contractor shall not operate any valve connected to Port water lines except with a Port representative present and only at that representative's express direction.

Flushing – The contractor will be responsible for all flushing activity, including but not limited to, flushing air from service and mainlines at the time of chlorination, flushing chlorinated water after all chlorination and rechlorination and as directed by the Port representative prior to chlorination due to dirty conditions. The contractor shall thoroughly flush all lines. Flushing velocity shall not be less than two feet per second (2 fps). Any flushing is considered completed when the system chlorine residual matches the background chlorine residual level of the Port system at that location.

Chlorination – The contractor will be responsible for chlorine taps. Taps will be required on all dead ends and may be required on high points to vent trapped air. Taps will be coordinated and observed by the Port of Klickitat. Before chlorination, the Port representative will witness all valves being opened in the system being chlorinated. The Port representative will observe the contractor sample chlorine residuals as follows.

- After chlorination (beginning of test initial value)
- Prior to the chlorination solution being flushed at the end of the 24-hour test period (finish value)
- The Port system water after the infrastructure has been thoroughly flushed

A minimum of 50 ppm and a maximum of 200 ppm of free residual chlorine are the acceptable limits for the initial test. Optimum chlorine residual for the initial test is 50 ppm. Any residual below acceptable initial limits will be grounds for restarting the chlorination test. If the finish residual value is less than 20 ppm or varies by 60% or more than the starting value (whichever is greater), the test will deemed to have failed and rechlorination will be required after thoroughly flushing the line. If, after three chlorinations, no passing level is obtained, the line will be deemed contaminated, be removed, and be replaced, all at contractor's expense.

Bacteriological – When the chlorination test is deemed to have passed, the system will be ready for a bacteriological sample to be taken. The system shall be thoroughly flushed to the Port system background chlorine residual. 24-hours after the completion of the flushing, a representative of the Port of Klickitat shall draw bacteriological samples from the closed system. There will be a minimum 48-hour period between collecting the chlorination sample and the schedule of the beginning of the pressure testing to permit an acceptable bacteriological test to be conducted. If the bacteriological test result is negative, pressure testing of the main can proceed. However, if the bacteriological test result is positive, rechlorination of the main is required. When rechlorination due to a failed sample is required, a companion sample set will be taken with the second primary sample set.

Pressure Testing – Prior to pressure testing, any and all air shall be flushed from the system. The Port representative will witness all valves being checked to be opened and all service stops and hydrants securely closed. Pressure testing shall be done from the high end of the main unless otherwise directed by the Port of Klickitat. The test pressure shall be 2 times the working system pressure at that location, but not less than 150 psi, for a period of not less than two hours and may not have a drop greater than 5 psi. The contractor's pressure testing equipment shall be made to connect to a 3/4" meter. The leakage from the waterline during the two hour test shall not exceed the allowable leakage as determined in Section 5.5.

Section 6: Construction Certification

6.1 General

In general, the developer of the proposed project is required to retain a licensed professional engineer for the design of all water works improvements and a Port approved inspector to witness installation and testing of all facilities.

6.2 Final Acceptance

a) Following completion of construction, the design engineer and/or inspector shall notify the Port and their engineer that the improvements are complete and ready for final inspection and acceptance.

b) Following notification, the design engineer shall schedule the final walkthrough of the construction site with the contractor, design engineer, and Port representative. If the work is not acceptable to the Port, the design engineer shall document the unacceptable items in writing and provide copies to all participants.

c) When all final walkthrough items have been addressed to the Port's satisfaction, the design engineer shall prepare record drawings incorporating the changes made during construction and the final walkthrough. Then they shall submit these drawings to the Port. These documents shall be provided in both a hard copy and electronic format (.dwg and .pdf).

d) The Port's final acceptance will not be given until all final walkthrough items have been addressed and all testing requirements, such as backfill compaction testing, pressure testing, disinfection, and tracer wire testing have been adequately addressed and documented.

6.3 Construction Certification

Upon final acceptance by the Port of Klickitat of the completed infrastructure, the design engineer must provide a Construction Completion Certification on a Washington State Department of Health Construction Completion Report Form, a copy of which is included. This report must be sealed by the Washington Registered Professional Engineer design engineer and be provided to the Port of Klickitat. In addition, at this time, the developer will be required to post a 10% warranty bond or other approved security with the Port of Klickitat for the one year warranty period.

APPROVED METER BOXES

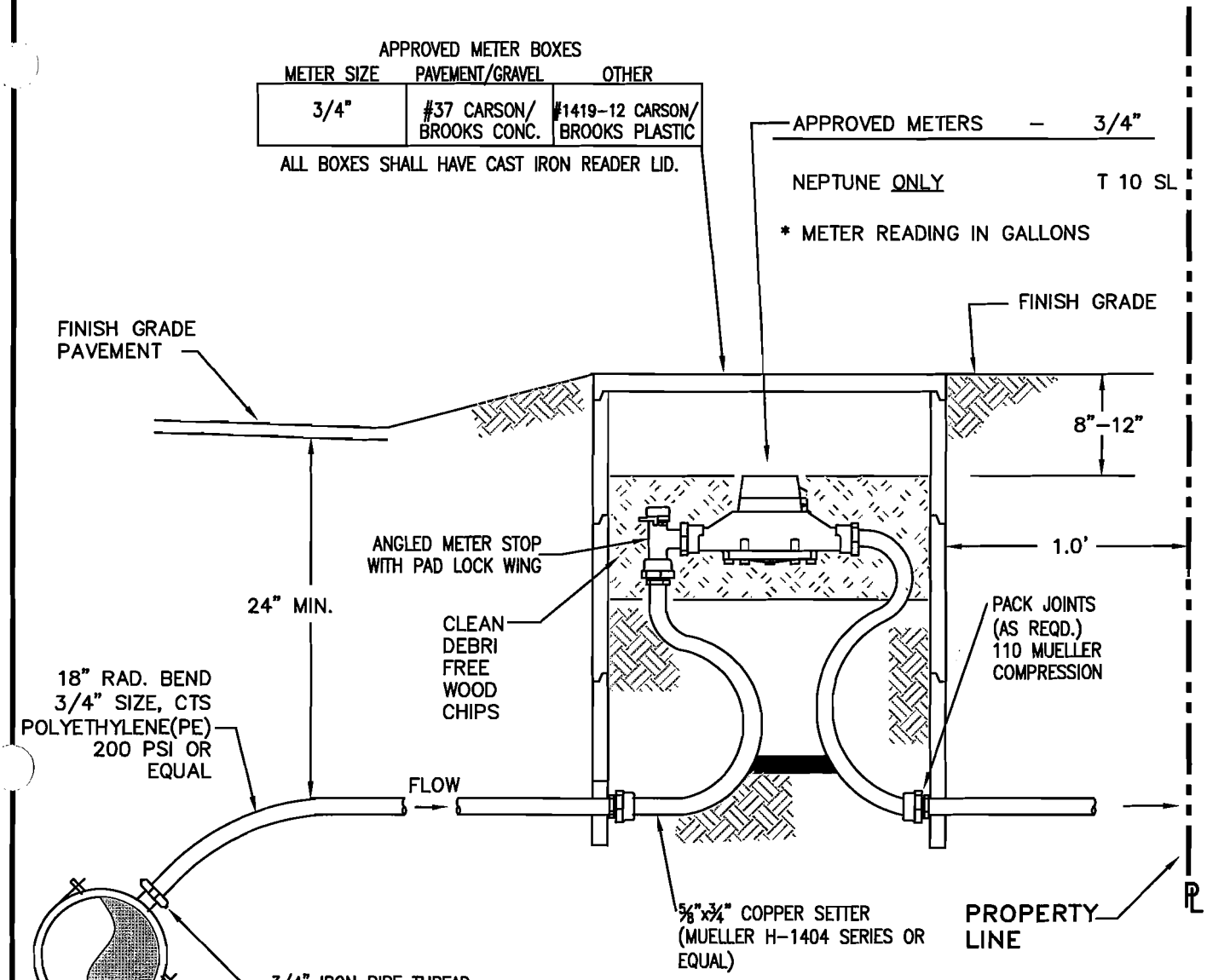
METER SIZE	PAVEMENT/GRAVEL	OTHER
3/4"	#37 CARSON/ BROOKS CONC.	#1419-12 CARSON/ BROOKS PLASTIC

ALL BOXES SHALL HAVE CAST IRON READER LID.

APPROVED METERS – 3/4"

NEPTUNE ONLY T 10 SL

* METER READING IN GALLONS



NO SCALE

NOTES:

1. ALL BRASS AND VALVES TO BE FORD OR MUELLER.
2. METER TO BE CENTERED AND SET PLUMB INSIDE METER BOX.
3. METER BOXES SET IN DRIVEWAYS SHALL HAVE TRAFFIC LIDS.
4. LARGER METER INSTALLATION WILL REQUIRE A SITE SPECIFIC ENGINEERING DESIGN.
5. PIPE BEDDING TO BE 3" OF SAND OR INSPECTOR APPROVED MATERIAL

Port of Klickitat
154 E BINGEN POINT WAY STE. A
BINGEN, WA 98605
509-493-1655
509-493-4257 (fax)

STANDARD DETAIL #100

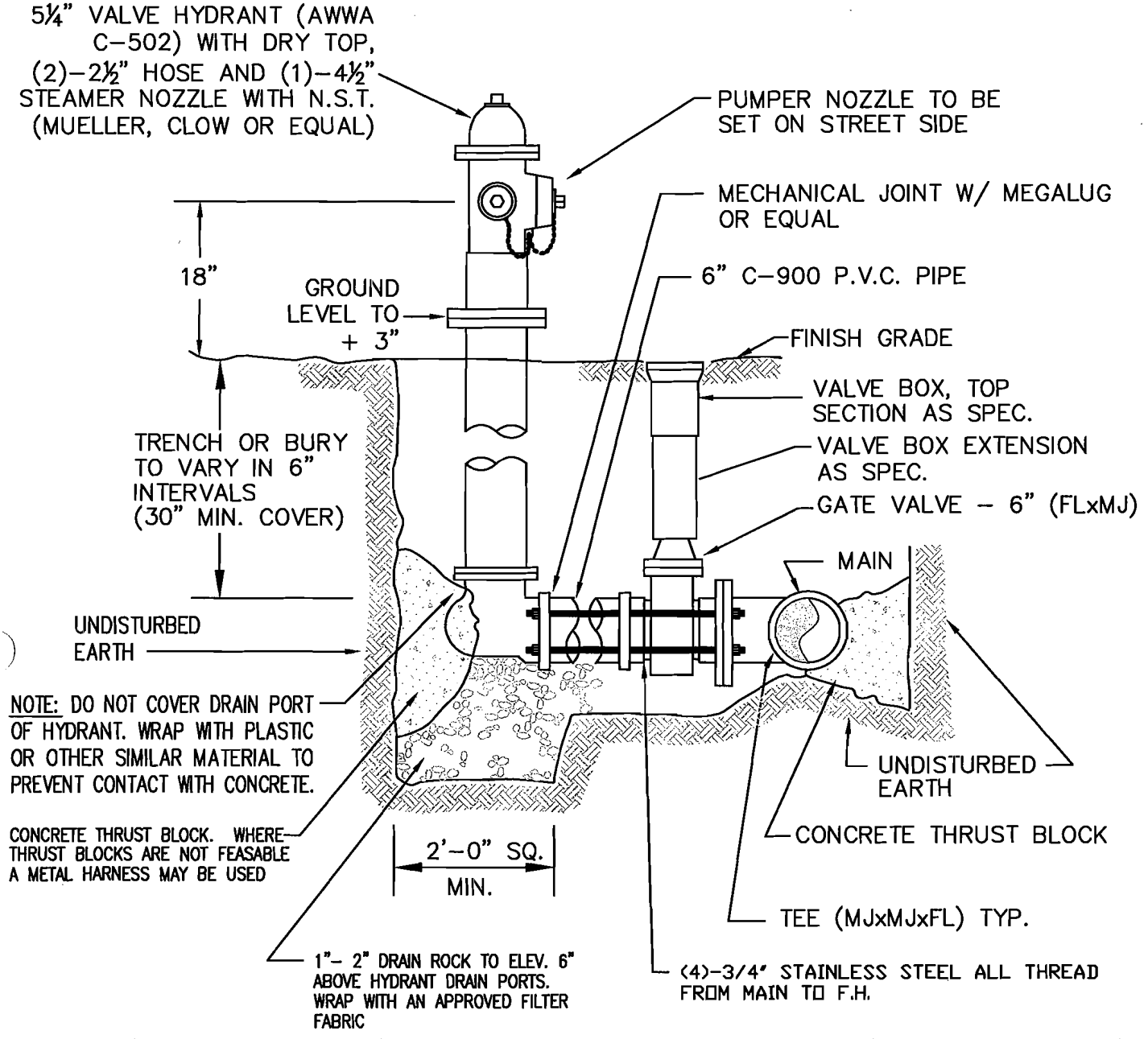
3/4" WATER SERVICE CONNECTION

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

K:\ACAD\APWA\PORT OF KLICKITAT\DETAILS2.DWG

ENGINEER / SURVEYOR:
TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3313 W. 2ND STREET SUITE 100
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

DATE: 4/29/2009



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Port of Klickitat
154 E BINGEN POINT WAY STE. A
BINGEN, WA 98605
509-493-1655
509-493-4257 (fax)

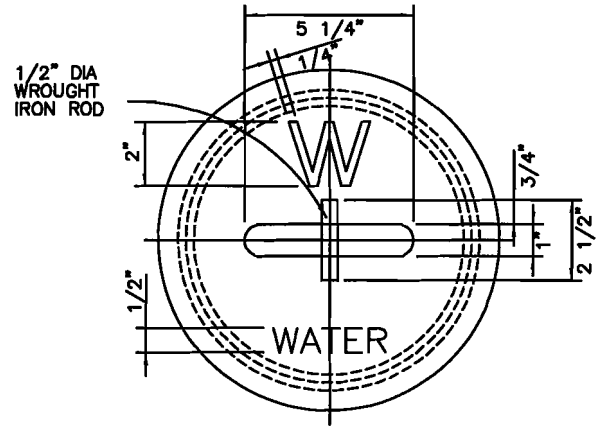
STANDARD DETAIL #101
FIRE HYDRANT AND GATE VALVE INSTALLATION

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

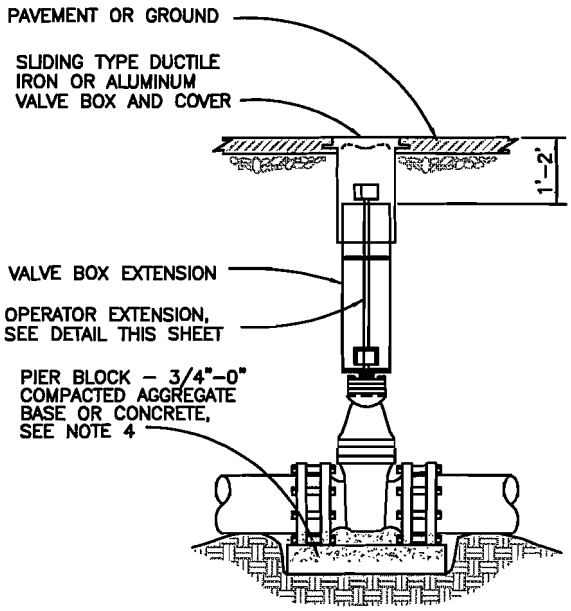
K:\ACAD\APWA\PORT OF KLICKITAT\DETAILS2.DWG

ENGINEER / SURVEYOR:
TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3313 W. 2ND STREET SUITE 100
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

DATE: 5/6/2009



COVER PLAN



VALVE BOX
ASSEMBLY DETAIL

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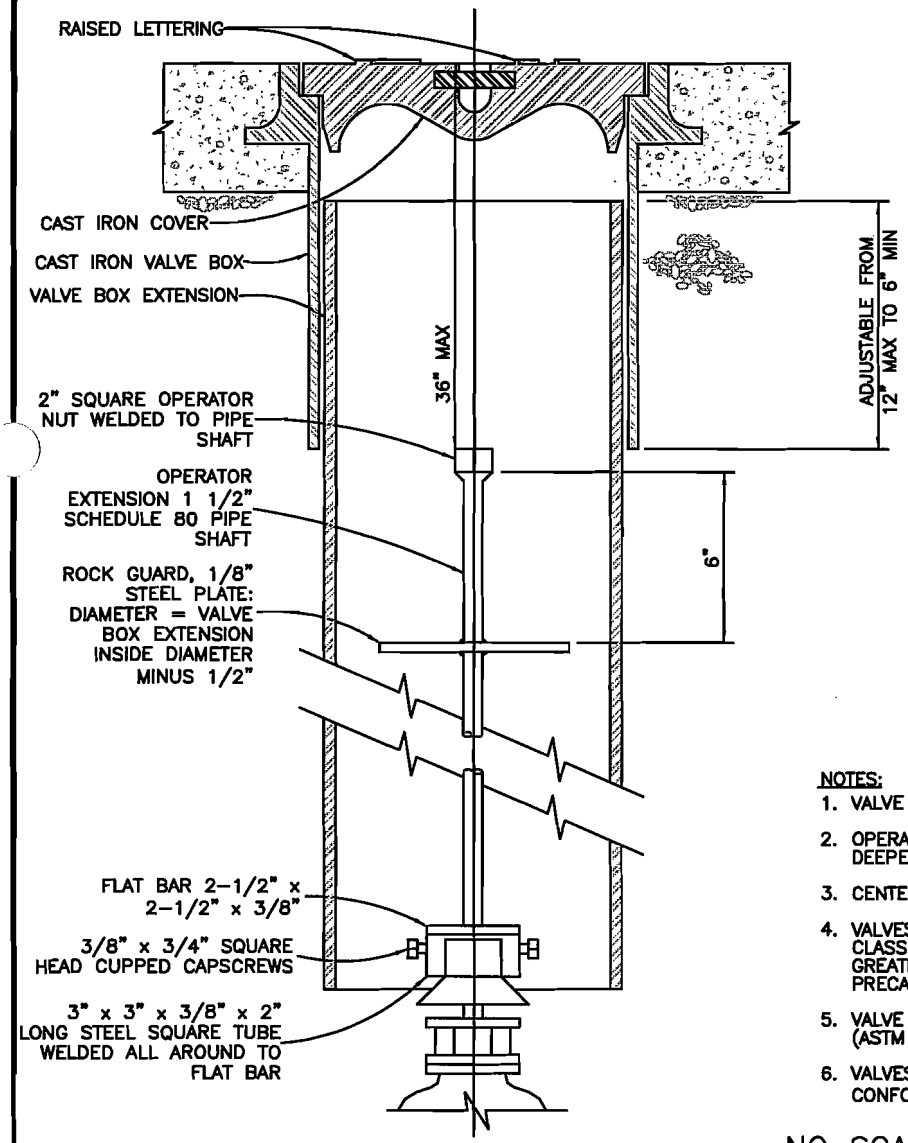

VALVE BOX EXTENSION SECTION

NO SCALE

NOTES:

1. VALVE BOX NOT TO REST ON OPERATING ASSEMBLY.
2. OPERATOR EXTENSION REQUIRED WHEN VALVE NUT IS DEEPER THAN 3 FEET FROM FINISH GRADE.
3. CENTER VALVE BOX ON AXIS OF OPERATOR NUT.
4. VALVES 12" AND SMALLER SHALL BE PROVIDED WITH CLASS B BASE ON UNDISTURBED GROUND. VALVES GREATER THAN 12" SHALL BE INSTALLED ON PRECAST CONCRETE PIER BLOCK.
5. VALVE BOX EXTENSION SHALL BE PVC SDR 35 (ASTM D 3034).
6. VALVES 4"–12" SHALL BE RESILIENT SEAT GATE VALVE CONFORMING TO AWWA C–515 (CLOW, KENNEDY OR EQUAL)

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STANDARD DETAIL #102
VALVE BOX AND OPERATOR EXTENSION ASSEMBLY DETAILS

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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ENGINEER / SURVEYOR:
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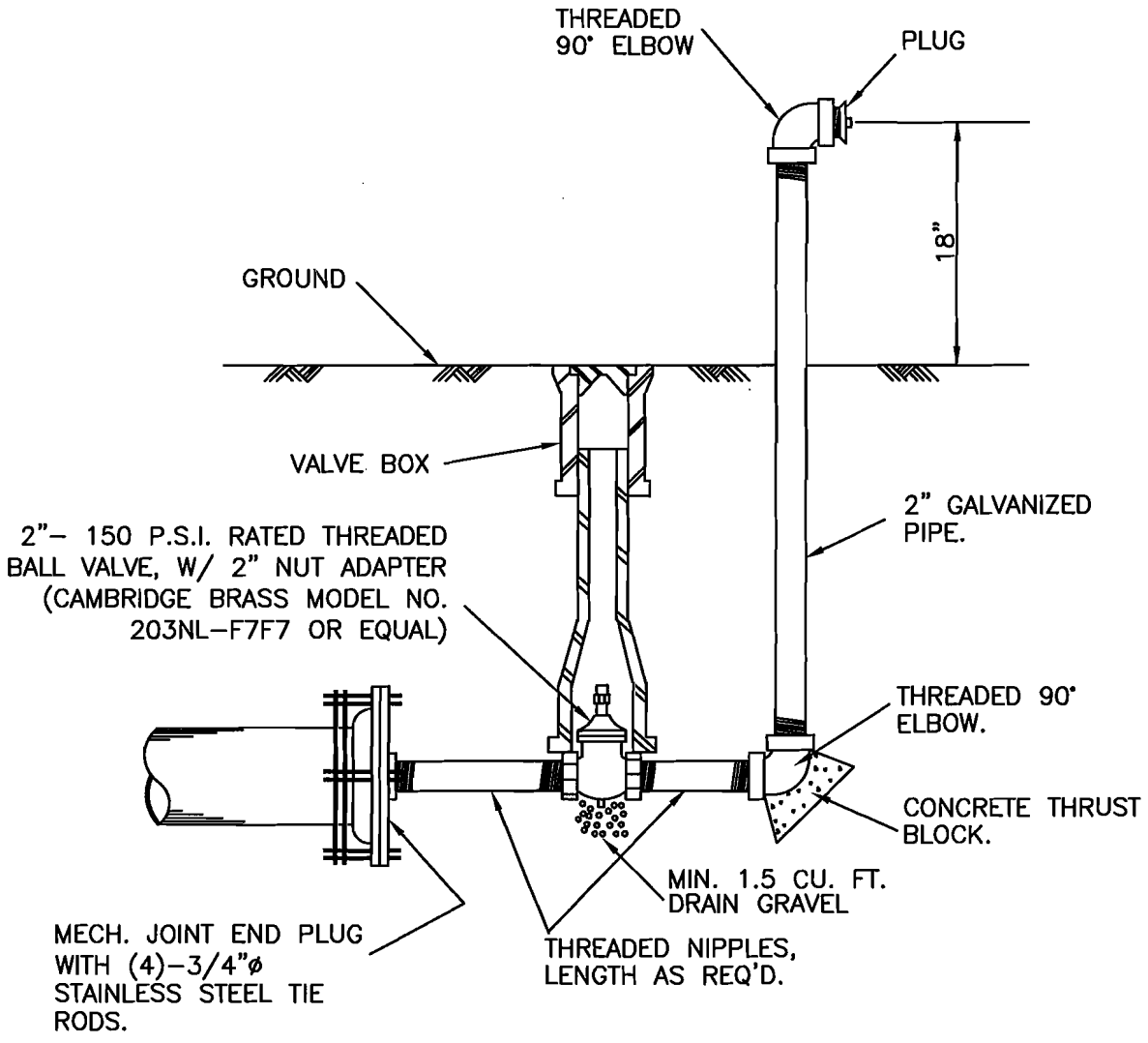
CONSULTING ENGINEERS
3313 W. 2ND STREET SUITE 100
THE DALLES, OREGON 97058
PH. 541–296–9177 FAX 541–296–6657

DATE: 4/29/2009



NO SCALE

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STANDARD DETAIL #103
OFF STREET BLOW-OFF DETAIL

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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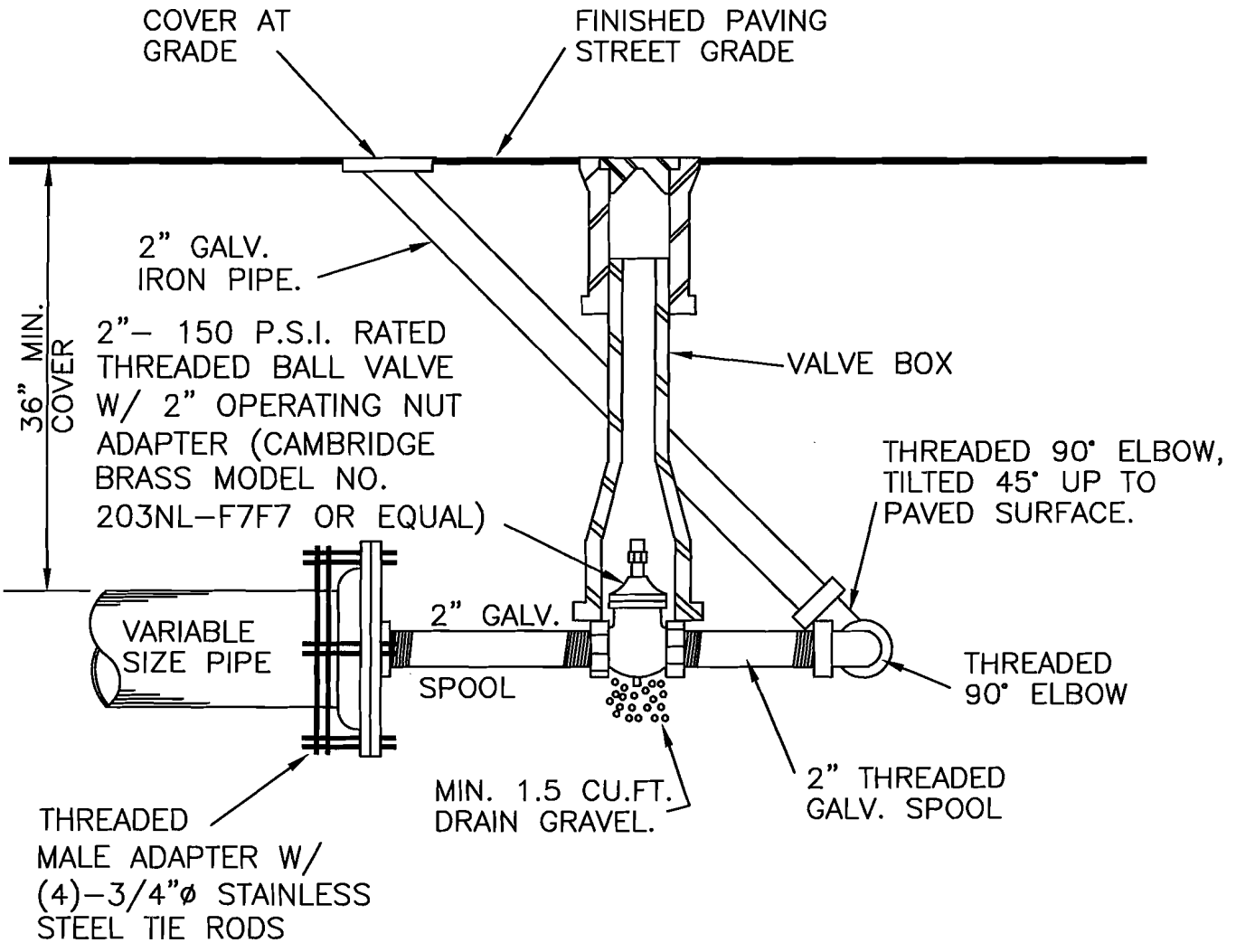
DATE: 5/6/2009



NO SCALE

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STANDARD DETAIL #104
IN STREET BLOW-OFF DETAIL

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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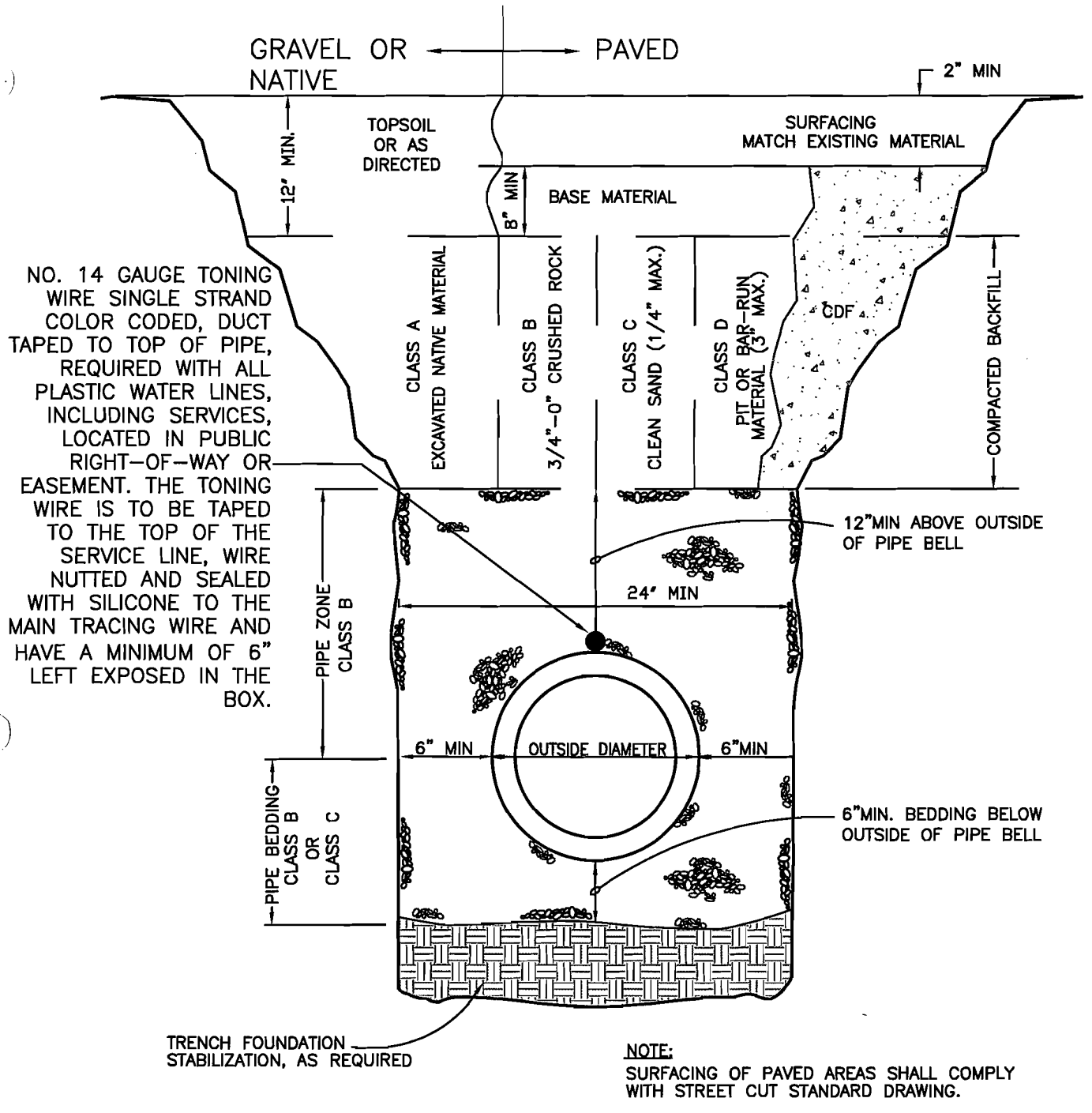
PH. 541–296–9177 FAX 541–296–6657
DATE: 5/6/2009



NOTE:
SURFACING OF PAVED AREAS SHALL COMPLY WITH STREET CUT STANDARD DRAWING.

NO SCALE

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STANDARD DETAIL #105
TRENCH DETAIL

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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DATE: 4/29/2009

(HORIZONTAL) BEARING AREA OF THRUST BLOCKS IN SQUARE FEET									(VERTICAL) VOLUME OF THRUST BLOCK IN CUBIC YARDS			
FITTING SIZE	TEE, WYE, DEAD END AND HYDRANT	STRADDLE BLOCK	90° BEND PLUGGED CROSS	TEE PLUGGED ON RUN		45° BEND	22-1/2° BEND	11-1/4° BEND	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND
				A-1	A-2							
4	1.0	1.6	1.4	1.9	1.4	1.0	---	---	---	---	---	---
6	2.1	3.7	3.0	4.3	3.0	1.6	1.0	---	1.3	---	---	---
8	3.8	6.5	5.3	7.6	5.4	2.9	1.5	1.0	2.3	1.1	---	---
10	5.9	10.2	8.4	11.8	8.4	4.6	2.4	1.2	3.7	1.8	---	---
12	8.5	14.7	12.0	17.0	12.0	6.6	3.4	1.7	5.5	2.8	1.2	---
14	11.5	---	16.3	23.0	16.3	8.9	4.6	2.3	7.6	3.9	1.7	---
16	15.0	26.1	21.3	30.0	21.3	11.6	6.0	3.0	9.9	5.1	2.3	0.9
18	19.0	---	27.0	38.0	27.0	14.6	7.6	3.8	---	---	---	---
20	23.5	40.8	33.3	47.0	33.3	18.1	9.4	4.7	---	---	---	---
24	34.0	58.8	48.0	68.0	48.0	26.2	13.6	6.8	---	---	---	---

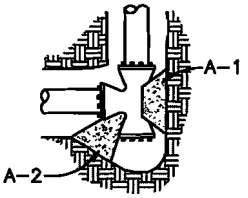
NOTES:

1. ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 PSI AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION:

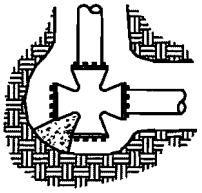
   BEARING AREA = (TEST PRESSURE / 150) x (2000 / SOIL BEARING STRESS) x (TABLE VALUE)

2. ABOVE VOLUMES BASED ON TEST PRESSURE OF 150 PSI AND THE WEIGHT OF CONCRETE = 4050 POUNDS PER CUBIC YARD. TO COMPUTE FOR DIFFERENT TEST PRESSURES, USE THE FOLLOWING EQUATION:

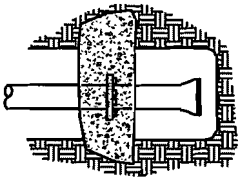
   VOLUME = (TEST PRESSURE / 150) x (TABLE VALUE)



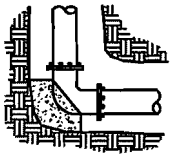
TEE



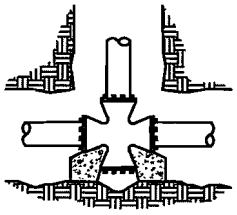
CROSS



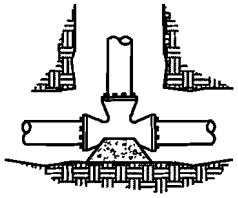
STRADDLE BLOCK



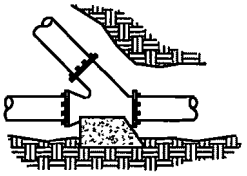
BEND



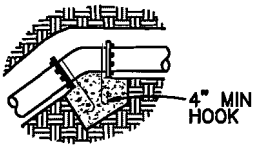
CROSS



TEE



WYE



VERTICAL BEND

RODS FOR VERTICAL BENDS		
FITTING SIZE	ROD SIZE	EMBEDMENT
12" AND LESS	#6	30"
14"-16"	#8	36"

NOTES:

1. CONCRETE BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2. ALL CONCRETE TO BE CLASS 2400 MINIMUM.
3. INSTALL ISOLATION MATERIAL BETWEEN PIPE AND/OR FITTINGS BEFORE POURING CONCRETE BLOCKING.
4. CONCRETE SHALL BE KEPT CLEAR OF ALL JOINTS AND ACCESSORIES.
5. TIE RODS SHALL BE DEFORMED GALVANIZED COLD ROLLED STEEL, 40000 PSI TENSILE STRENGTH.

NO SCALE

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STANDARD DETAIL #106
THRUST BLOCKING

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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CONSULTING ENGINEERS
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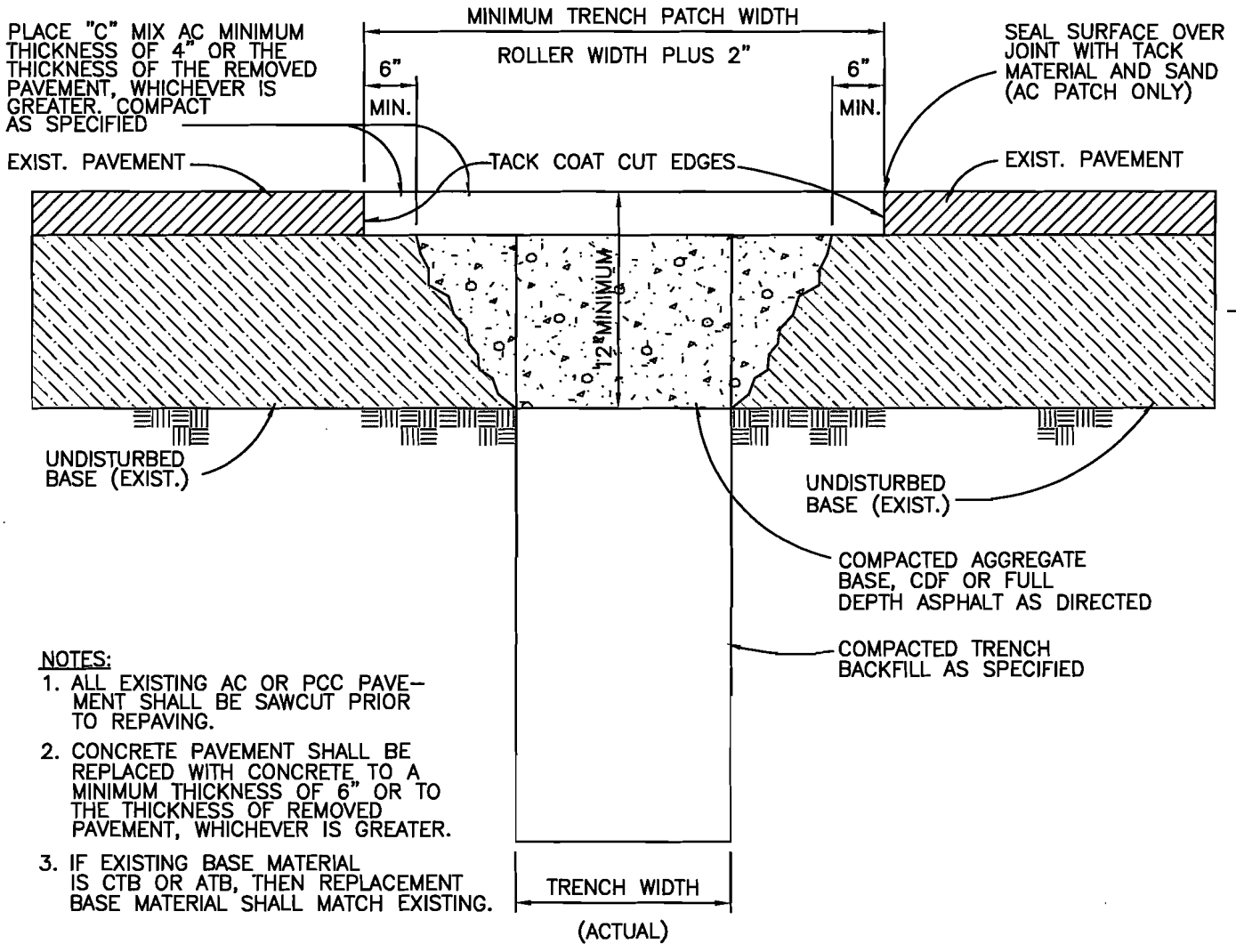
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

DATE: 4/29/2009



NOTES:

1. ALL EXISTING AC OR PCC PAVEMENT SHALL BE SAWCUT PRIOR TO REPAVING.
2. CONCRETE PAVEMENT SHALL BE REPLACED WITH CONCRETE TO A MINIMUM THICKNESS OF 6" OR TO THE THICKNESS OF REMOVED PAVEMENT, WHICHEVER IS GREATER.
3. IF EXISTING BASE MATERIAL IS CTB OR ATB, THEN REPLACEMENT BASE MATERIAL SHALL MATCH EXISTING.

NO SCALE

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STANDARD DETAIL #107
STREET CUT

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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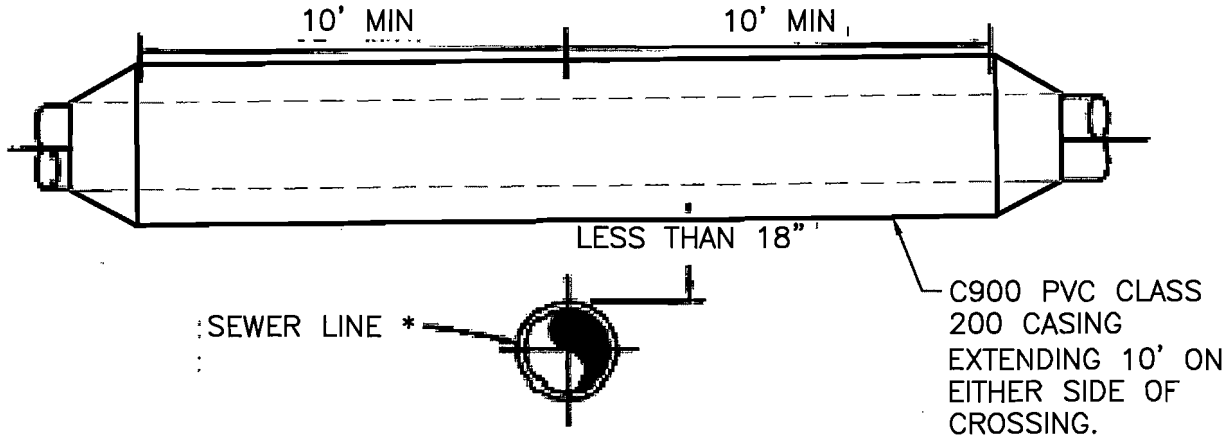
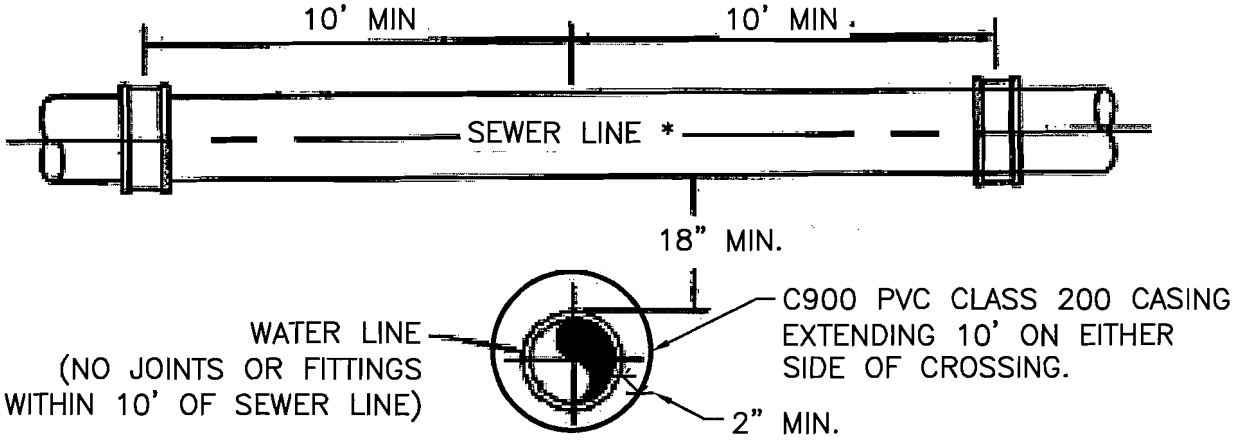


CASE 1: WATERLINE ABOVE SEWER



CASE 2: WATERLINE BELOW SEWER

FOR PIPE CROSSINGS WHERE THE POTABLE LINE IS CLOSER THAN 18 INCHES VERTICALLY FROM THE NON-POTABLE LINE OR THE POTABLE LINE MUST CROSS UNDER THE NON-POTABLE LINE, THE POTABLE LINE SHOULD BE CASED WITH C900 PVC CLASS 200 PIPE EXTENDING A MINIMUM OF 10 FEET TO EITHER SIDE OF THE CROSSING. (DOH WATER SYSTEM DESIGN MANUAL 8.4.4)

** NOTE:*
NON-POTABLE LINE ABOVE OR LESS THAN 18" BELOW WATERLINE TO BE CONSTRUCTED OF AWWA WATERLINE MATERIAL AND VISUALLY INSPECTED FOR SIGNS OF LEAKAGE OR IMPROPER CONSTRUCTION. NON-POTABLE LINE TO HAVE NO JOINTS WITHIN 10' OF THE CROSSING.

NO SCALE

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STANDARD DETAIL #108
NON-POTABLE CROSSING

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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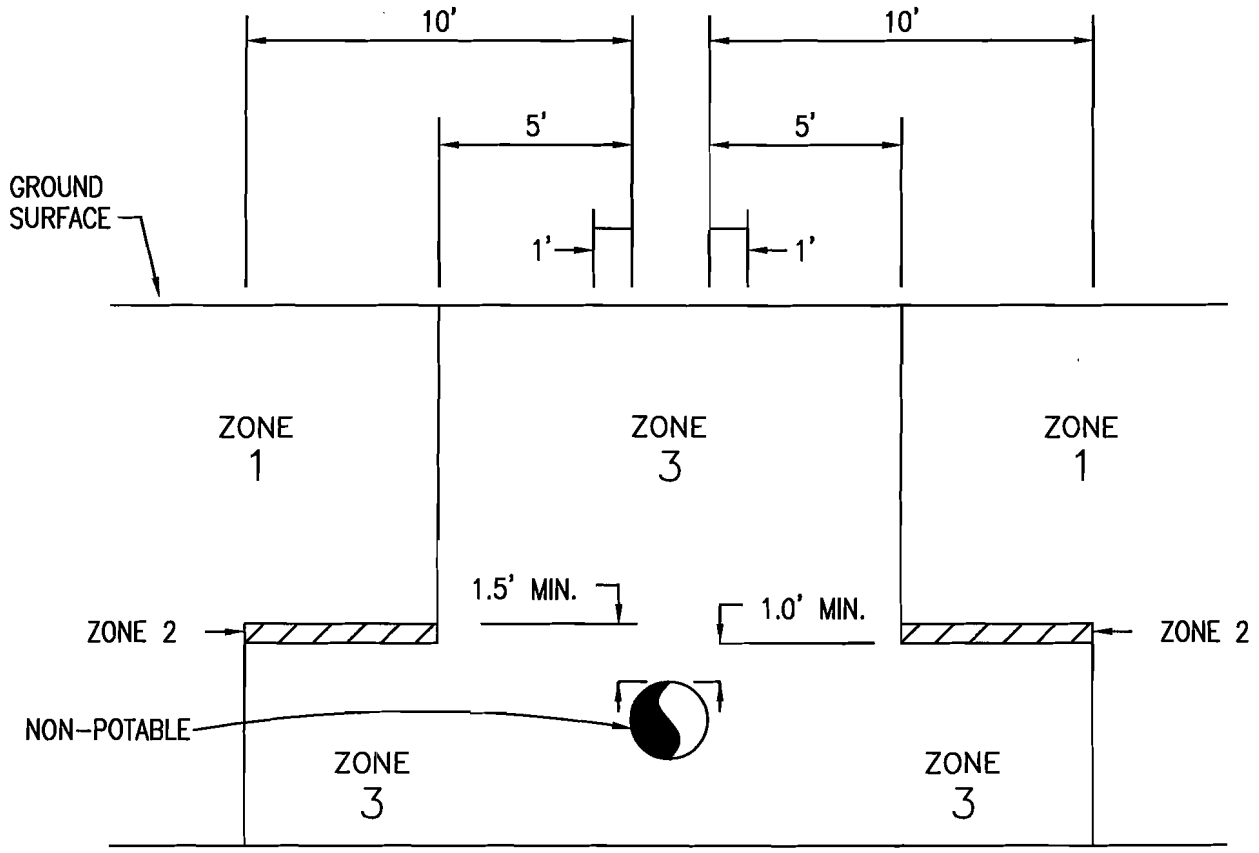
PH. 541-296-9177 FAX 541-296-6657
DATE: 4/29/2009



WATER & NON-POTABLE LINE IN PARALLEL CONDITIONS

ZONE	VERTICAL SEPARATION	HORIZONTAL SEPARATION	RESTRICTIONS
1	Water line 18" higher than Non-Potable	5'	Only crossing restrictions apply
1	Water line level or lower than Non-Potable	10'	Only crossing restrictions apply
2	Water line 1.5' higher than Non-Potable	Greater than 5' but less than 10'	Concrete Encasement
3	Water line 1.5' higher than Non-Potable	Less than 1'	Parallel water line prohibited
3	Water line less than 1.5' above Non-Potable	Less than 5'	Parallel water line prohibited
3	Water line level or lower than Non-Potable	Less than 10'	Parallel water line prohibited

NOTE:

1. WATER & NON-POTABLE LINE CROSSINGS SHALL COMPLY WITH POK DESIGN STANDARDS, AND DOH WATER SYSTEM DESIGN MANUAL FOR SEPARATION AND PIPE MATERIAL REQUIREMENTS.
2. SEPARATION LESS THAN 18" FOR WATER & NON-POTABLE LINE CROSSINGS MUST BE APPROVED BY THE POK.
3. UNDERGROUND UTILITIES SHALL NOT BE LOCATED CLOSER THAN 10' HORIZONTALLY FROM ANY WATER MAIN. UNDER SPECIAL PERMISSION FROM THE POK, SEPARATION MAY BE REDUCED TO 5'.

NO SCALE

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STANDARD DETAIL #109
NON-POTABLE PARALLEL

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657
DATE: 4/29/2009

TESTING AND INSPECTION

A) THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL REQUIRED OR NECESSARY INSPECTIONS ARE COMPLETED BY THE OWNER'S AUTHORIZED INSPECTORS PRIOR TO PROCEEDING WITH SUBSEQUENT WORK WHICH COVERS OR THAT IS DEPENDENT ON THE WORK TO BE INSPECTED. FAILURE TO OBTAIN NECESSARY INSPECTION(S) AND APPROVAL(S) SHALL RESULT IN THE CONTRACTOR BEING FULLY RESPONSIBLE FOR ALL PROBLEMS ARISING FROM UNINSPECTED WORK.

B) UNLESS OTHERWISE SPECIFIED, THE FOLLOWING TABLE OUTLINES THE MINIMUM TESTING SCHEDULE FOR THE PROJECT. THIS TESTING SCHEDULE IS NOT COMPLETE, AND DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF OBTAINING ALL NECESSARY INSPECTIONS FOR ALL WORK PERFORMED, REGARDLESS OF WHO IS RESPONSIBLE FOR PAYMENT.

REQUIRED TESTING AND FREQUENCY			Party Responsible for payment	
			Contractor	Others (See note 1)
STREETS, PARKING LOTS, PADS, FILLS, ETC.				
SUBGRADE	1 TEST/4000 S.F/LIFT (2 MIN)	√	See note 2 & note 3	
BASEROCK	1 TEST/4000 S.F/LIFT	√	See note 2 & note 3	
ASPHALT	1 TEST/4000 S.F/LIFT (2 MIN)	√	See note 2	
PIPED UTILITIES, ALL				
TRENCH BACKFILL	1 TEST/200 FOOT TRENCH/LIFT (2 MIN)	√	See note 2	
WATER				
PRESSURE	PER POK REQUIREMENTS	√		
BACTERIAL WATER TEST	PER DOH	√	See note 2	
CHLORINE RESIDUAL TEST	PER POK REQUIREMENTS	√		

NOTE 1: OTHERS REFERS TO OWNER, ENGINEER OR APPRAISING AGENCY AS APPLICABLE. CONTRACTOR RESPONSIBLE FOR SCHEDULING TESTING. ALL TESTING MUST BE COMPLETED PRIOR TO PERFORMING SUBSEQUENT WORK.

NOTE 2: TESTING MUST BE PERFORMED BY AN APPROVED INDEPENDENT CERTIFIED TESTING AGENCY.

NOTE 3: IN ADDITION TO IN PLACE DENSITY TESTING, THE SUBGRADE AND BASEROCK SHALL BE PROOF-ROLLED WITH A LOADED 10 YARD DUMP TRUCK PROVIDED BY THE CONTRACTOR. LOCATION AND PATTERN OF PROOF-ROLL TO BE AS DIRECTED BY THE OWNERS AUTHORIZED REPRESENTATIVE.

NOTE 4: CONTRACTOR MAY USE HYDROSTATIC TESTING IN LIEU OF VACUUM AND AIR TESTING.

Port of Klickitat
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STANDARD DETAIL #110
TESTING SPECIFICATIONS

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657
DATE: 5/6/2009

Dallesport Industrial Park Water System Improvement Specifications

Contractor Requirements Agreement of Understanding

(To be reviewed and signed prior to Preconstruction Meeting)

The contractor shall provide the appointed Port of Klickitat Inspector(s) two working days notice prior to performing any construction activity that will require inspection by the inspector. The notice needs to be provided to the Operations Manager, who will typically be the Inspector.

1. Activities that will require inspection include, but will not be limited to:
   a. Connection to existing waterlines
   b. Installation of valves, hydrants, blow offs, thrust blocks
   c. Pressure and chlorination testing
   d. Isolation of any part of system
   e. Broken Line repair
   f. Service installation

2. The Contractor is responsible for reviewing the approved plans for additional activities that require inspection by the appointed Port of Klickitat Inspector. The Contractor understands and acknowledges that if any portion of the project which is buried prior to inspection by the owner's representative shall be subject to re-excavation for inspection at NO additional cost to the owner.

3. The contractor shall correct any deficiencies in the work, as noted by the inspector, at the cost of the contractor, in a timely manner.

4. The contractor shall notify the Klickitat Public Utility District Water/Wastewater Operations Manager (Tim Furlong Ph. 509-250-0454) or the Port of Klickitat (Marc Thornsbury Ph. 509-493-1655), the Design Engineer, and Tenneson Engineering (Ph. 541-296-9177) immediately of any unexpected site conditions that would prevent the completion of improvements as designed.

Contractor's Company Name:_____

Owner's Name:_____

WA Contractor License #:_____ Renewal Date:_____

Address:_____

Phone:_____ Fax:_____

Cell:_____ Email:_____

Owner's Representative:_____

Owner's Representative Signature:_____ Date:_____

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STANDARD FORM # 100
CONTRACTOR VERIFICATION FORM

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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ENGINEER / SURVEYOR:
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THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657
DATE: 5/6/2009

PROJECT NAME: _____

CONTRACTOR: _____

CONSTRUCTION START DATE: _____

CONSTRUCTION END DATE: _____

_____

_____

DWA INSPECTOR: _____

INSPECTION LOCATION: _____

INSPECTION DATE: _____

	YES	NO	COMMENT
PIPE INSTALLATION ACCEPTABLE?:	_____	_____	_____
BACKFILL SUITABLE:	_____	_____	_____
SURFACING DENSITY:	_____	_____	_____
PRESSURE TESTING PASS/FAIL:	_____	_____	_____ **PSI**
LEAKAGE TEST PASS/FAIL:	_____	_____	_____ **GAL/HR**
BACTERIOLOGICAL TEST PASS/FAIL:	_____	_____	_____ **LAB#**

DISINFECTION INITIAL VALUE: **DATE:**_____ **TIME:**_____ **PPM:**_____

DISINFECTION FINAL VALUE: **DATE:**_____ **TIME:**_____ **PPM:**_____

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STANDARD FORM # 101
INSPECTION TESTING FORM

DALLESPORT INDUSTRIAL PARK WATER SYSTEM

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CONSULTING ENGINEERS
3313 W. 2ND STREET SUITE 100
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657
DATE: 4/29/2009

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

CONSTRUCTION COMPLETION REPORT FORM FOR DISTRIBUTION MAIN PROJECTS

In accordance with WAC 246-290-120(5), a ***Construction Completion Report*** is required for all construction projects. Under the submittal exception process for distribution main projects, designed by a professional engineer but not submitted to DOH for approval, the report does not need to be submitted. **However, the purveyor must keep the Construction Completion Report on file and make it available for review upon request by DOH in accordance with WAC 246-290-125 (2)(b).** Furthermore:

(1) The report form **must** bear the seal, date and signature of a professional engineer (PE) licensed in the state of Washington; and

(2) Per WAC 246-290-120(5)(c), the amount of change in the physical capacity of a system must be documented, if the project results in a change in physical capacity.

Name of Water System

DOH System ID No.: _____

Name of Purveyor (Owner or System Contact)

Date Water System Plan that includes Standard Construction Specifications

Mailing Address

Date Standard Specifications Approved by DOH: _____

City State Zip

PROJECT NAME AND DESCRIPTIVE TITLE:

(Include the name of any development project and number of services.)

Date Project or Portions Thereof Completed

PROFESSIONAL ENGINEER'S ACKNOWLEDGMENT

The undersigned professional engineer (PE), or his/her authorized agent, has inspected the above-described project that, as to layout, size and type of pipe, valves and materials, and other designed physical facilities, has been constructed and is substantially completed in accordance with construction documents reviewed by the purveyor's engineer. In the opinion of the undersigned engineer, the installation, physical testing procedures, water quality tests, and disinfection practices were carried out in accordance with state regulations and principles of standard engineering practice.

I have reviewed the disinfection procedures, pressure test results, and results of the bacteriological test(s) for this project and certify that they comply with the requirements of the construction standards/specifications approved by DOH.

P.E.'s Seal

Date Signed

Name of Engineering Firm

Name of PE Acknowledging Construction

Mailing Address

City State Zip

Engineer's Signature

State/Federal Funding Type (if any) _____

Please keep a completed, signed, and stamped copy on file.

☐ **NWRO Drinking Water**
Department of Health
20435 72nd Ave. S, Ste 200
Kent, WA 98032-2358
(253) 395-6750

☐ **SWRO Drinking Water**
Department of Health
PO Box 47823
Olympia, WA 98504-7823
(360) 236-3030

☐ **ERO Drinking Water**
Department of Health
1500 W. Fourth Ave, Suite 305
Spokane, WA 99201
(509) 456-3115

For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

Appendix E

Water Quality Monitoring Report

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
OFFICE OF DRINKING WATER
PO Box 47822 • Olympia, Washington 98504-7822
Tel: (360) 236-3100 • FAX: (360) 236-2253 • TDD Relay Service: 1-800-833-6388

March 2008

Subject: **WATER QUALITY MONITORING REPORT FOR 2008**

Dear Water System Manager/Purveyor:

Enclosed is your water system's Water Quality Monitoring Report (WQMR) for 2008. The WQMR was developed to help you keep track of the source-specific water quality monitoring requirements for your water system throughout the year 2008.

Because 2008 is the first year in the new three-year monitoring period, we are not scheduling sampling in 2008 that your system may receive a waiver for later. In 2009 we will inform you of the waiver options for your system. Your system has already been granted State Waivers for some monitoring for this three-year period.

Please review your WQMR closely. If you notice any mistakes on your WQMR, please call your regional office to have your records updated or corrected. Most mistakes can be resolved with a phone call, and DOH can send you a revised WQMR.

This information packet is intended to help you understand and use your 2008 WQMR. Packet materials include:

Your 2008 WQMR (yellow)
A WQMR information sheet (green)

If you have any questions about your 2008 WQMR or if DOH needs to correct your 2008 WQMR, please contact the appropriate DOH regional office staff listed below.

Eastern Regional Office, Anita Waterman (509) 456-2475
Northwest Regional Office, Steve Hulsman (253) 395-6777
Southwest Regional Office, Belle Fuchs/ Sophia Petro (360) 236-3046

Sincerely,

J Weber

Jimmy Weber
WQMR Coordinator

Enclosures

Information About Your 2008 Water Quality Monitoring Report (WQMR)

March 2008

The Department of Health (DOH) developed the Water Quality Monitoring Report (WQMR) to help you track your system's annual water quality monitoring requirements. WQMR information is specific to your system and its individual sources, and summarizes microbiological and chemical sampling requirements that apply to each source (at the well) and to the distribution system (at the tap).

Your system may have other monitoring requirements not listed on the WQMR. Other monitoring may be required for special investigations, complex treatment systems, or special operation and maintenance situations. Your water system plan may specify additional monitoring requirements not shown on your 2008 WQMR.

WQMRs specify Safe Drinking Water Act (SDWA) sampling requirements that are determined by each source's water quality history, compliance status, and waiver status.

The 2008 WQMR has five parts:

1. List of active sources that have monitoring requirements during the year 2008
2. Sample collection schedule
3. Information on waivers
4. Sampling frequency and waiver status
5. Special notices and regional office staff contact information

Part 1: Sources with Water Quality Monitoring Requirements

Part 1 lists your water system's active seasonal and permanent sources (wells, well fields, springs, infiltration galleries, and surface water). This table does not list emergency, inter-tie, purchased water sources, or individual wells that make up a well field. These types of sources are excluded from the WQMR because they rarely have routine source-specific water quality monitoring requirements.

The table lists sources by DOH source number and includes the source name, type, and use code as listed on the most recent Water Facilities Inventory (WFI) form. The table also indicates if DOH has assessed the source for susceptibility to contamination and, if so, includes the susceptibility assessment rating. *All active sources require a susceptibility assessment rating as part of the wellhead and watershed protection programs. DOH will not grant organic chemical monitoring waivers for sources that do not have a susceptibility assessment rating.*

Part 2: Monitoring Schedule for 2008

Part 2 shows your system's sampling requirements for the calendar year. Specific months are assigned according to past sampling events for each source. DOH assigns samples to be collected in a particular month to help maintain compliance with the required monitoring frequency (described in Part 4) and to even out the workload for laboratories. The monthly scheduling format should help you budget for monitoring expenses. If you miss collecting a sample in a particular month, collect it as soon as possible. DOH reviews missed sample collection schedules for compliance and enforcement purposes.

Coliform Monitoring: The coliform monitoring portion of Part 2 lists the number of routine coliform samples required each month. This information is also included on your WFI form. If the population of your system changes during the year, your coliform monitoring requirement may also change. In this case, you will receive an updated WFI with a new coliform sampling schedule. You may also receive an updated WQMR; however, the coliform monitoring schedule on your most recent WFI provides the most accurate information and supercedes the schedule on the WQMR. Refer to your most recent WFI for the coliform sample collection schedule. Coliform samples are usually collected from a household tap within the distribution system and are referred to as "distribution samples" (distinct from "source samples").

Chemical Monitoring: The chemical monitoring portion of Part 2 lists "source" sampling requirements for organic and inorganic chemicals by month, source, and U.S. Environmental Protection Agency (EPA) test method. Collect "source" samples as close to the source of water as possible (for example, at the wellhead or from within the pump house), but *after* all treatment.

Lead and copper "distribution" monitoring requirements are also scheduled in Part 2 (the number of samples required is listed in Part 4.) Lead and copper samples must be collected from indoor faucets within the distribution system after the water has sat unused in the pipes for at least 6 hours but no more than 12 hours. Faucets that will be used for lead and copper samples should be flushed with cold water the *evening prior* to collecting the sample.

Part 3: Water Quality Monitoring Waivers

Part 3 provides general information about chemical monitoring waivers. Many systems are eligible for organic and inorganic waivers that may reduce or eliminate source-specific monitoring requirements.

There are three categories of waivers: 1) organic waivers (apply to SOC and some VOC monitoring requirements); 2) inorganic waivers (apply to IOC monitoring requirements); and 3) statewide waivers (apply to asbestos, dioxin, soil fumigants, and other special categories of contaminants).

Organic waivers eliminate some or all of the SOC monitoring requirements, and can also reduce the VOC monitoring requirements for certain types of sources. Organic waivers require a susceptibility assessment rating and a waiver application.

Inorganic waivers reduce IOC monitoring requirements. However, **many sources may need to sample for individual IOC compounds (for example, arsenic) as a condition of the IOC waiver.** Eligibility for an IOC waiver depends on source-specific water quality history and a waiver application. **The annual sampling requirement for nitrate cannot be waived.**

Statewide waivers are granted by DOH without a fee and without a waiver application process. Criteria that enable the state to grant statewide waivers are based on water quality information gathered from numerous water systems across the state. Areas were identified where specific contaminants were used, or are still being used, and any occurrence of contamination. Statewide waivers generally apply to asbestos, dioxin, glyphosate, endothal, and soil fumigants (in most, but not all, counties).

NOTE: Because 2008 is the first year in the new 3-year monitoring period, we are not scheduling sampling in 2008 that your system may receive a waiver for later. In 2009 we will inform you of the waiver options for your system. Your system has already been granted State Waivers for some monitoring for this 3-year period.

Part 4: Water Quality Monitoring Frequency

Part 4 outlines the frequency of current water quality monitoring requirements for each source for the 2008-2010 compliance period. Information in Part 4 relates directly to information in Part 2. Part 4 may be useful when planning for upcoming monitoring requirements. Sample collection frequencies are listed according to monitoring group (for example, IOC, VOC, SOC), the specific "test panel" required, and sample location. The table identifies where and how often a sample must be collected. If any statewide waivers have been granted to a source for a particular monitoring group, it will be indicated under the column labeled "Schedule/Status."

Part 5: DOH Staff Contacts and Special Notes

Part 5 lists the name and phone number of your DOH regional office source monitoring staff. If you have questions about your 2008 WQMR or notice any inaccuracies, call your regional office to have your records updated. In most cases, errors are resolved with a phone call and a revised WQMR will be mailed to you. **Part 5 also contains *Special Notes* specific to your water system or individual sources. Please look for these Special Notes!**

We realize you may have developed your own schedule and method for tracking your source and distribution system monitoring requirements. If you have, consider using this report to verify the work you have already done. If you haven't worked out a schedule, please use this one.

Washington State Department of Health

Water Quality Monitoring Report for the Year 2008

System: DALLESPORT INDUSTRIAL PARK PWSID: 00238 5 Report Date: 03/03/2008
Contact: JARED M. LADWIG Group: A - NTNC County: KLICKITAT Region: EASTERN

Part 1: List of Active Sources with Water Quality Monitoring Requirements

DOH Source#	Name	Type	Use	Susceptibility Rating
S01	Well #1 - AFL872	Well	Permanent	Low
S02	Well #2 - AFL871	Well	Permanent	Low

Part 2: Sampling Schedule for the Year 2008

Coliform Sampling (Routine)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
	1	1	1	1	1	1	1	1	1	1	1	1

* Indicates the requirement is an exception from WAC 246-290.

If the coliform (bacteriological) sampling schedule listed at the bottom of the current Water Facilities Inventory (WFI) form for your system is different from the schedule listed above, follow the schedule on the current WFI.

- Samples must be collected from representative points within the distribution system.
- Repeat samples are required following an unsatisfactory sample.
- A minimum of 5 routine samples are required the month following one or more unsatisfactory samples in accordance with your system's Coliform Monitoring Plan.

Lead and Copper Distribution Sampling

- Lead and copper samples must be collected from indoor faucets within the distribution system after the water has sat unused in the pipes for at least 6 hours but no more than 12 hours.
- Sample faucets should be flushed with cold water the evening prior to collecting the sample.
- Part 2 indicates the month in which samples should be collected. Part 4 indicates the total number of samples required.
- If you are required to sample Annually or once every 3 years, samples must be collected between June and September.

Chlorine Residual Sampling

- Systems that use continuous chlorination must take chlorine residual measurements daily (or at a reduced frequency approved the by the department), and at the same time and location as routine and repeat coliform samples.

Disinfection Byproducts Sampling

- Systems that use continuous chlorination must collect a sample for total trihalomethanes (TTHM) and a sample for haloacetic acids (HAA5) for each chlorination treatment facility identified in your individual disinfection byproducts (DBP) monitoring plan. Collect the samples from the distribution system at the frequency and locations identified in your DBP monitoring plan.

Water Quality Monitoring Report for the Year 2008

Determining your Disinfection Byproducts (DBP) monitoring requirement for 2008:

Please review each successive statement below to determine your appropriate monitoring requirement. Also keep in mind that a complete DBP sample set is one TTHM and one HAA5 sample.

(1) If you have not taken any TTHM or HAA5 samples, you must sample in 2008 during a month that has the warmest water temperature at a location in your distribution system representing the Maximum Residence Time of the water in the pipes. You are done with your determination and do not need to continue.

(2) If any of your TTHM or HAA5 (DBP) compliance samples were collected during a month that didn't have the warmest water temperature or at a location that wasn't the Maximum Residence Time of the water in the pipes, another set of samples is due in 2008. You are done with your determination and do not need to continue.

(3) If all of your TTHM and HAA5 (DBP) compliance samples for each treatment plant were collected during a month that had the warmest water temperature and at a location that represented the Maximum Residence Time of the water in the pipes, please continue.

Considering your DBP Sample Results:	Years Sampled	Next Sample Set Due
3 a) 2004 TTHM results averaged 20 ug/l or less and HAA5 results averaged 15 ug/l or less, and you did not monitor in 2005 or 2006, and 2007 TTHM results averaged 60 ug/l or less and HAA5 results averaged 45 ug/l or less.	2004 & 2007	2010
3 b) You monitored only one year and TTHM results averaged 20 ug/l or less and HAA5 results averaged 15 ug/l or less.	2004 - 2005	2008
	2006	2009
	2007	2010
If not, were they:		
4) For the last two consecutive years of sampling; TTHM results averaged 40 ug/l or less and HAA5 results averaged 30 ug/l or less.	2004 - 2005	2008
	2005 - 2006	2009
	2006 - 2007	2010
If not, were they:		
5) TTHM results averaged 80 ug/l or less and HAA5 results averaged 60 ug/l or less each year, but did not meet the criteria above.	2004 - 2007	2008
If not, were they:		
6) TTHM results for any year averaged more than 80 ug/l or HAA5 results for any year averaged more than 60 ug/l and following year TTHM results averaged more than 60 ug/l or HAA5 results averaged more than 45 ug/l.	2004 - 2007	Quarterly

If you are on a quarterly monitoring schedule due to a TTHM or HAA5 exceedance, you must continue to monitor quarterly u your annual average sample results are 60 µg/L or less for TTHM and 45 µg/L or less for HAA5. Then you may return to ann monitoring.

Chemical Sampling Requirements

- Source water chemical samples must be taken from a location as near to the source as possible, after any treatment.
- Nitrate and nitrite are included as part of a complete IOC.

Month	Source	Monitoring Requirement	Test Panel/Method
January		*No source chemical sampling required this month*	
February		*No source chemical sampling required this month*	
March	S01	NITRATE	NITRATE
M	S02	NITRATE	NITRATE
April		*No source chemical sampling required this month*	
May		*No source chemical sampling required this month*	
June		*No source chemical sampling required this month*	

Water Quality Monitoring Report for the Year 2008

July		*No source chemical sampling required this month*	
August		*No source chemical sampling required this month*	
September		*No source chemical sampling required this month*	
October		*No source chemical sampling required this month*	
November		*No source chemical sampling required this month*	
December		*No source chemical sampling required this month*	

Part 3: State Waivers

- Automatically granted to all sources based on DOH assessment of conditions within the state.
- No waiver application, or fee required.
- State waivers granted for the 2008 - 2010 compliance period are listed in Part 4.

Part 4: Water Quality Monitoring Frequency

- Although waivers may be granted for your system, there may be some monitoring required as a condition of the waiver your system was granted.

Monitoring Group	Test Panel	Sample Location	Schedule/Status
Asb	ASB	Distribution	Collect 1 Asbestos sample in 2009
Bacteriological	Coli	Distribution	See routine sample schedule in part 2
Dioxin	Dioxin	All sources	State Waiver Thru Dec 2010
Endothall	Endo	All sources	State Waiver Thru Dec 2010
EDB and other soil fumigants	Fumigant	S01	State Waiver Thru Dec 2010
EDB and other soil fumigants	Fumigant	S02	State Waiver Thru Dec 2010
Glyphosphate	Glyphs	All sources	State Waiver Thru Dec 2010
Herbicides	Herbs	S01	1 sample between Jan 2008 - Dec 2010
Herbicides	Herbs	S02	1 sample between Jan 2008 - Dec 2010
Insecticides	Insect	S01	1 sample between Jan 2008 - Dec 2010
Insecticides	Insect	S02	1 sample between Jan 2008 - Dec 2010
Inorganic Contaminants	IOC	S01	1 sample between Jan 2008 - Dec 2010
Inorganic Contaminants	IOC	S02	1 sample between Jan 2008 - Dec 2010
Lead/Copper *	LCR	Distribution	LCR 1 Set of 5 samples between Jan 2008 - Dec 2010
Nitrate *	NIT	S01	Collect 1 Nitrate sample(s) in 2008
Nitrate *	NIT	S02	Collect 1 Nitrate sample(s) in 2008
General Pesticides	Pest1	S01	1 sample between Jan 2008 - Dec 2010
General Pesticides	Pest1	S02	1 sample between Jan 2008 - Dec 2010
Diquat	Diquat	All sources	State Waiver Thru Dec 2010
Volatile Organic Contaminants	VOC	S01	1 sample between Jan 2008 - Dec 2010
Volatile Organic Contaminants	VOC	S02	1 sample between Jan 2008 - Dec 2010

Water Quality Monitoring Report for the Year 2008

** These contaminant monitoring groups do not have waiver options under the SDWA.*

Part 5: Regional Water Quality Monitoring Contact

Eastern Regional Office

For Further information call the Eastern Regional Office (Anita Waterman) Phone: (509) 456-2475

For questions regarding Disinfection ByProducts (DBP) monitoring, contact: Dan Mathias (509) 456-2774

Special Note

For Group A Community Systems Only: Your Consumer Confidence Report, summarizing the results of your 2007 water quality monitoring requirements is due before July 1, 2008. For further information visit www.doh.wa.gov/ehp/dw/Our_Main_Pages/consumer.htm or contact the CCR Coordinator at your Regional Office.

Appendix F

Water Rights Certificates and Self Assessment Forms

S. F. No. 7354—(Rev. 6-70).

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

aka 9862P

Permit to Appropriate Public Waters of the State of Washington

Book No. 20 of Ground Water Permits, on page 9862 under Application No. 10719

KLICKITAT COUNTY PORT DISTRICT NO. 1

of Bingen, Washington

is, pursuant to the Report of Examination which has been accepted by the applicant, 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 March 23, 1970

Source(s) of the proposed ground water appropriation is/~~are~~ a well

The quantity of water appropriated shall be limited to the amount which can be beneficially applied and not to exceed 450 gallons per minute; 300 acre-feet per year, to be used for the following purposes: community domestic and commercial supply, as more definitely set out below.

Approximate location(s) of the point(s) of withdrawal is/~~are~~ 50 feet north and 420 feet east from southwest corner of Sec. 25

being within ~~SW¼SW¼SW¼~~

of Sec. 25, Twp. 2 N., Rge. 13 E. W.M., Klickitat County,

The use, or uses, to which water is to be applied:

Community and commercial
Domestic/~~municipal~~ supply/ 450 gallons per minute; 300 acre-feet per year, during entire year.

Irrigation: _____ gallons per minute; _____ acre-feet per year from _____ to _____, each year, for the irrigation of _____ acres.

Other use(s): _____ gallons per minute; _____ acre-feet per year, from _____ to _____ each year, for _____

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by Klickitat County Port District No. 1 within Secs. 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35 and 36, All in T. 2 N., R. 13 E.W.M.

Ap # 10719
(aka 98 F

ADDITIONAL LIMITATIONS AND PROVISIONS: The installation and maintenance of an access port as described in Ground Water Bulletin No. ' shall be required prior to issuance of final Certificate of Water Right.

A suitable measuring device shall be installed and maintained in accordance with WAC 508-64-020 through WAC 508-64-040.

DESCRIPTION OF PROPOSED WORKS:

The well will be **drilled** (Dug or drilled) and have a diameter of **6** inches, and depth of **210** feet.

Description of tunnel or infiltration trench: _____

DEVELOPMENT SCHEDULE:

Construction work shall begin on or before **Started**

and shall thereafter be prosecuted with reasonable diligence and completed on or before

December 1, 1975

and complete application of water to proposed use shall be made on or before

December 1, 1976 12-1-79 80 ~~81~~ ~~82~~ 4-1-~~84~~ 85 ~~86~~ ~~87~~ ~~88~~ ~~89~~ ~~90~~ 94

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 Olympia, Washington, this **8th**

day of **September**, 19 **70**

JOHN A. BIGGS, *Director*
Department of Ecology

by _____

ENGINEERING DATA
OK _____

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PERMIT

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ SURFACE WATER ☒ GROUND WATER

PERMIT NUMBER	APPLICATION NUMBER	PRIORITY DATE	
G4-23565P	G4-23565	October 18, 1974	

NAME
KLICKITAT COUNTY PORT DISTRICT NO. 1

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
104 North Alder Street	Bingen	Washington	98605

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
A well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	1000	300

QUANTITY, TYPE OF USE, PERIOD OF USE
1000 gallons per minute; 300 acre-feet per year, to be used continuously for a community domestic supply.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL
650 feet west and 1735 feet north of the southeast corner of Sec. 26.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE E. OR W. W.M.	W.R.I.A.	COUNTY
NE¼SE¼	26	2	13 E.	30	Klickitat

RECORDED PLATTED PROPERTY

LOT	BLOCK	(GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY WATER TO BE USED ON

Lands servered by Klickitat County Port District No. 1, Dallesport Industrial Park water system being with Sections 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, and 36, lying northerly (of) the north bank of the Columbia River.

G4-23565

DESCRIPTION OF PROPOSED WORKS

A well estimated 400 feet in depth and 12 inches in diameter to a 748,000 gallons storage tank and existing distribution system.

DEVELOPMENT SCHEDULE		
BEGINNING DATE	COMPLETION DATE	DATE COMPLETE APPLICATION OF WATER TO BE MADE
April 1, 1976 4-1-77 4-1-78 4-1-80	April 1, 1977 4-1-78 82	April 1, 1979 83 4-1-80 4-1-82

PROVISIONS 4-1-79, 4-1-80 84 93 90 85 4-1-82

Nothing in this permit shall be construed as excusing the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations including those administered by local agencies under the Shoreline Management Act of 1971.

"Under this application and Ground Water Permit #9862, the total annual withdrawal is limited to 300 acre-feet per year."

"A suitable measuring device approved by the Department of Ecology shall be installed and maintained in accordance with WAC 508-64020 through WAC 508-64-040."

"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."

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 Olympia, Washington, this 22nd *day of* April *1975*

JOHN A. BIGGS, *Director*
Department of Ecology

by ..... Assistant Director

ENGINEERING DATA

OK: WRE

CITY OF THE DALLES 158
1048045
Page: 1 of 3
08/27/2004 02:43P
Klickitat Co.

DAWA

Columbia Gorge Airport
PO Box 285
Dallesport WA 98617-0285

STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT

This document supersedes
Certificate of Water Right dated December 28, 1954

Document Title: Certificate of Water Right

Agency: Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902-3401

Applicant: Columbia Gorge Airport
PO Box 285
Dallesport WA 98617-0285

Reference Number:

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
September 18, 1953	03377	03242	02105-A

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
A Well	

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
	615	750

QUANTITY/TYPE OF USE/PERIOD OF USE

615 gallons per minute, 750 acre-feet per year for the purpose of municipal water supply.

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼SW¼	34	02	13 E.	30	Klickitat

PARCEL # 02133400000800

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
	27, 28, 33 & 34	02	13 E	30	Klickitat

PARCEL # 02133400000800

ADDITIONAL LEGAL IS ON PAGE 2

1048045
Page: 2 of 3
09/27/2004 02:43P
CITY OF THE DALLES 156 Klickitat Co.

CONTINUED LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

Approximately 200 feet south and 200 feet west of the center of Section 34,

CONTINUED LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

Beginning at a point on the North line of Sec. 33, Twp. 2 N., Rge. 13 E.W.M, 624.25 West N. 89°14' West of the Northeast corner of said Sec. 33; thence South 1000 feet to the Northerly line of Case Field (Old Dalles Airport); thence South 57°30' E. 650 feet more or less to the South line of the NE¼ of NE¼ of said Sec. 33; thence S. 89°14' E. 500 feet more or less to the Easterly right-of-way line of County Road No. 30; thence S. 41°39' E. 860 feet along the easterly line of said County Road No. 30, and the southerly projection therefore to its intersection with the northerly extension of the East line of the succeeding tangent if said County Road No. 30; thence S 0°7' W. 2607.4 feet; thence S 85°46' E. 973 feet; thence N. 85°35' E. 1361.0 feet; thence S 72°49' E. 250.9 feet to the northerly right-of-way line of the S.P. & S. Railroad; thence easterly tracing the northerly right of way line of said S. P. & S. Railroad approximately 1800 feet to the east line of Sec. 34, Twp. 2N., Rge. 13 E.W.M.; thence N. 0°02' W. 30 feet; thence N. 88°25' E. 563.6 feet; thence N. 01°35' E. 30.0 feet; thence N. 88°25 E. approximately 800.0 feet; thence on a curve to the left tracing the northerly right-of-way line of S. P. & S. Railroad Co. approximately 1400.0 feet to its intersection with the N.S. section line of Sec. 35, Twp. 2 N., Rge. 13 E.W.M.; thence N. 0°02' E. along said quarter section line 3898 feet to the section line common to Sections 26 and 35, Twp. 2 N., Rge. 13 E.W.M.; thence north along the east line of the SE¼ of Sec. 26, 668.7 feet; thence west along the north line of the S½ of S½ of SW¼ of Sec. 26, 2654.2 feet to the west line of said Sec. 26; thence west along the north line of the SE¼ of SE¼ of SE¼ of Sec. 27, Twp. 2 N., Rge. 13 E.W.M. 663.3 feet; thence north along the east line of the NW¼ of SE¼ of SE¼ of said Sec. 27, 663.1 feet; thence west along the north line of S½ of S½ of said Sec. 27, 4658.1 feet to the west line of said Sec. 27; thence west along the north line of the NE¼ of SE¼ of SE¼ of Sec. 28, Twp. 2 N., Rge. 13 E.W.M., 625.69 feet to the east line of County Road No. 30; thence south along the east line of said County Road 1300.35 feet to the point of beginning, SAVE AND EXCEPT a County Road 60 feet in width as now existing on the North 60 feet of the S½ of S½ of Sec. 27, and the county roads now existing in the NE¼ of SE¼ of SE¼ of Sec. 28, EXCEPTING THE FOLLOWING described tracts:

Beginning at a point 664 feet west of the section corner common to Sections 26, 27, 34 and 35 in Twp. 2 N., Rge. 13 E.W.M., and located in Klickitat County, Washington; running thence S. 10° W 514 feet; thence S. 39° W. 1660 feet; thence S. 36° W. 406 feet; thence S. 45° E. 2191 feet; thence S. 23° W. 817 feet; thence N. 83° E. 2360 feet; thence East 610 feet; thence N. 51° E. 637 feet to the N-S center line of Sec. 35, Twp. 2 N., Rge. 13 E.W.M.; thence north along said line 4390 feet; thence west 3317 feet; thence north 663 feet; thence west 960 feet to the south right-of-way line of the Klickitat County road; thence westerly tracing said right-of-way line 3724 feet to the point of curvature of 9° curve to the left; thence tracing said right-of-way line along a 9° curve to the left 951 feet to the point of tangency of said curve; thence south 370 feet; thence S 84° E 970 feet; thence N. 55 E. 1010 feet; thence S. 35°25' E. 880 feet; thence S. 89°30' E. 3020 feet to the point of beginning, containing 571 acres.

Beginning at the southwest corner of the Dalles Airport, which point is S. 0°07' W. 680.6 feet from the point of tangency of a curve to the right of Engineer's Station #25+93.85; thence tracing the line of the top of the bluff north of the Columbia River S. 85°46' E. 973 feet; thence N. 85°35' E. 1361.0 feet; thence S. 72°49' E. 250.9 feet to a point on the north right-of-way line of the S. P. & S. R. R. in the SW¼ of NE¼ of Sec. 34, Twp. 2 N., Rge. 13 E.W.M.; thence tracing the said north right-of-way line of the S. P. & S. R. R. easterly a distance of approximately 1060.0 feet to an existing fence; thence north along the existing fence 700 feet more or less; thence west 800 feet to the southwest corner of the Northwest-Southeast runway of the Dalles Airport; thence continuing westerly 2800 feet more or less to the east right-of-way of County Road No. 30; thence south 600 feet to the point of beginning, containing 56.3 acres.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.100.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in RCW 90.14.

Given under my hand and the seal of this office at Yakima, Washington, this 25th day of August 2004.

STATE OF

Linda Hoffman

Legal Description Continued

Beginning at a point 664 feet west of the section corner common to Sections 26, 27, 34 and 35 in Twp. 2 N., Rge. 13 E.W.M., and located in Klickitat County, Washington; running thence S. 10° W 514 feet; thence S. 39° W. 1660 feet; thence S. 36° W. 406 feet; thence S. 45° E. 2191 feet; thence S. 23° W. 817 feet; thence N. 83° E. 2360 feet; thence East 610 feet; thence N. 51° E. 637 feet to the N-S center line of Sec. 35, Twp. 2 N., Rge. 13 E.W.M.; thence north along said line 4390 feet; thence west 3317 feet; thence north 663 feet; thence west 960 feet to the south right-of-way line of the Klickitat County road; thence westerly tracing said right-of-way line 3724 feet to the point of curvature of 9° curve to the left; thence tracing said right-of-way line along a 9° curve to the left 951 feet to the point of tangency of said curve; thence south 370 feet; thence S 84° E 970 feet; thence N. 55 E. 1010 feet; thence S. 35°25' E. 880 feet; thence S. 89°30' E. 3020 feet to the point of beginning, containing 571 acres.

Beginning at the southwest corner of the Dalles Airport, which point is S. 0°07' W. 680.6 feet from the point of tangency of a curve to the right of Engineer's Station #25+93.85; thence tracing the line of the top of the bluff north of the Columbia River S. 85°46' E. 973 feet; thence N. 85°35' E. 1361.0 feet; thence S. 72°49' E. 250.9 feet to a point on the north right-of-way line of the S. P. & S. R. R. in the SW¼ of NE¼ of Sec. 34, Twp. 2 N., Rge. 13 E.W.M.; thence tracing the said north right-of-way line of the S. P. & S. R. R. easterly a distance of approximately 1060.0 feet to an existing fence; thence north along the existing fence 700 feet more or less; thence west 800 feet to the southwest corner of the Northwest-Southeast runway of the Dalles Airport; thence continuing westerly 2800 feet more or less to the east right-of-way of County Road No. 30; thence south 600 feet to the point of beginning, containing 56.3 acres.

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

Tab 1

WATER SYSTEM PLAN
WATER RIGHTS SELF ASSESSMENT – EXISTING STATUS

PERMIT CERTIFICATE OR CLAIM #	NAME ON DOCUMENT	PRIORITY DATE (List oldest first)	SOURCE NAME/ NUMBER	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	EXISTING WATER RIGHTS		EXISTING CONSUMPTION		CURRENT WATER RIGHT 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)
Permits/ Certificates 1. 9862	Klickitat County Port District #1	03-23-70	S01		450 gpm	300 ac-ft				
2.G4-23565P	Klickitat County Port District #1	10-18-74	S02		1,000gpm	0 ac-ft				
3.										
4.										
Claims 1.										
2.										
3.										
4.										
TOTAL	**********	********	*********	**********	1,450 gpm	300 ac-ft	35 gpm	28 ac-ft	+1,415 gpm	+272 ac-ft

INTERTIE NAME/ IDENTIFIER	NAME OF PURVEYOR PROVIDING WATER	EXISTING LIMITS ON INTERTIE 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.							
3.							
4.							
TOTAL	**********						

PENDING WATER RIGHT APPLICATION (New/Change)	NAME ON APPLICATION	DATE SUBMITTED	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	PENDING WATER RIGHTS	
				Maximum Instantaneous Flow Rate (Qi) Requested	Maximum Annual Volume (Qa) Requested
1.					
2.					
3.					
4.					

To return form, please see reverse side.

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

Table 2

WATER SYSTEM PLAN
WATER RIGHTS SELF ASSESSMENT – 6 YEAR FORECAST

PERMIT CERTIFICATE OR CLAIM #	NAME ON DOCUMENT	PRIORITY DATE (List oldest first)	SOURCE NAME/ NUMBER	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	EXISTING WATER RIGHTS		FORECASTED WATER USE FROM SOURCES (6-year Demand)		FORECASTED WATER RIGHT 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)
Permits/ Certificates 1. 9862	Klickitat County Port District #1	02-23-70	S01	No	450 gpm	300 ac-ft				
2. G4-23565P	Klickitat County Port District #1	10-18-74	S02	No	1,000 gpm	0 ac-ft				
3.										
4.										
Claims 1.										
2.										
TOTAL	**********	*********	*********	**********	1,450 gpm	300 ac-ft	248 gpm	200 ac-ft	+1,202 gpm	+100 ac-ft

INTERTIE NAME/ IDENTIFIER	NAME OF PURVEYOR PROVIDING WATER	EXISTING LIMITS ON INTERTIE USE		FORECASTED 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)
1.							
2.							
TOTAL	**********						

PENDING WATER RIGHT APPLICATION (New/Change)	NAME ON APPLICATION	DATE SUBMITTED	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	PENDING WATER RIGHTS	
				Maximum Instantaneous Flow Rate (Qi) Requested	Maximum Annual Volume (Qa) Requested
1.					
2.					

The Department of Health is an equal opportunity agency. For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388). For additional copies of this form, call 1-800-521-0323. This and other forms are available at http://www.doh.wa.gov/ehp/dw

To return form, please see reverse side.

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

Table 3

WATER SYSTEM PLAN
WATER RIGHTS SELF ASSESSMENT – 20 YEAR FORECAST

PERMIT CERTIFICATE OR CLAIM #	NAME ON DOCUMENT	PRIORITY DATE (List oldest first)	SOURCE NAME/ NUMBER	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	EXISTING WATER RIGHTS		FORECASTED WATER USE FROM SOURCES (20-year Demand)		FORECASTED WATER RIGHT 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)
Permits/ Certificates 1. 9862	Klickitat County Port District #1	02-23-70	S01	No	450 gpm	300 ac-ft				
2. G4-23565P	Klickitat County Port District #1	10-18-74	S02	No	1,000 gpm	0 ac-ft				
3.										
4.										
Claims 1.										
2.										
TOTAL	**********	********	********	**********	1,450 gpm	300 ac-ft	471 gpm	380 ac-ft	+979 gpm	-80 ac-ft

INTERTIE NAME/ IDENTIFIER	NAME OF PURVEYOR PROVIDING WATER	EXISTING LIMITS ON INTERTIE USE		FORECASTED 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)
1.							
2.							
TOTAL	**********						

PENDING WATER RIGHT APPLICATION (New/Change)	NAME ON APPLICATION	DATE SUBMITTED	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	PENDING WATER RIGHTS	
				Maximum Instantaneous Flow Rate (Qi) Requested	Maximum Annual Volume (Qa) Requested
1.					
2.					

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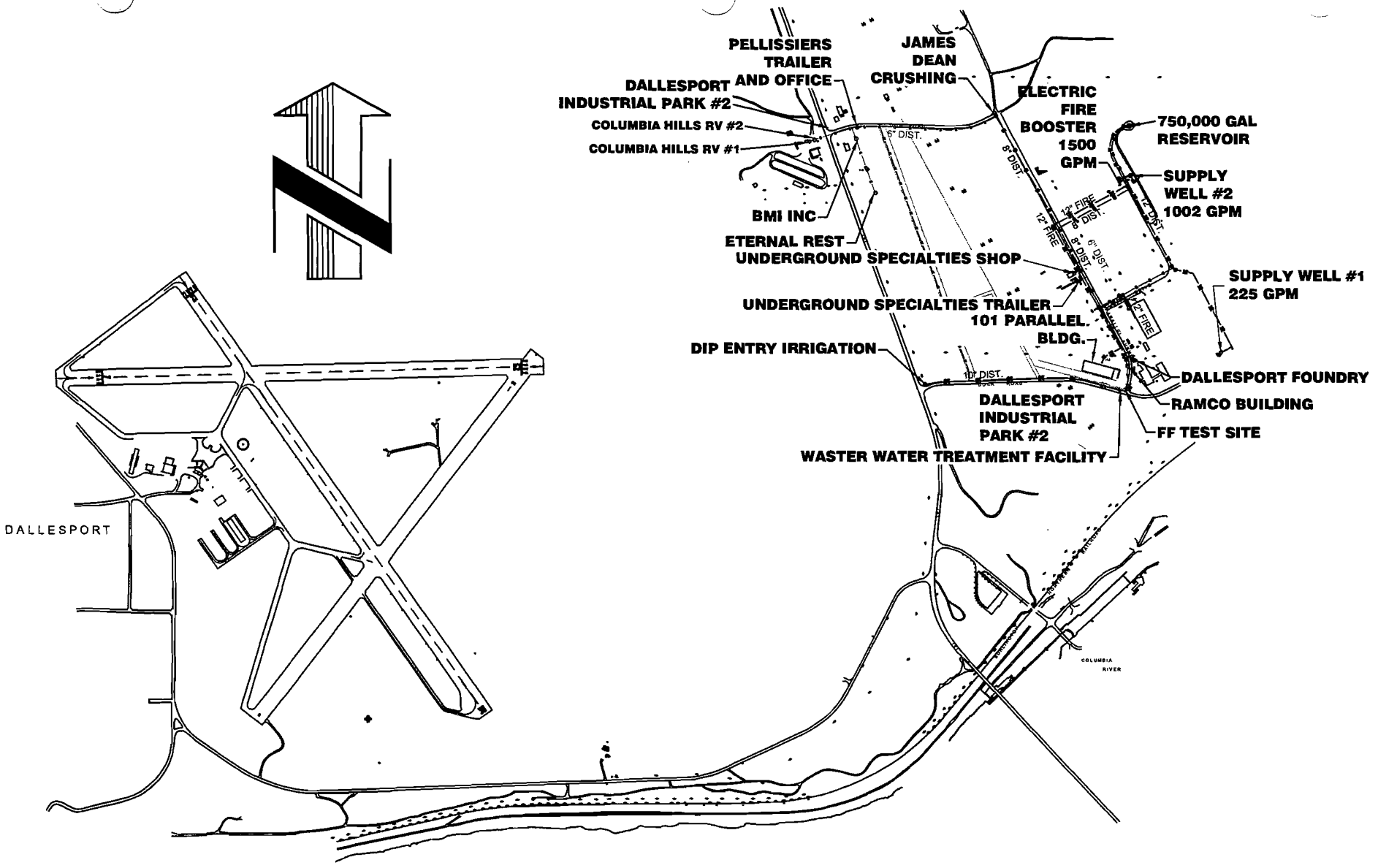
Appendix G

System Hydraulic Analysis



(E) 2008 DALLESPORT INDUSTRIAL PARK WATER SYSTEM

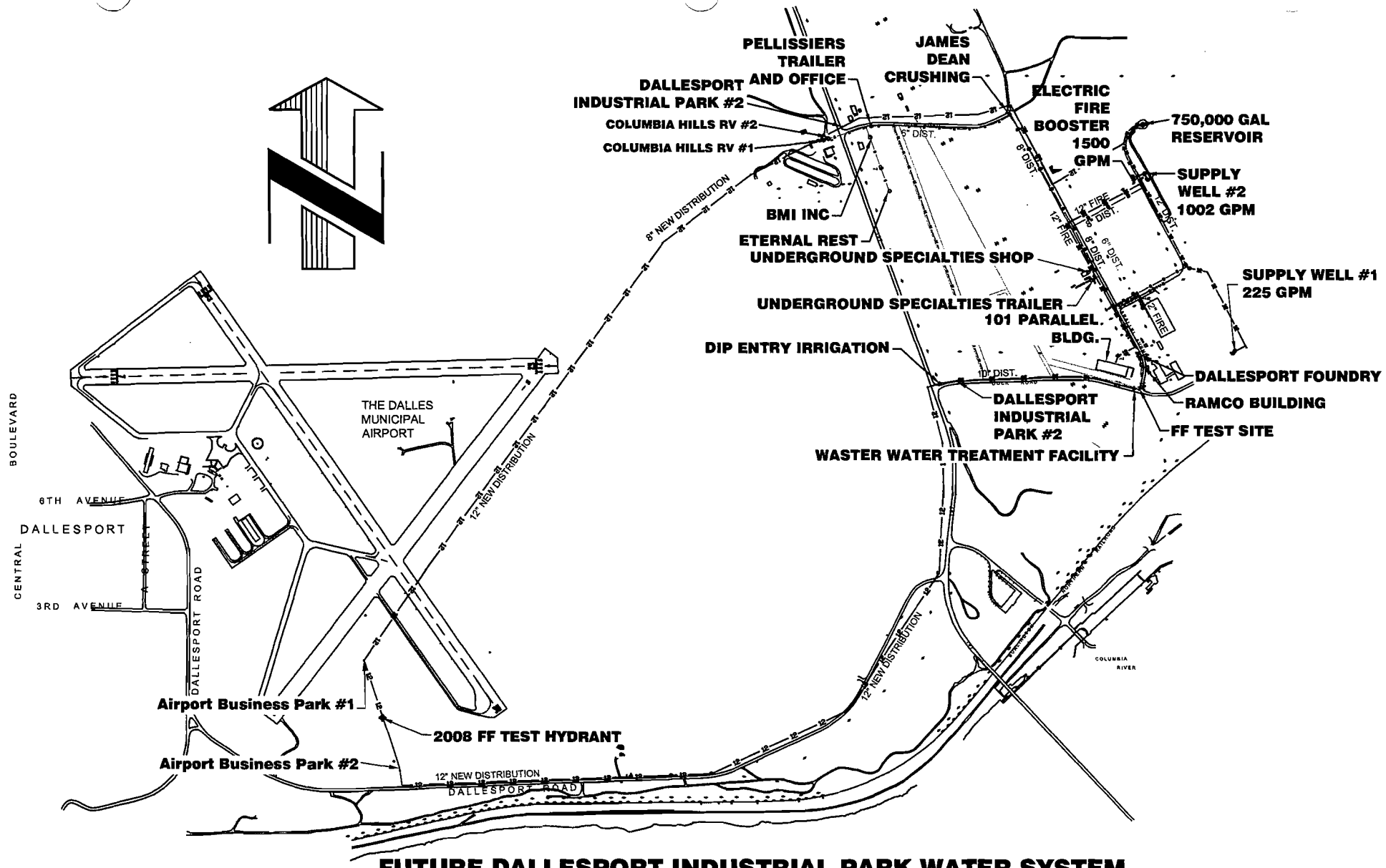
TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
409 LINCOLN STREET
THE DALLES, OREGON 97058
541-296-9177 FAX 541-296-6657

Survey	Calc.	App.
T.E.C.	D.O.E.	
Drawn	Date	Scale
K.C.T.	6/16/2009	N.T.S.
Dwg. No.	Work Order No.	Sheet
	12726	1 of 1

(E) 2008 WATER SYSTEM LAYOUT FOR PORT OF KLICKITAT DALLESPORT INDUSTRIAL PARK

DALLESPORT, WASHINGTON

PLOT DATE: 7/1/2009 K:\ACAD\12700\12726\2008 DIP Water Improvements.dwg



FUTURE DALLESPORT INDUSTRIAL PARK WATER SYSTEM

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
409 LINCOLN STREET
THE DALLES, OREGON 97058
541-296-9177 FAX 541-296-6657

Survey	Calc.	App.
T.E.C.	D.O.E.	
Drawn	**Date**	**Scale**
K.C.T.	6/16/2009	N.T.S.
Dwg. No.	**Work Order No.**	**Sheet**
	12726	1 of 1

FUTURE WATER SYSTEM LAYOUT FOR PORT OF KLICKITAT DALLESPORT INDUSTRIAL PARK

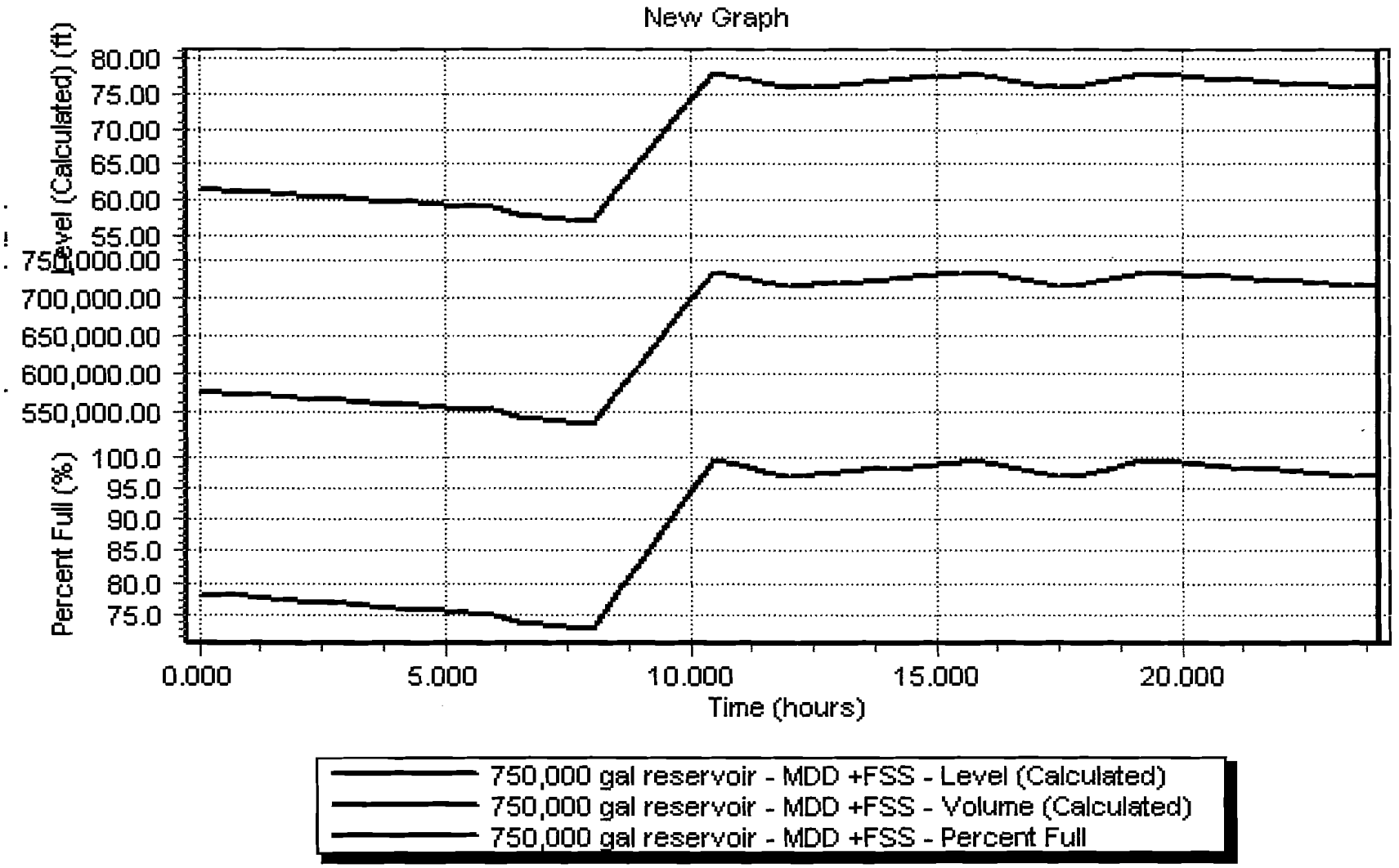
DALLESPORT, WASHINGTON

PLOT DATE: 7/1/2009 K:\ACAD\12700\12726\2008 DIP Water Improvements.dwg

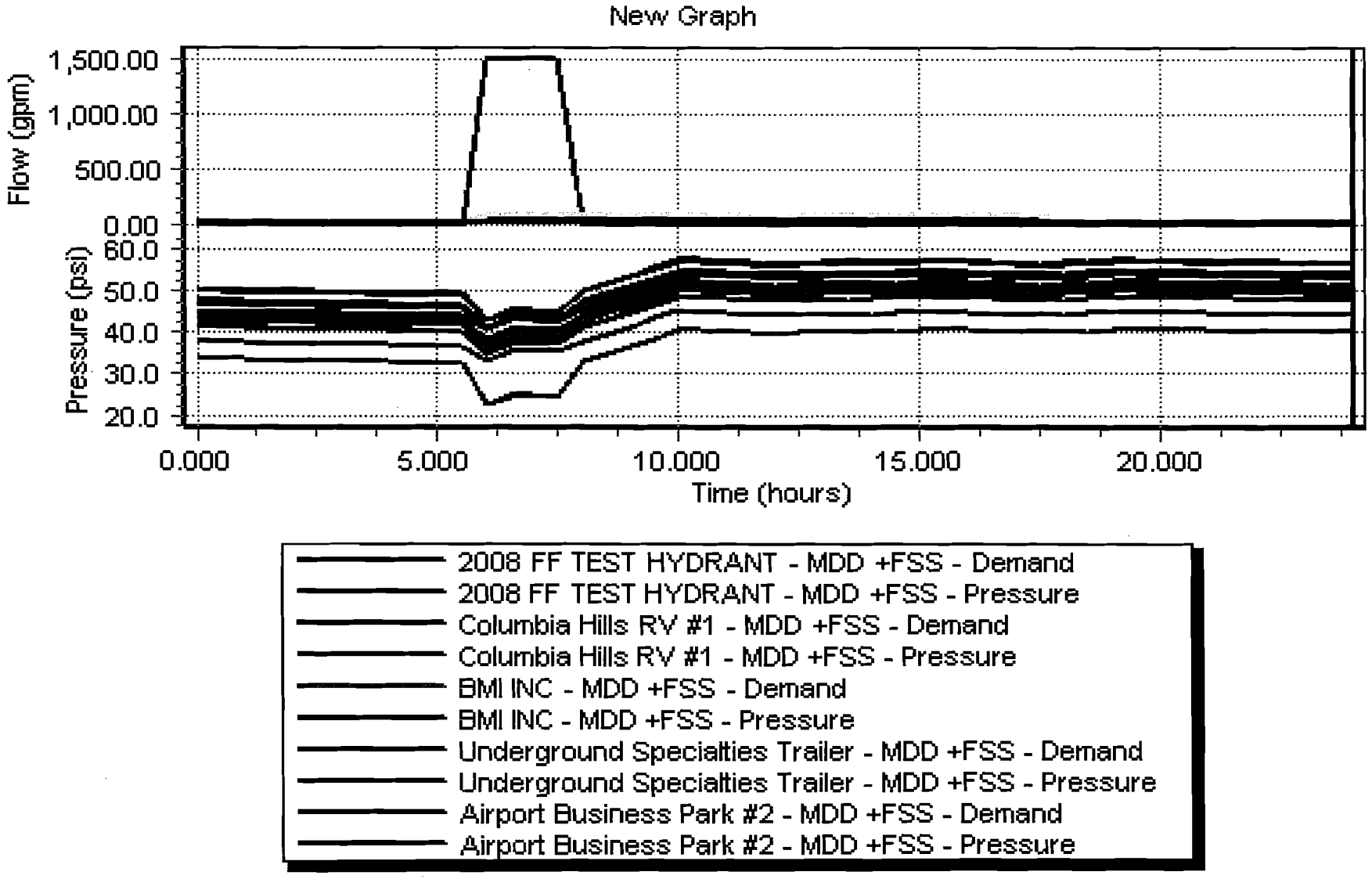
PORT OF KLICKITAT // DALLESPORT WATER SYSTEM

WATER SYSTEM DEMANDS

AREA	2008 YR				2014 YR				2028 YR			
	ERU's	MDD (gpd)	MDD (gpm)	PHD (gpm)	ERU's	MDD (gpd)	MDD (gpm)	PHD (gpm)	ERU's	MDD (gpd)	MDD (gpm)	PHD (gpm)
AIRPORT BUSINESS PARK (INDUSTRIAL)	125	104,950	72.9	184.9	125	104,950	72.9	157.9	379	293,020	203.5	423.6
DP INDUSTRIAL PARK (INDUSTRIAL)	71	59,612	41.4	105.1	300	251,880	174.9	379.1	429	360,188	250.1	479.4
TOTAL	196	164,562	114.3	290.0	425	356,830	247.8	537.0	808	653,208	453.6	903.0


New Graph
Level (Calculated) (ft)
80.00
75.00
70.00
65.00
60.00
55.00
750,000.00
700,000.00
650,000.00
600,000.00
550,000.00
Percent Full (%)
100.0
95.0
90.0
85.0
80.0
75.0
0.000
5.000
10.000
15.000
20.000
Time (hours)
750,000 gal reservoir - MDD +FSS - Level (Calculated)
750,000 gal reservoir - MDD +FSS - Volume (Calculated)
750,000 gal reservoir - MDD +FSS - Percent Full

Time (hours)	750,000 gal reservoir - MDD +FSS - Level (Calculated) (ft)	750,000 gal reservoir - MDD +FSS - Volume (Calculated) (gal)	750,000 gal reservoir - MDD +FSS - Percent Full (%)
Column1	**Column2**	**Column3**	**Column4**
0.0	61.5	578400.3	78.4
1.0	61.1	574235.8	77.8
2.0	60.6	570071.2	77.3
3.0	60.2	565906.7	76.7
4.0	59.8	561742.1	76.1
5.0	59.3	557577.5	75.6
6.0	58.9	553413.0	75.0
6.5	57.9	544644.7	73.8
7.0	57.5	540899.5	73.3
7.5	57.3	538313.4	72.9
8.0	57.0	535769.1	72.6
9.0	65.7	617248.0	83.6
10.0	74.3	698153.7	94.6
11.0	77.4	727412.3	98.6
12.0	76.1	714860.4	96.9
12.5	76.2	716509.7	97.1
13.0	76.5	719025.5	97.4
13.5	76.8	721525.7	97.8
14.0	77.0	724010.0	98.1
15.0	77.5	728931.3	98.8
16.0	77.9	732051.6	99.2
17.0	76.5	719499.7	97.5
17.5	76.0	714104.5	96.8
18.0	76.2	716635.6	97.1
18.5	77.0	723337.0	98.0
19.0	77.7	729996.5	98.9
19.5	77.9	732263.9	99.2
20.0	77.7	730181.8	99.0
20.5	77.5	728099.4	98.7
21.0	77.2	726017.2	98.4
22.0	76.8	721852.7	97.8
23.0	76.4	717688.1	97.3
24.0	76.3	717042.7	97.2


New Graph
Flow (gpm)
1,500.00
1,000.00
500.00
0.00
Pressure (psi)
60.0
50.0
40.0
30.0
20.0
0.000
5.000
10.000
15.000
20.000
Time (hours)
2008 FF TEST HYDRANT - MDD +FSS - Demand
2008 FF TEST HYDRANT - MDD +FSS - Pressure
Columbia Hills RV #1 - MDD +FSS - Demand
Columbia Hills RV #1 - MDD +FSS - Pressure
BMI INC - MDD +FSS - Demand
BMI INC - MDD +FSS - Pressure
Underground Specialties Trailer - MDD +FSS - Demand
Underground Specialties Trailer - MDD +FSS - Pressure
Airport Business Park #2 - MDD +FSS - Demand
Airport Business Park #2 - MDD +FSS - Pressure

Time (hours)	2008 FF TEST HYDRANT - MDD +FSS - Demand (gpm)	2008 FF TEST HYDRANT - MDD +FSS - Pressure (psi)	Columbia Hills RV #1 - MDD +FSS - Demand (gpm)	Columbia Hills RV #1 - MDD +FSS - Pressure (psi)	BMI INC - MDD +FSS - Demand (gpm)	BMI INC - MDD +FSS - Pressure (psi)	Underground Specialties Trailer - MDD +FSS - Demand (gpm)	Underground Specialties Trailer - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.0	33.5	0.5	41.2	0.5	43.1	0.5	37.6
1.0	0.0	33.3	0.5	41.0	0.5	42.9	0.5	37.4
2.0	0.0	33.1	0.5	40.8	0.5	42.7	0.5	37.2
3.0	0.0	33.0	0.5	40.6	0.5	42.5	0.5	37.0
4.0	0.0	32.8	0.5	40.4	0.5	42.3	0.5	36.8
5.0	0.0	32.6	0.5	40.2	0.5	42.1	0.5	36.6
6.0	1500.0	22.4	4.7	34.7	4.7	36.6	4.7	33.0
6.5	1500.0	24.4	4.7	36.9	4.7	38.8	4.7	35.3
7.0	1500.0	24.3	2.0	36.9	2.0	38.9	2.0	35.2
7.5	1500.0	24.2	2.0	36.8	2.0	38.7	2.0	35.1
8.0	0.0	33.0	2.0	41.1	2.0	43.0	2.0	37.8
9.0	0.0	36.7	2.0	44.8	2.0	46.7	2.0	41.4
10.0	0.0	40.3	2.0	48.4	2.0	50.3	2.0	45.0
11.0	0.0	40.3	2.0	47.9	2.0	49.8	2.0	44.4
12.0	0.0	39.7	2.0	47.3	2.0	49.3	2.0	43.8
12.5	0.0	39.8	2.0	47.5	2.0	49.4	2.0	44.0
13.0	0.0	39.9	2.0	47.6	2.0	49.5	2.0	44.1
13.5	0.0	40.1	2.0	47.7	2.0	49.7	2.0	44.2
14.0	0.0	40.2	2.0	47.9	2.0	49.8	2.0	44.3
15.0	0.0	40.4	2.0	48.1	2.0	50.0	2.0	44.6
16.0	0.0	40.5	2.0	48.1	2.0	50.1	2.0	44.6
17.0	0.0	39.9	2.0	47.6	2.0	49.5	2.0	44.0
17.5	0.0	39.7	2.0	47.4	2.0	49.3	2.0	43.9
18.0	0.0	40.0	0.5	47.6	0.5	49.5	0.5	44.1
18.5	0.0	40.3	0.5	47.9	0.5	49.8	0.5	44.4
19.0	0.0	40.6	0.5	48.2	0.5	50.1	0.5	44.7
19.5	0.0	40.6	0.5	48.2	0.5	50.2	0.5	44.7
20.0	0.0	40.5	0.5	48.1	0.5	50.1	0.5	44.6
20.5	0.0	40.4	0.5	48.1	0.5	50.0	0.5	44.5
21.0	0.0	40.3	0.5	48.0	0.5	49.9	0.5	44.4
22.0	0.0	40.1	0.5	47.8	0.5	49.7	0.5	44.2
23.0	0.0	39.9	0.5	47.6	0.5	49.5	0.5	44.0
24.0	0.0	40.0	0.5	47.6	0.5	49.5	0.5	44.1

Time (hours)	Airport Business Park #2 - MDD +FSS - Demand (gpm)	Airport Business Park #2 - MDD +FSS - Pressure (psi)	Dallesport Foundry - MDD +FSS - Demand (gpm)	Dallesport Foundry - MDD +FSS - Pressure (psi)	Ramco Building - MDD +FSS - Demand (gpm)	Ramco Building - MDD +FSS - Pressure (psi)	Dallesport Industrial Park #2 - MDD +FSS - Demand (gpm)	Dallesport Industrial Park #2 - MDD +FSS - Pressure (psi)
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9
0.0	14.6	33.5	0.5	46.6	0.5	46.6	16.6	46.8
1.0	14.6	33.3	0.5	46.4	0.5	46.4	16.6	46.6
2.0	14.6	33.1	0.5	46.2	0.5	46.2	16.6	46.4
3.0	14.6	33.0	0.5	46.0	0.5	46.0	16.6	46.2
4.0	14.6	32.8	0.5	45.8	0.5	45.8	16.6	46.0
5.0	14.6	32.6	0.5	45.6	0.5	45.7	16.6	45.8
6.0	65.7	22.6	4.7	41.3	4.7	41.4	24.9	41.1
6.5	65.7	24.6	4.7	43.6	4.7	43.7	24.9	42.8
7.0	65.7	24.5	2.0	43.6	2.0	43.7	24.9	42.6
7.5	65.7	24.4	2.0	43.5	2.0	43.6	24.9	42.5
8.0	65.7	33.0	2.0	46.7	2.0	46.7	24.9	46.2
9.0	65.7	36.7	2.0	50.3	2.0	50.4	24.9	49.9
10.0	65.7	40.3	2.0	53.9	2.0	54.0	24.9	53.6
11.0	65.7	40.3	2.0	53.4	2.0	53.4	24.9	53.6
12.0	65.7	39.7	2.0	52.8	2.0	52.8	24.9	53.0
12.5	65.7	39.8	2.0	53.0	2.0	53.0	24.9	53.1
13.0	65.7	39.9	2.0	53.1	2.0	53.1	24.9	53.3
13.5	65.7	40.1	2.0	53.2	2.0	53.2	24.9	53.4
14.0	65.7	40.2	2.0	53.3	2.0	53.3	24.9	53.5
15.0	65.7	40.4	2.0	53.5	2.0	53.6	24.9	53.7
16.0	65.7	40.5	2.0	53.6	2.0	53.6	24.9	53.8
17.0	65.7	39.9	2.0	53.0	2.0	53.0	24.9	53.2
17.5	65.7	39.7	2.0	52.8	2.0	52.9	24.9	53.0
18.0	14.6	40.0	0.5	53.0	0.5	53.1	16.6	53.2
18.5	14.6	40.3	0.5	53.3	0.5	53.4	16.6	53.5
19.0	14.6	40.6	0.5	53.7	0.5	53.7	16.6	53.8
19.5	14.6	40.6	0.5	53.7	0.5	53.7	16.6	53.9
20.0	14.6	40.5	0.5	53.6	0.5	53.6	16.6	53.8
20.5	14.6	40.4	0.5	53.5	0.5	53.5	16.6	53.7
21.0	14.6	40.3	0.5	53.4	0.5	53.4	16.6	53.6
22.0	14.6	40.1	0.5	53.2	0.5	53.2	16.6	53.4
23.0	14.6	39.9	0.5	53.0	0.5	53.0	16.6	53.2
24.0	14.6	40.0	0.5	53.1	0.5	53.1	16.6	53.2

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Time (hours)	Dallesport Industrial Park #1 - MDD +FSS - Demand (gpm)	Dallesport Industrial Park #1 - MDD +FSS - Pressure (psi)	Oregon Cherry Growers - MDD +FSS - Demand (gpm)	Oregon Cherry Growers - MDD +FSS - Pressure (psi)	Waste Water Treatment Facility - MDD +FSS - Demand (gpm)	Waste Water Treatment Facility - MDD +FSS - Pressure (psi)	Columbia Hills RV #2 - MDD +FSS - Demand (gpm)	Columbia Hills RV #2 - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	16.6	49.7	0.5	44.9	0.5	46.9	0.5	47.5
1.0	16.6	49.5	0.5	44.8	0.5	46.7	0.5	47.3
2.0	16.6	49.3	0.5	44.6	0.5	46.5	0.5	47.1
3.0	16.6	49.1	0.5	44.4	0.5	46.3	0.5	46.9
4.0	16.6	48.9	0.5	44.2	0.5	46.2	0.5	46.7
5.0	16.6	48.8	0.5	44.0	0.5	46.0	0.5	46.5
6.0	24.9	42.7	4.7	40.5	4.7	41.4	4.7	41.0
6.5	24.9	44.9	4.7	42.8	4.7	43.7	4.7	43.2
7.0	24.9	44.9	2.0	42.7	2.0	43.7	2.0	43.2
7.5	24.9	44.8	2.0	42.6	2.0	43.5	2.0	43.1
8.0	24.9	49.6	2.0	45.2	2.0	47.0	2.0	47.4
9.0	24.9	53.3	2.0	48.8	2.0	50.6	2.0	51.1
10.0	24.9	56.9	2.0	52.4	2.0	54.3	2.0	54.7
11.0	24.9	56.5	2.0	51.7	2.0	53.7	2.0	54.2
12.0	24.9	55.9	2.0	51.2	2.0	53.1	2.0	53.6
12.5	24.9	56.0	2.0	51.3	2.0	53.3	2.0	53.8
13.0	24.9	56.2	2.0	51.5	2.0	53.4	2.0	53.9
13.5	24.9	56.3	2.0	51.6	2.0	53.5	2.0	54.0
14.0	24.9	56.4	2.0	51.7	2.0	53.6	2.0	54.1
15.0	24.9	56.6	2.0	51.9	2.0	53.9	2.0	54.4
16.0	24.9	56.7	2.0	52.0	2.0	53.9	2.0	54.4
17.0	24.9	56.1	2.0	51.4	2.0	53.3	2.0	53.9
17.5	24.9	55.9	2.0	51.2	2.0	53.2	2.0	53.7
18.0	16.6	56.2	0.5	51.4	0.5	53.4	0.5	53.9
18.5	16.6	56.5	0.5	51.7	0.5	53.7	0.5	54.2
19.0	16.6	56.8	0.5	52.0	0.5	54.0	0.5	54.5
19.5	16.6	56.8	0.5	52.0	0.5	54.0	0.5	54.5
20.0	16.6	56.7	0.5	51.9	0.5	53.9	0.5	54.4
20.5	16.6	56.6	0.5	51.8	0.5	53.8	0.5	54.3
21.0	16.6	56.5	0.5	51.7	0.5	53.7	0.5	54.3
22.0	16.6	56.3	0.5	51.5	0.5	53.5	0.5	54.1
23.0	16.6	56.1	0.5	51.4	0.5	53.3	0.5	53.9
24.0	16.6	56.2	0.5	51.4	0.5	53.4	0.5	53.9

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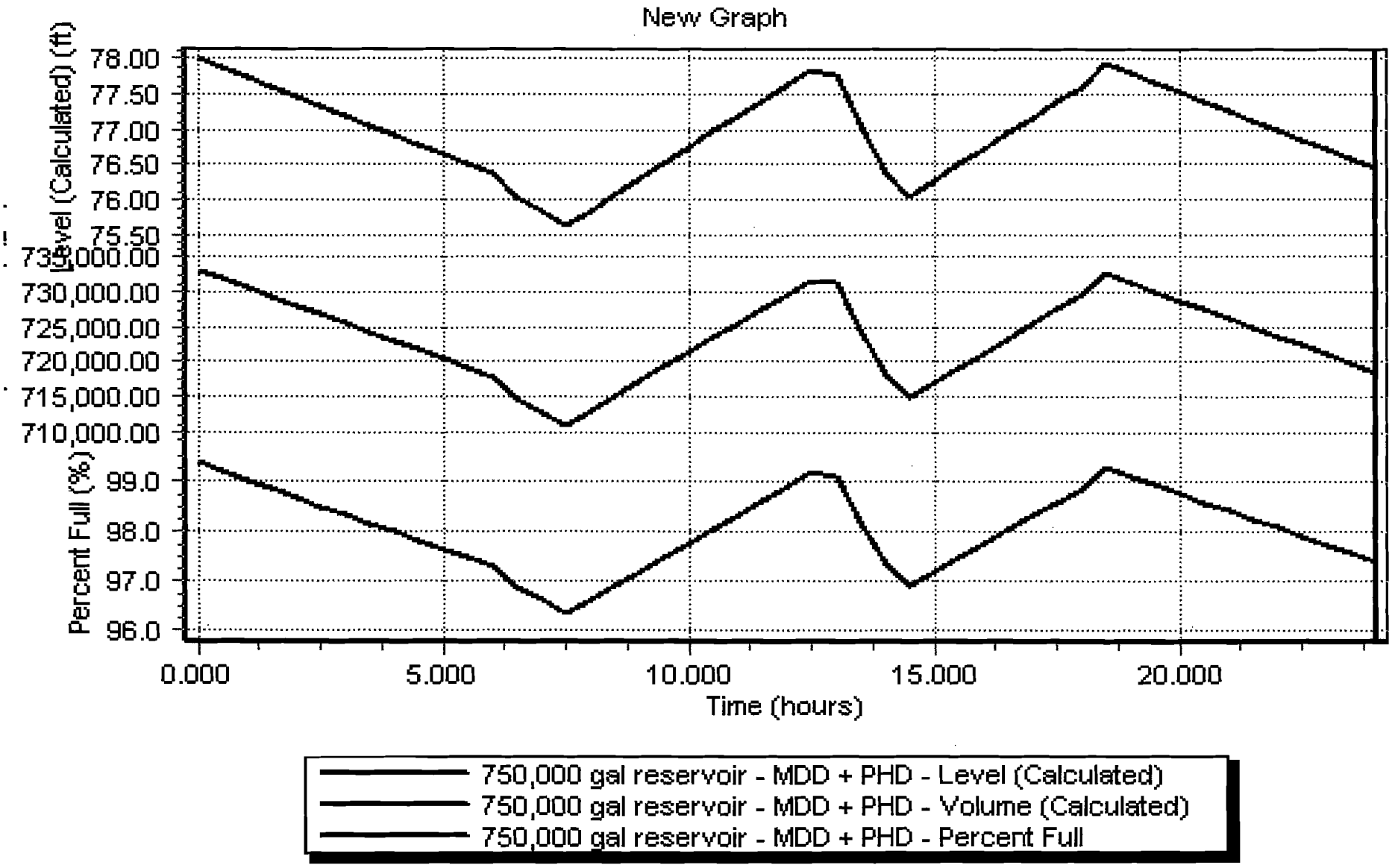
Time (hours)	James Dean Crushing - MDD +FSS - Demand (gpm)	James Dean Crushing - MDD +FSS - Pressure (psi)	Underground Specialties Shop - MDD +FSS - Demand (gpm)	Underground Specialties Shop - MDD +FSS - Pressure (psi)	Eternal Rest - MDD +FSS - Demand (gpm)	Eternal Rest - MDD +FSS - Pressure (psi)	Airport Busines Park #1 - MDD +FSS - Demand (gpm)	Airport Busines Park #1 - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	43.5	0.5	41.2	0.5	42.6	14.6	33.5
1.0	0.5	43.3	0.5	41.0	0.5	42.4	14.6	33.3
2.0	0.5	43.1	0.5	40.8	0.5	42.2	14.6	33.1
3.0	0.5	42.9	0.5	40.6	0.5	42.0	14.6	33.0
4.0	0.5	42.7	0.5	40.4	0.5	41.8	14.6	32.8
5.0	0.5	42.5	0.5	40.2	0.5	41.6	14.6	32.6
6.0	4.7	38.5	4.7	36.5	4.7	36.1	65.7	22.8
6.5	4.7	40.8	4.7	38.8	4.7	38.3	65.7	24.8
7.0	2.0	40.8	2.0	38.8	2.0	38.4	65.7	24.7
7.5	2.0	40.7	2.0	38.6	2.0	38.2	65.7	24.6
8.0	2.0	43.6	2.0	41.3	2.0	42.5	65.7	33.0
9.0	2.0	47.3	2.0	45.0	2.0	46.2	65.7	36.7
10.0	2.0	50.9	2.0	48.6	2.0	49.8	65.7	40.3
11.0	2.0	50.3	2.0	47.9	2.0	49.3	65.7	40.3
12.0	2.0	49.7	2.0	47.4	2.0	48.8	65.7	39.7
12.5	2.0	49.9	2.0	47.5	2.0	48.9	65.7	39.8
13.0	2.0	50.0	2.0	47.7	2.0	49.0	65.7	39.9
13.5	2.0	50.1	2.0	47.8	2.0	49.2	65.7	40.1
14.0	2.0	50.2	2.0	47.9	2.0	49.3	65.7	40.2
15.0	2.0	50.4	2.0	48.1	2.0	49.5	65.7	40.4
16.0	2.0	50.5	2.0	48.2	2.0	49.6	65.7	40.5
17.0	2.0	49.9	2.0	47.6	2.0	49.0	65.7	39.9
17.5	2.0	49.8	2.0	47.4	2.0	48.8	65.7	39.7
18.0	0.5	49.9	0.5	47.6	0.5	49.0	14.6	40.0
18.5	0.5	50.3	0.5	47.9	0.5	49.3	14.6	40.3
19.0	0.5	50.6	0.5	48.2	0.5	49.6	14.6	40.6
19.5	0.5	50.6	0.5	48.2	0.5	49.7	14.6	40.6
20.0	0.5	50.5	0.5	48.1	0.5	49.6	14.6	40.5
20.5	0.5	50.4	0.5	48.0	0.5	49.5	14.6	40.4
21.0	0.5	50.3	0.5	47.9	0.5	49.4	14.6	40.3
22.0	0.5	50.1	0.5	47.8	0.5	49.2	14.6	40.1
23.0	0.5	49.9	0.5	47.6	0.5	49.0	14.6	39.9
24.0	0.5	50.0	0.5	47.6	0.5	49.0	14.6	40.0

Time (hours)	Pellissiers trailer and office - MDD +FSS - Demand (gpm)	Pellissiers trailer and office - MDD +FSS - Pressure (psi)	DIP Entry Irrigation - MDD +FSS - Demand (gpm)	DIP Entry Irrigation - MDD +FSS - Pressure (psi)
Column1	Column2	Column3	Column4	Column5
0.0	1.0	44.3	0.5	50.1
1.0	1.0	44.1	0.5	49.9
2.0	1.0	43.9	0.5	49.7
3.0	1.0	43.7	0.5	49.5
4.0	1.0	43.5	0.5	49.3
5.0	1.0	43.3	0.5	49.1
6.0	9.4	37.8	4.7	42.8
6.5	9.4	40.0	4.7	45.0
7.0	4.0	40.0	2.0	45.0
7.5	4.0	39.9	2.0	44.9
8.0	4.0	44.2	2.0	50.0
8.5	4.0	46.1	2.0	51.8
9.0	4.0	47.9	2.0	53.6
10.0	4.0	51.5	2.0	57.2
11.0	4.0	51.0	2.0	56.8
12.0	4.0	50.5	2.0	56.3
12.5	4.0	50.6	2.0	56.4
13.0	4.0	50.7	2.0	56.5
13.5	4.0	50.8	2.0	56.7
14.0	4.0	51.0	2.0	56.8
15.0	4.0	51.2	2.0	57.0
16.0	4.0	51.2	2.0	57.1
17.0	4.0	50.7	2.0	56.5
17.5	4.0	50.5	2.0	56.3
18.0	1.0	50.7	0.5	56.5
18.5	1.0	51.0	0.5	56.8
19.0	1.0	51.3	0.5	57.1
19.5	1.0	51.4	0.5	57.2
20.0	1.0	51.3	0.5	57.1
20.5	1.0	51.2	0.5	57.0
21.0	1.0	51.1	0.5	56.9
22.0	1.0	50.9	0.5	56.7
23.0	1.0	50.7	0.5	56.5
24.0	1.0	50.7	0.5	56.5



Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

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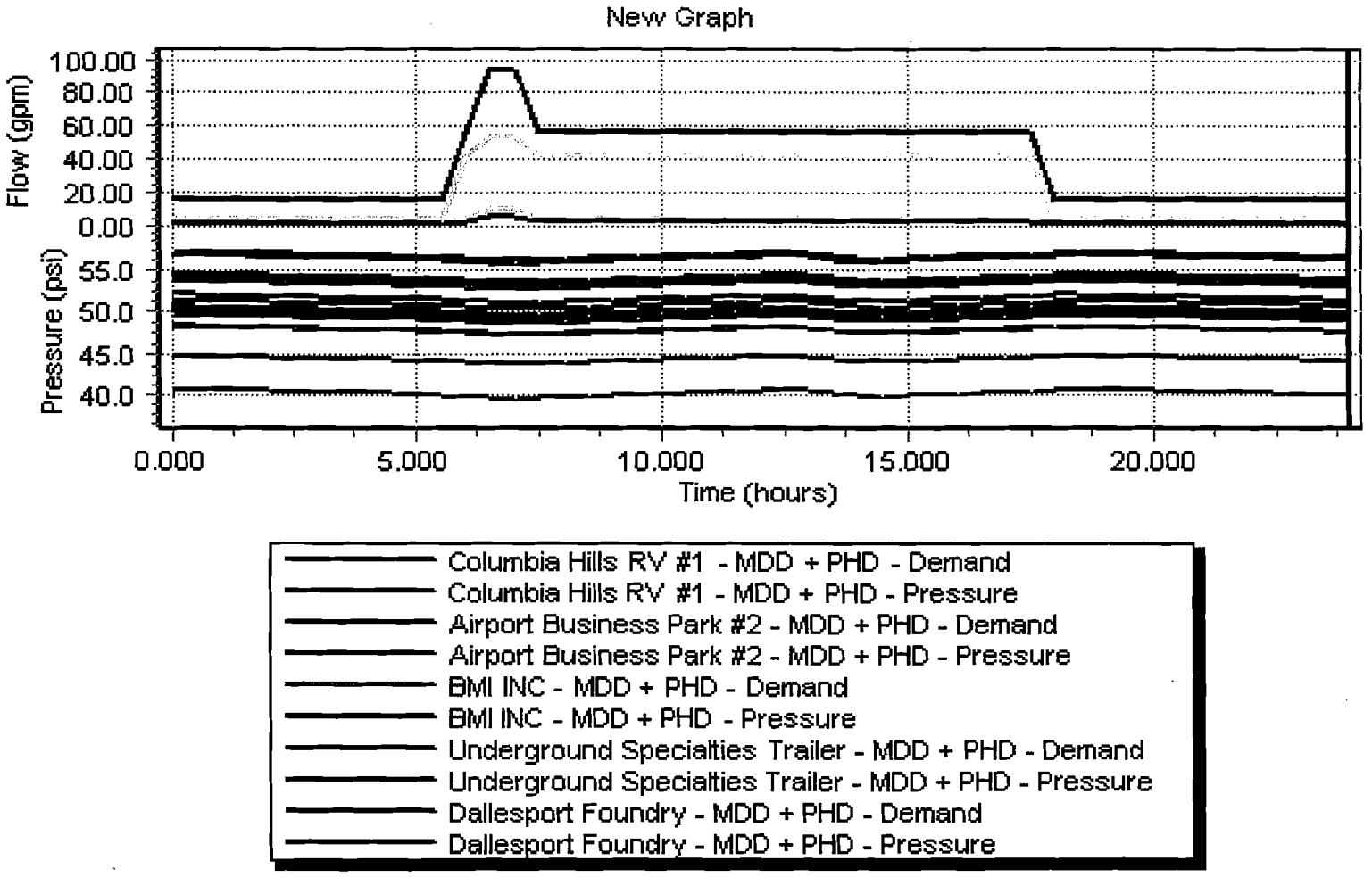
Time (hours)	750,000 gal reservoir - MDD + PHD - Level (Calculated) (ft)	750,000 gal reservoir - MDD + PHD - Volume (Calculated) (gal)	750,000 gal reservoir - MDD + PHD - Percent Full (%)
Column1	Column2	Column3	Column4
0.0	78.0	733223.2	99.4
1.0	77.7	730653.1	99.0
2.0	77.5	728082.7	98.7
3.0	77.2	725512.3	98.3
4.0	76.9	722942.2	98.0
5.0	76.6	720371.8	97.6
6.0	76.4	717801.7	97.3
6.5	76.0	714666.8	96.8
7.0	75.8	712707.7	96.6
7.5	75.6	710761.0	96.3
8.0	75.8	712930.9	96.6
9.0	76.3	717229.4	97.2
10.0	76.8	721474.0	97.8
11.0	77.2	725665.2	98.3
12.0	77.6	729804.3	98.9
12.5	77.9	731853.7	99.2
13.0	77.8	731281.7	99.1
13.5	77.1	724623.0	98.2
14.0	76.4	717964.1	97.3
15.0	76.3	716973.0	97.2
16.0	76.7	721221.0	97.7
17.0	77.2	725415.4	98.3
17.5	77.4	727492.9	98.6
18.0	77.6	729557.0	98.9
18.5	77.9	732621.9	99.3
19.0	77.8	731336.8	99.1
19.5	77.7	730051.8	98.9
20.0	77.5	728766.6	98.8
20.5	77.4	727481.4	98.6
21.0	77.3	726196.3	98.4
22.0	77.0	723626.1	98.1
23.0	76.7	721055.8	97.7
24.0	76.4	718485.6	97.4


New Graph
Flow (gpm)
100.00
80.00
60.00
40.00
20.00
0.00
Pressure (psi)
55.0
50.0
45.0
40.0
0.000
5.000
10.000
15.000
20.000
Time (hours)
Columbia Hills RV #1 - MDD + PHD - Demand
Columbia Hills RV #1 - MDD + PHD - Pressure
Airport Business Park #2 - MDD + PHD - Demand
Airport Business Park #2 - MDD + PHD - Pressure
BMI INC - MDD + PHD - Demand
BMI INC - MDD + PHD - Pressure
Underground Specialties Trailer - MDD + PHD - Demand
Underground Specialties Trailer - MDD + PHD - Pressure
Dallesport Foundry - MDD + PHD - Demand
Dallesport Foundry - MDD + PHD - Pressure

Time (hours)	Columbia Hills RV #1 - MDD + PHD - Demand (gpm)	Columbia Hills RV #1 - MDD + PHD - Pressure (psi)	Airport Business Park #2 - MDD + PHD - Demand (gpm)	Airport Business Park #2 - MDD + PHD - Pressure (psi)	BMI INC - MDD + PHD - Demand (gpm)	BMI INC - MDD + PHD - Pressure (psi)	Underground Specialties Trailer - MDD + PHD - Demand (gpm)	Underground Specialties Trailer - MDD + PHD - Pressure (psi)
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9
0.0	0.5	48.3	14.6	40.7	0.5	50.2	0.5	44.7
1.0	0.5	48.2	14.6	40.5	0.5	50.1	0.5	44.6
2.0	0.5	48.1	14.6	40.4	0.5	50.0	0.5	44.5
3.0	0.5	47.9	14.6	40.3	0.5	49.9	0.5	44.4
3.5	0.5	47.9	14.6	40.2	0.5	49.8	0.5	44.3
4.0	0.5	47.8	14.6	40.2	0.5	49.7	0.5	44.3
5.0	0.5	47.7	14.6	40.1	0.5	49.6	0.5	44.1
6.0	2.0	47.5	55.5	39.8	2.0	49.4	2.0	43.9
6.5	4.7	47.3	93.4	39.6	4.7	49.2	4.7	43.8
7.0	4.7	47.2	93.4	39.5	4.7	49.1	4.7	43.7
7.5	2.0	47.2	55.5	39.6	2.0	49.2	2.0	43.7
8.0	2.0	47.3	55.5	39.7	2.0	49.3	2.0	43.8
9.0	2.0	47.5	55.5	39.9	2.0	49.5	2.0	44.0
10.0	2.0	47.7	55.5	40.1	2.0	49.6	2.0	44.2
11.0	2.0	47.9	55.5	40.3	2.0	49.8	2.0	44.4
12.0	2.0	48.1	55.5	40.4	2.0	50.0	2.0	44.6
12.5	2.0	48.2	55.5	40.5	2.0	50.1	2.0	44.7
13.0	2.0	48.1	55.5	40.4	2.0	50.0	2.0	44.6
13.5	2.0	47.8	55.5	40.1	2.0	49.7	2.0	44.3
14.0	2.0	47.5	55.5	39.8	2.0	49.4	2.0	44.0
15.0	2.0	47.5	55.5	39.9	2.0	49.4	2.0	44.0
16.0	2.0	47.7	55.5	40.0	2.0	49.6	2.0	44.2
17.0	2.0	47.9	55.5	40.2	2.0	49.8	2.0	44.4
17.5	2.0	48.0	55.5	40.3	2.0	49.9	2.0	44.5
18.0	0.5	48.2	14.6	40.6	0.5	50.1	0.5	44.7
18.5	0.5	48.3	14.6	40.6	0.5	50.2	0.5	44.7
19.0	0.5	48.2	14.6	40.6	0.5	50.1	0.5	44.6
19.5	0.5	48.2	14.6	40.5	0.5	50.1	0.5	44.6
20.0	0.5	48.1	14.6	40.5	0.5	50.0	0.5	44.5
20.5	0.5	48.0	14.6	40.4	0.5	49.9	0.5	44.5
21.0	0.5	48.0	14.6	40.3	0.5	49.9	0.5	44.4
22.0	0.5	47.9	14.6	40.2	0.5	49.8	0.5	44.3
23.0	0.5	47.7	14.6	40.1	0.5	49.7	0.5	44.2
24.0	0.5	47.6	14.6	40.0	0.5	49.5	0.5	44.1

Time (hours)	Dallesport Foundry - MDD + PHD - Demand (gpm)	Dallesport Foundry - MDD + PHD - Pressure (psi)	Underground Specialties Shop - MDD + PHD - Demand (gpm)	Underground Specialties Shop - MDD + PHD - Pressure (psi)	Dallesport Industrial Park #2 - MDD + PHD - Demand (gpm)	Dallesport Industrial Park #2 - MDD + PHD - Pressure (psi)	Dallesport Industrial Park #1 - MDD + PHD - Demand (gpm)	Dallesport Industrial Park #1 - MDD + PHD - Pressure (psi)
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9
0.0	0.5	53.7	0.5	48.3	3.3	53.9	3.3	56.8
1.0	0.5	53.6	0.5	48.2	3.3	53.8	3.3	56.7
2.0	0.5	53.5	0.5	48.0	3.3	53.7	3.3	56.6
3.0	0.5	53.4	0.5	47.9	3.3	53.6	3.3	56.5
4.0	0.5	53.2	0.5	47.8	3.3	53.5	3.3	56.4
5.0	0.5	53.1	0.5	47.7	3.3	53.3	3.3	56.3
6.0	2.0	52.9	2.0	47.5	41.5	53.1	41.5	56.0
6.5	4.7	52.8	4.7	47.4	53.1	53.0	53.1	55.8
7.0	4.7	52.7	4.7	47.3	53.1	52.9	53.1	55.7
7.5	2.0	52.7	2.0	47.3	41.5	52.9	41.5	55.8
8.0	2.0	52.8	2.0	47.4	41.5	53.0	41.5	55.9
9.0	2.0	53.0	2.0	47.6	41.5	53.2	41.5	56.1
10.0	2.0	53.2	2.0	47.8	41.5	53.4	41.5	56.3
11.0	2.0	53.4	2.0	48.0	41.5	53.6	41.5	56.5
12.0	2.0	53.6	2.0	48.1	41.5	53.7	41.5	56.6
12.5	2.0	53.7	2.0	48.2	41.5	53.8	41.5	56.7
13.0	2.0	53.5	2.0	48.1	41.5	53.8	41.5	56.6
13.5	2.0	53.2	2.0	47.8	41.5	53.4	41.5	56.3
14.0	2.0	52.9	2.0	47.5	41.5	53.1	41.5	56.0
15.0	2.0	53.0	2.0	47.6	41.5	53.2	41.5	56.1
16.0	2.0	53.2	2.0	47.7	41.5	53.4	41.5	56.3
16.5	2.0	53.3	2.0	47.8	41.5	53.4	41.5	56.4
17.5	2.0	53.5	2.0	48.0	41.5	53.6	41.5	56.5
18.0	0.5	53.6	0.5	48.2	3.3	53.8	3.3	56.8
18.5	0.5	53.7	0.5	48.3	3.3	53.9	3.3	56.8
19.0	0.5	53.6	0.5	48.2	3.3	53.8	3.3	56.8
19.5	0.5	53.6	0.5	48.1	3.3	53.8	3.3	56.7
20.0	0.5	53.5	0.5	48.1	3.3	53.7	3.3	56.6
20.5	0.5	53.5	0.5	48.0	3.3	53.7	3.3	56.6
21.0	0.5	53.4	0.5	48.0	3.3	53.6	3.3	56.5
22.0	0.5	53.3	0.5	47.8	3.3	53.5	3.3	56.4
23.0	0.5	53.2	0.5	47.7	3.3	53.4	3.3	56.3
24.0	0.5	53.0	0.5	47.6	3.3	53.3	3.3	56.2

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

07/01/2009 3:43 PM

Time (hours)	Oregon Cherry Growers - MDD + PHD - Demand (gpm)	Oregon Cherry Growers - MDD + PHD - Pressure (psi)	Waste Water Treatment Facility - MDD + PHD - Demand (gpm)	Waste Water Treatment Facility - MDD + PHD - Pressure (psi)	Columbia Hills RV #2 - MDD + PHD - Demand (gpm)	Columbia Hills RV #2 - MDD + PHD - Pressure (psi)	Eternal Rest - MDD + PHD - Demand (gpm)	Eternal Rest - MDD + PHD - Pressure (psi)
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9
0.0	0.5	52.1	0.5	54.1	0.5	54.6	0.5	49.7
1.0	0.5	52.0	0.5	53.9	0.5	54.5	0.5	49.6
2.0	0.5	51.8	0.5	53.8	0.5	54.4	0.5	49.5
3.0	0.5	51.7	0.5	53.7	0.5	54.2	0.5	49.4
4.0	0.5	51.6	0.5	53.6	0.5	54.1	0.5	49.2
5.0	0.5	51.5	0.5	53.5	0.5	54.0	0.5	49.1
6.0	2.0	51.3	2.0	53.3	2.0	53.8	2.0	48.9
6.5	4.7	51.2	4.7	53.1	4.7	53.6	4.7	48.7
7.0	4.7	51.1	4.7	53.0	4.7	53.5	4.7	48.6
7.5	2.0	51.1	2.0	53.0	2.0	53.5	2.0	48.7
8.0	2.0	51.2	2.0	53.1	2.0	53.6	2.0	48.7
9.0	2.0	51.4	2.0	53.3	2.0	53.8	2.0	48.9
10.0	2.0	51.6	2.0	53.5	2.0	54.0	2.0	49.1
11.0	2.0	51.8	2.0	53.7	2.0	54.2	2.0	49.3
12.0	2.0	52.0	2.0	53.9	2.0	54.4	2.0	49.5
12.5	2.0	52.0	2.0	54.0	2.0	54.5	2.0	49.6
13.0	2.0	51.9	2.0	53.9	2.0	54.4	2.0	49.5
13.5	2.0	51.6	2.0	53.6	2.0	54.1	2.0	49.2
14.0	2.0	51.3	2.0	53.3	2.0	53.8	2.0	48.9
15.0	2.0	51.4	2.0	53.3	2.0	53.8	2.0	48.9
16.0	2.0	51.6	2.0	53.5	2.0	54.0	2.0	49.1
17.0	2.0	51.8	2.0	53.7	2.0	54.2	2.0	49.3
17.5	2.0	51.8	2.0	53.8	2.0	54.3	2.0	49.4
18.0	0.5	52.0	0.5	54.0	0.5	54.5	0.5	49.6
18.5	0.5	52.0	0.5	54.0	0.5	54.6	0.5	49.7
19.0	0.5	52.0	0.5	54.0	0.5	54.5	0.5	49.6
19.5	0.5	51.9	0.5	53.9	0.5	54.4	0.5	49.6
20.0	0.5	51.9	0.5	53.9	0.5	54.4	0.5	49.5
20.5	0.5	51.8	0.5	53.8	0.5	54.3	0.5	49.4
21.0	0.5	51.8	0.5	53.7	0.5	54.3	0.5	49.4
22.0	0.5	51.6	0.5	53.6	0.5	54.1	0.5	49.3
23.0	0.5	51.5	0.5	53.5	0.5	54.0	0.5	49.2
24.0	0.5	51.4	0.5	53.4	0.5	53.9	0.5	49.0

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

07/01/2009 3:43 PM

Time (hours)	James Dean Crushing - MDD + PHD - Demand (gpm)	James Dean Crushing - MDD + PHD - Pressure (psi)	Ramco Building - MDD + PHD - Demand (gpm)	Ramco Building - MDD + PHD - Pressure (psi)	Airport Busines Park #1 - MDD + PHD - Demand (gpm)	Airport Busines Park #1 - MDD + PHD - Pressure (psi)	Pellissiers trailer and office - MDD + PHD - Demand (gpm)	Pellissiers trailer and office - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	50.6	0.5	53.7	14.6	40.7	1.0	51.4
1.0	0.5	50.5	0.5	53.6	14.6	40.5	1.0	51.3
2.0	0.5	50.4	0.5	53.5	14.6	40.4	1.0	51.2
3.0	0.5	50.3	0.5	53.4	14.6	40.3	1.0	51.0
4.0	0.5	50.2	0.5	53.3	14.6	40.2	1.0	50.9
5.0	0.5	50.0	0.5	53.1	14.6	40.1	1.0	50.8
6.0	2.0	49.8	2.0	52.9	55.5	39.8	4.0	50.6
6.5	4.7	49.7	4.7	52.8	93.4	39.6	9.4	50.4
7.0	4.7	49.6	4.7	52.7	93.4	39.5	9.4	50.3
7.5	2.0	49.6	2.0	52.7	55.5	39.6	4.0	50.3
8.0	2.0	49.7	2.0	52.8	55.5	39.7	4.0	50.4
9.0	2.0	49.9	2.0	53.0	55.5	39.9	4.0	50.6
10.0	2.0	50.1	2.0	53.2	55.5	40.1	4.0	50.8
11.0	2.0	50.3	2.0	53.4	55.5	40.3	4.0	51.0
12.0	2.0	50.5	2.0	53.6	55.5	40.4	4.0	51.2
12.5	2.0	50.6	2.0	53.7	55.5	40.5	4.0	51.3
13.0	2.0	50.5	2.0	53.6	55.5	40.4	4.0	51.2
13.5	2.0	50.1	2.0	53.3	55.5	40.1	4.0	50.9
14.0	2.0	49.8	2.0	53.0	55.5	39.8	4.0	50.6
15.0	2.0	49.9	2.0	53.0	55.5	39.9	4.0	50.6
16.0	2.0	50.1	2.0	53.2	55.5	40.0	4.0	50.8
17.0	2.0	50.3	2.0	53.4	55.5	40.2	4.0	51.0
17.5	2.0	50.4	2.0	53.5	55.5	40.3	4.0	51.1
18.0	0.5	50.6	0.5	53.7	14.6	40.6	1.0	51.3
18.5	0.5	50.6	0.5	53.7	14.6	40.6	1.0	51.4
19.0	0.5	50.5	0.5	53.7	14.6	40.6	1.0	51.3
19.5	0.5	50.5	0.5	53.6	14.6	40.5	1.0	51.3
20.0	0.5	50.4	0.5	53.5	14.6	40.5	1.0	51.2
20.5	0.5	50.4	0.5	53.5	14.6	40.4	1.0	51.1
21.0	0.5	50.3	0.5	53.4	14.6	40.3	1.0	51.1
22.0	0.5	50.2	0.5	53.3	14.6	40.2	1.0	51.0
23.0	0.5	50.1	0.5	53.2	14.6	40.1	1.0	50.8
24.0	0.5	49.9	0.5	53.1	14.6	40.0	1.0	50.7

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

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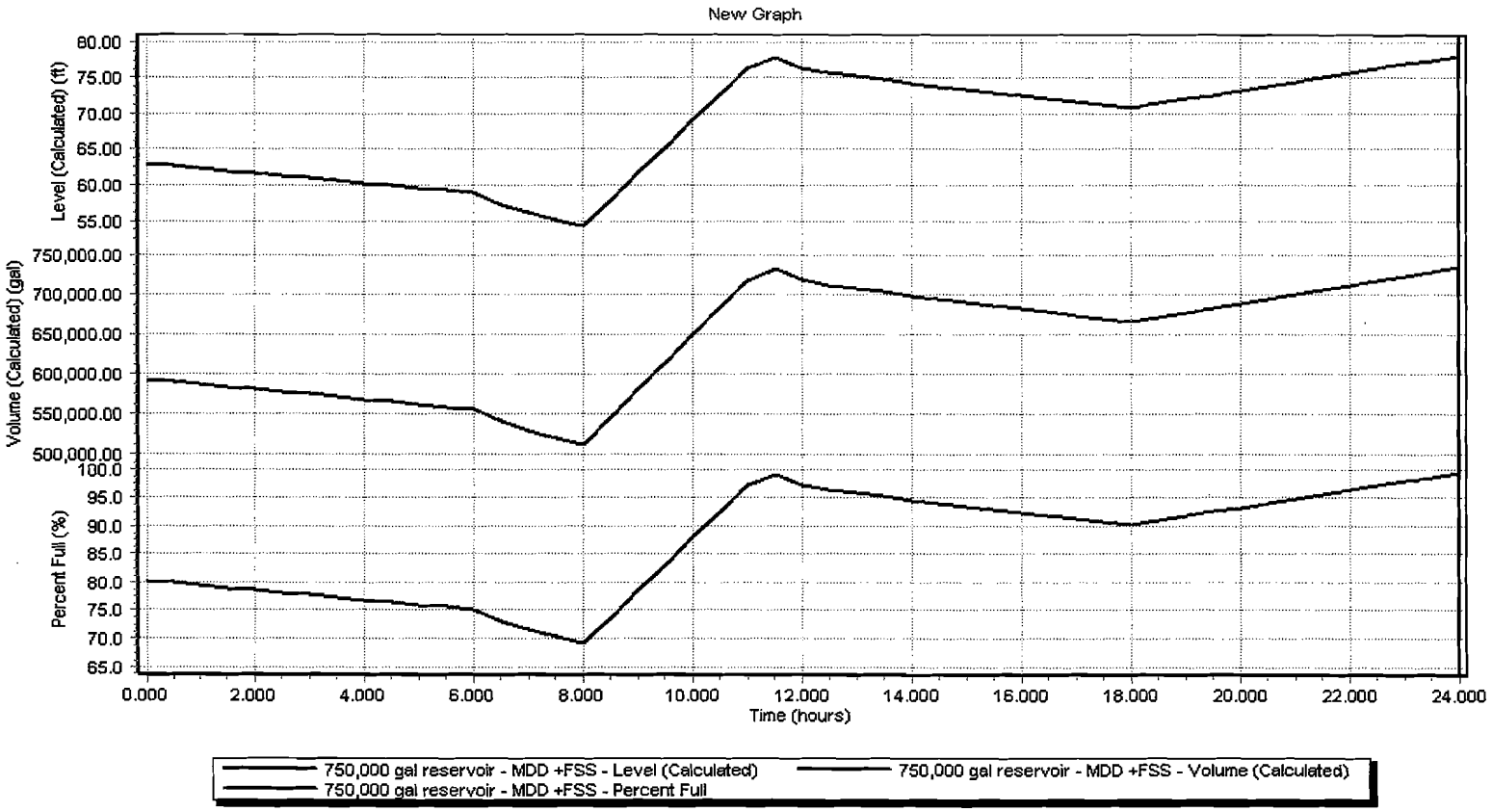
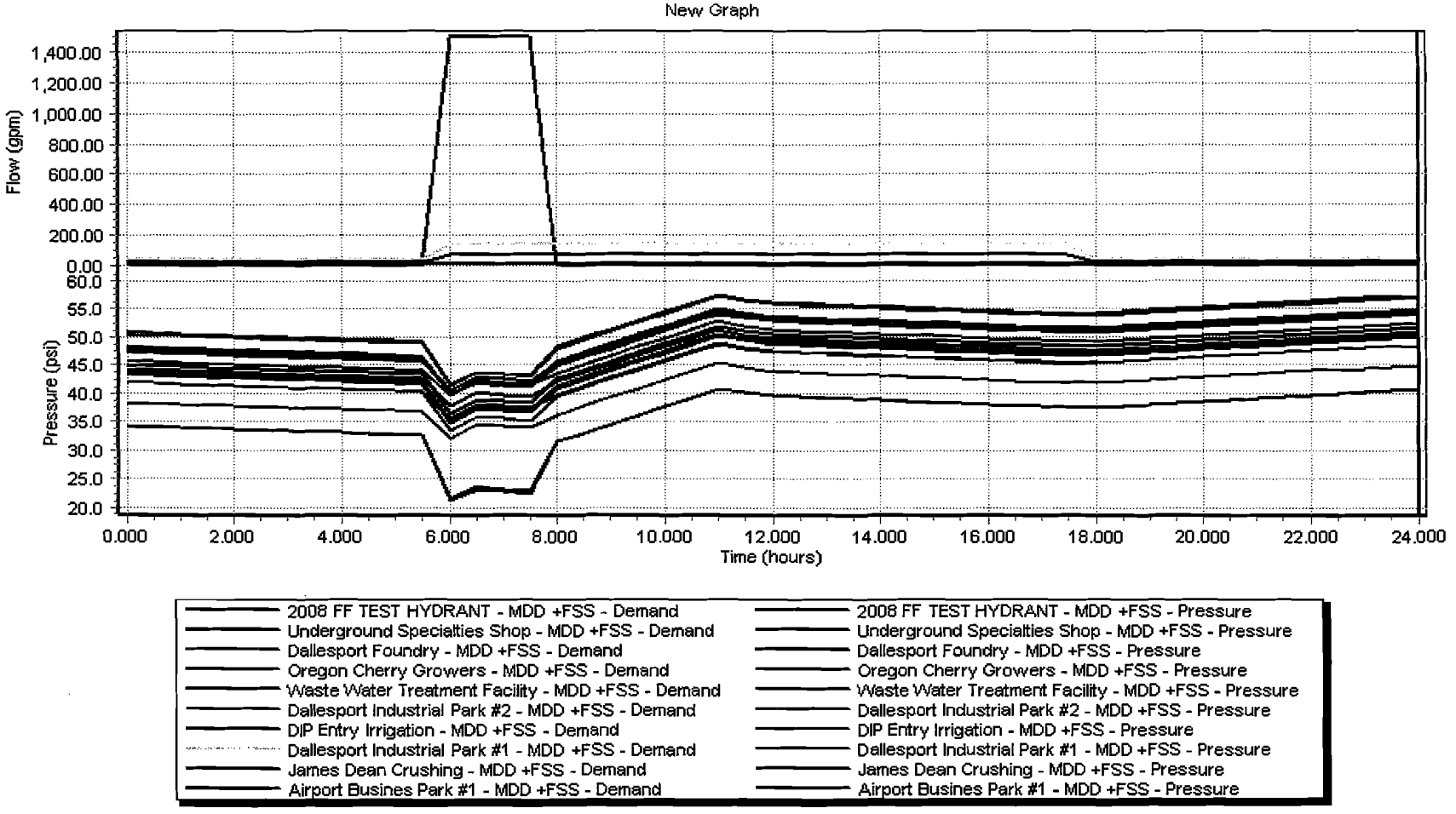
Time (hours)	DIP Entry Irrigation - MDD + PHD - Demand (gpm)	DIP Entry Irrigation - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**
0.0	0.5	57.2
1.0	0.5	57.1
2.0	0.5	57.0
3.0	0.5	56.9
4.0	0.5	56.7
5.0	0.5	56.6
6.0	2.0	56.4
6.5	4.7	56.2
7.0	4.7	56.1
7.5	2.0	56.2
8.0	2.0	56.3
9.0	2.0	56.4
10.0	2.0	56.6
11.0	2.0	56.8
12.0	2.0	57.0
12.5	2.0	57.1
13.0	2.0	57.0
13.5	2.0	56.7
14.0	2.0	56.4
15.0	2.0	56.4
16.0	2.0	56.6
17.0	2.0	56.8
17.5	2.0	56.9
18.0	0.5	57.1
18.5	0.5	57.2
19.0	0.5	57.1
19.5	0.5	57.1
20.0	0.5	57.0
20.5	0.5	57.0
21.0	0.5	56.9
22.0	0.5	56.8
23.0	0.5	56.7
24.0	0.5	56.5


New Graph
Level (Calculated) (ft)
Volume (Calculated) (gal)
Percent Full (%)
Time (hours)
750,000 gal reservoir - MDD +FSS - Level (Calculated)
750,000 gal reservoir - MDD +FSS - Volume (Calculated)
750,000 gal reservoir - MDD +FSS - Percent Full

Time (hours)	750,000 gal reservoir - MDD +FSS - Level (Calculated) (ft)	750,000 gal reservoir - MDD +FSS - Volume (Calculated) (gal)	750,000 gal reservoir - MDD +FSS - Percent Full (%)
Column1	**Column2**	**Column3**	**Column4**
0.0	63.0	592218.8	80.3
1.0	62.3	585846.1	79.4
2.0	61.6	579473.8	78.5
3.0	61.0	573101.5	77.7
4.0	60.3	566728.8	76.8
5.0	59.6	560356.5	75.9
6.0	58.9	553983.9	75.1
6.5	57.3	538481.2	73.0
7.0	56.2	528116.1	71.6
7.5	55.2	519016.8	70.3
8.0	54.3	510065.7	69.1
9.0	61.6	579193.8	78.5
10.0	69.0	648661.0	87.9
11.0	76.2	716581.7	97.1
12.0	76.4	718002.3	97.3
12.5	75.6	710991.1	96.4
13.0	75.2	706643.5	95.8
13.5	74.7	702323.4	95.2
14.0	74.3	698030.4	94.6
15.0	73.4	689526.0	93.4
16.0	72.5	681128.0	92.3
17.0	71.6	672835.0	91.2
17.5	71.1	668727.9	90.6
18.0	70.7	664646.2	90.1
18.5	71.3	670572.8	90.9
19.0	72.0	676462.0	91.7
19.5	72.6	682314.2	92.5
20.0	73.2	688129.7	93.3
20.5	73.8	693908.5	94.0
21.0	74.4	699650.9	94.8
22.0	75.6	711027.8	96.4
23.0	76.8	722262.1	97.9
24.0	78.0	733355.5	99.4


New Graph
Flow (gpm)
1,400.00
1,200.00
1,000.00
800.00
600.00
400.00
200.00
0.00
Pressure (psi)
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (hours)
2008 FF TEST HYDRANT - MDD +FSS - Demand
Underground Specialties Shop - MDD +FSS - Demand
Dallesport Foundry - MDD +FSS - Demand
Oregon Cherry Growers - MDD +FSS - Demand
Waste Water Treatment Facility - MDD +FSS - Demand
Dallesport Industrial Park #2 - MDD +FSS - Demand
DIP Entry Irrigation - MDD +FSS - Demand
Dallesport Industrial Park #1 - MDD +FSS - Demand
James Dean Crushing - MDD +FSS - Demand
Airport Busines Park #1 - MDD +FSS - Demand
2008 FF TEST HYDRANT - MDD +FSS - Pressure
Underground Specialties Shop - MDD +FSS - Pressure
Dallesport Foundry - MDD +FSS - Pressure
Oregon Cherry Growers - MDD +FSS - Pressure
Waste Water Treatment Facility - MDD +FSS - Pressure
Dallesport Industrial Park #2 - MDD +FSS - Pressure
DIP Entry Irrigation - MDD +FSS - Pressure
Dallesport Industrial Park #1 - MDD +FSS - Pressure
James Dean Crushing - MDD +FSS - Pressure
Airport Busines Park #1 - MDD +FSS - Pressure

Time (hours)	2008 FF TEST HYDRANT - MDD +FSS - Demand (gpm)	2008 FF TEST HYDRANT - MDD +FSS - Pressure (psi)	Underground Specialties Shop - MDD +FSS - Demand (gpm)	Underground Specialties Shop - MDD +FSS - Pressure (psi)	Dallesport Foundry - MDD +FSS - Demand (gpm)	Dallesport Foundry - MDD +FSS - Pressure (psi)	Oregon Cherry Growers - MDD +FSS - Demand (gpm)	Oregon Cherry Growers - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.0	34.1	0.5	41.8	0.5	47.2	0.5	45.6
1.0	0.0	33.9	0.5	41.5	0.5	46.9	0.5	45.3
2.0	0.0	33.6	0.5	41.2	0.5	46.6	0.5	45.0
3.0	0.0	33.30	0.5	40.9	0.5	46.3	0.5	44.7
4.0	0.0	33.00	0.5	40.6	0.5	46.0	0.5	44.4
5.0	0.0	32.7	0.5	40.3	0.5	45.7	0.5	44.1
6.0	1500.0	21.1	4.7	35.6	4.7	40.3	4.7	39.7
6.5	1500.0	23.2	4.7	38.1	4.7	42.8	4.7	42.2
7.0	1500.0	22.8	2.0	37.8	2.0	42.4	2.0	41.8
7.5	1500.0	22.4	2.0	37.4	2.0	42.0	2.0	41.4
8.0	0.0	31.4	2.0	39.7	2.0	45.0	2.0	43.5
9.0	0.0	34.5	2.0	42.8	2.0	48.1	2.0	46.6
10.0	0.0	37.6	2.0	45.9	2.0	51.2	2.0	49.7
11.0	0.0	40.7	2.0	48.9	2.0	54.2	2.0	52.7
12.0	0.0	39.5	2.0	47.3	2.0	52.7	2.0	51.1
12.5	0.0	39.4	2.0	47.2	2.0	52.6	2.0	51.0
13.0	0.0	39.2	2.0	47.0	2.0	52.4	2.0	50.8
13.5	0.0	39.0	2.0	46.8	2.0	52.2	2.0	50.6
14.0	0.0	38.8	2.0	46.6	2.0	52.0	2.0	50.4
15.0	0.0	38.4	2.0	46.2	2.0	51.6	2.0	50.0
16.0	0.0	38.0	2.0	45.8	2.0	51.2	2.0	49.6
17.0	0.0	37.6	2.0	45.4	2.0	50.8	2.0	49.2
17.5	0.0	37.4	2.0	45.2	2.0	50.6	2.0	49.1
18.0	0.0	37.5	0.5	45.2	0.5	50.6	0.5	49.0
18.5	0.0	37.8	0.5	45.5	0.5	50.9	0.5	49.3
19.0	0.0	38.1	0.5	45.7	0.5	51.2	0.5	49.6
19.5	0.0	38.4	0.5	46.0	0.5	51.4	0.5	49.8
20.0	0.0	38.6	0.5	46.3	0.5	51.7	0.5	50.1
20.5	0.0	38.9	0.5	46.5	0.5	52.0	0.5	50.4
21.0	0.0	39.2	0.5	46.8	0.5	52.2	0.5	50.6
22.0	0.0	39.7	0.5	47.3	0.5	52.8	0.5	51.1
23.0	0.0	40.2	0.5	47.8	0.5	53.3	0.5	51.7
24.0	0.0	40.6	0.5	48.3	0.5	53.7	0.5	52.1

Time (hours)	Waste Water Treatment Facility - MDD +FSS - Demand (gpm)	Waste Water Treatment Facility - MDD +FSS - Pressure (psi)	Dallesport Industrial Park #2 - MDD +FSS - Demand (gpm)	Dallesport Industrial Park #2 - MDD +FSS - Pressure (psi)	DIP Entry Irrigation - MDD +FSS - Demand (gpm)	DIP Entry Irrigation - MDD +FSS - Pressure (psi)	Dallesport Industrial Park #1 - MDD +FSS - Demand (gpm)	Dallesport Industrial Park #1 - MDD +FSS - Pressure (psi)
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9
0.0	0.5	47.5	35.0	47.4	0.5	50.7	35.0	50.3
1.0	0.5	47.3	35.0	47.1	0.5	50.4	35.0	50.0
2.0	0.5	47.0	35.0	46.8	0.5	50.1	35.0	49.7
3.0	0.5	46.7	35.0	46.5	0.5	49.8	35.0	49.4
4.0	0.5	46.4	35.0	46.3	0.5	49.5	35.0	49.2
5.0	0.5	46.1	35.0	46.0	0.5	49.2	35.0	48.9
6.0	4.7	40.3	140.0	39.9	4.7	41.4	140.0	41.2
6.5	4.7	42.8	140.0	41.7	4.7	43.7	140.0	43.5
7.0	2.0	42.5	140.0	41.3	2.0	43.4	140.0	43.3
7.5	2.0	42.0	140.0	40.9	2.0	43.0	140.0	42.9
8.0	2.0	45.3	140.0	44.6	2.0	48.2	140.0	47.8
9.0	2.0	48.4	140.0	47.8	2.0	51.3	140.0	50.9
10.0	2.0	51.5	140.0	50.9	2.0	54.4	140.0	54.0
11.0	2.0	54.5	140.0	54.0	2.0	57.4	140.0	57.1
12.0	2.0	53.0	140.0	52.9	2.0	56.1	140.0	55.7
12.5	2.0	52.9	140.0	52.7	2.0	55.9	140.0	55.6
13.0	2.0	52.7	140.0	52.5	2.0	55.7	140.0	55.4
13.5	2.0	52.5	140.0	52.3	2.0	55.5	140.0	55.2
14.0	2.0	52.3	140.0	52.1	2.0	55.3	140.0	55.0
15.0	2.0	51.9	140.0	51.7	2.0	55.0	140.0	54.6
16.0	2.0	51.5	140.0	51.3	2.0	54.6	140.0	54.2
17.0	2.0	51.1	140.0	51.0	2.0	54.2	140.0	53.8
17.5	2.0	50.9	140.0	50.8	2.0	54.0	140.0	53.6
18.0	0.5	51.0	35.0	50.8	0.5	54.1	35.0	53.7
18.5	0.5	51.2	35.0	51.1	0.5	54.4	35.0	54.0
19.0	0.5	51.5	35.0	51.4	0.5	54.7	35.0	54.3
19.5	0.5	51.8	35.0	51.6	0.5	54.9	35.0	54.6
20.0	0.5	52.0	35.0	51.9	0.5	55.2	35.0	54.8
20.5	0.5	52.3	35.0	52.2	0.5	55.5	35.0	55.1
21.0	0.5	52.6	35.0	52.4	0.5	55.7	35.0	55.3
22.0	0.5	53.1	35.0	52.9	0.5	56.2	35.0	55.9
23.0	0.5	53.6	35.0	53.5	0.5	56.8	35.0	56.4
24.0	0.5	54.0	35.0	53.9	0.5	57.2	35.0	56.8

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

07/01/2009 3:43 PM

Time (hours)	James Dean Crushing - MDD +FSS - Demand (gpm)	James Dean Crushing - MDD +FSS - Pressure (psi)	Airport Busines Park #1 - MDD +FSS - Demand (gpm)	Airport Busines Park #1 - MDD +FSS - Pressure (psi)	Pellissiers trailer and office - MDD +FSS - Demand (gpm)	Pellissiers trailer and office - MDD +FSS - Pressure (psi)	Eternal Rest - MDD +FSS - Demand (gpm)	Eternal Rest - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	44.1	14.6	34.1	1.0	44.9	0.5	43.2
1.0	0.5	43.8	14.6	33.9	1.0	44.6	0.5	42.9
2.0	0.5	43.5	14.6	33.6	1.0	44.3	0.5	42.6
3.0	0.5	43.2	14.6	33.3	1.0	44.0	0.5	42.3
4.0	0.5	42.9	14.6	33.0	1.0	43.7	0.5	42.0
5.0	0.5	42.7	14.6	32.7	1.0	43.4	0.5	41.7
6.0	4.7	37.6	65.7	21.5	9.4	36.5	4.7	34.8
6.5	4.7	40.0	65.7	23.6	9.4	38.8	4.7	37.1
7.0	2.0	39.7	65.7	23.2	4.0	38.6	2.0	36.9
7.5	2.0	39.3	65.7	22.8	4.0	38.2	2.0	36.5
8.0	2.0	42.0	65.7	31.4	4.0	42.5	2.0	40.8
9.0	2.0	45.0	65.7	34.5	4.0	45.6	2.0	43.9
10.0	2.0	48.2	65.7	37.6	4.0	48.7	2.0	47.0
11.0	2.0	51.2	65.7	40.7	4.0	51.7	2.0	50.0
12.0	2.0	49.6	65.7	39.5	4.0	50.3	2.0	48.6
12.5	2.0	49.5	65.7	39.4	4.0	50.2	2.0	48.5
13.0	2.0	49.3	65.7	39.2	4.0	50.0	2.0	48.3
13.5	2.0	49.1	65.7	39.0	4.0	49.8	2.0	48.1
14.0	2.0	48.9	65.7	38.8	4.0	49.6	2.0	47.9
15.0	2.0	48.5	65.7	38.4	4.0	49.2	2.0	47.5
16.0	2.0	48.1	65.7	38.0	4.0	48.8	2.0	47.1
17.0	2.0	47.7	65.7	37.6	4.0	48.4	2.0	46.7
17.5	2.0	47.6	65.7	37.4	4.0	48.2	2.0	46.5
18.0	0.5	47.5	14.6	37.5	1.0	48.3	0.5	46.6
18.5	0.5	47.8	14.6	37.8	1.0	48.6	0.5	46.9
19.0	0.5	48.1	14.6	38.1	1.0	48.8	0.5	47.2
19.5	0.5	48.4	14.6	38.4	1.0	49.1	0.5	47.4
20.0	0.5	48.6	14.6	38.6	1.0	49.4	0.5	47.7
20.5	0.5	48.9	14.6	38.9	1.0	49.6	0.5	48.0
21.0	0.5	49.1	14.6	39.2	1.0	49.9	0.5	48.2
22.0	0.5	49.7	14.6	39.7	1.0	50.4	0.5	48.7
23.0	0.5	50.2	14.6	40.2	1.0	51.0	0.5	49.3
24.0	0.5	50.6	14.6	40.6	1.0	51.4	0.5	49.7

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

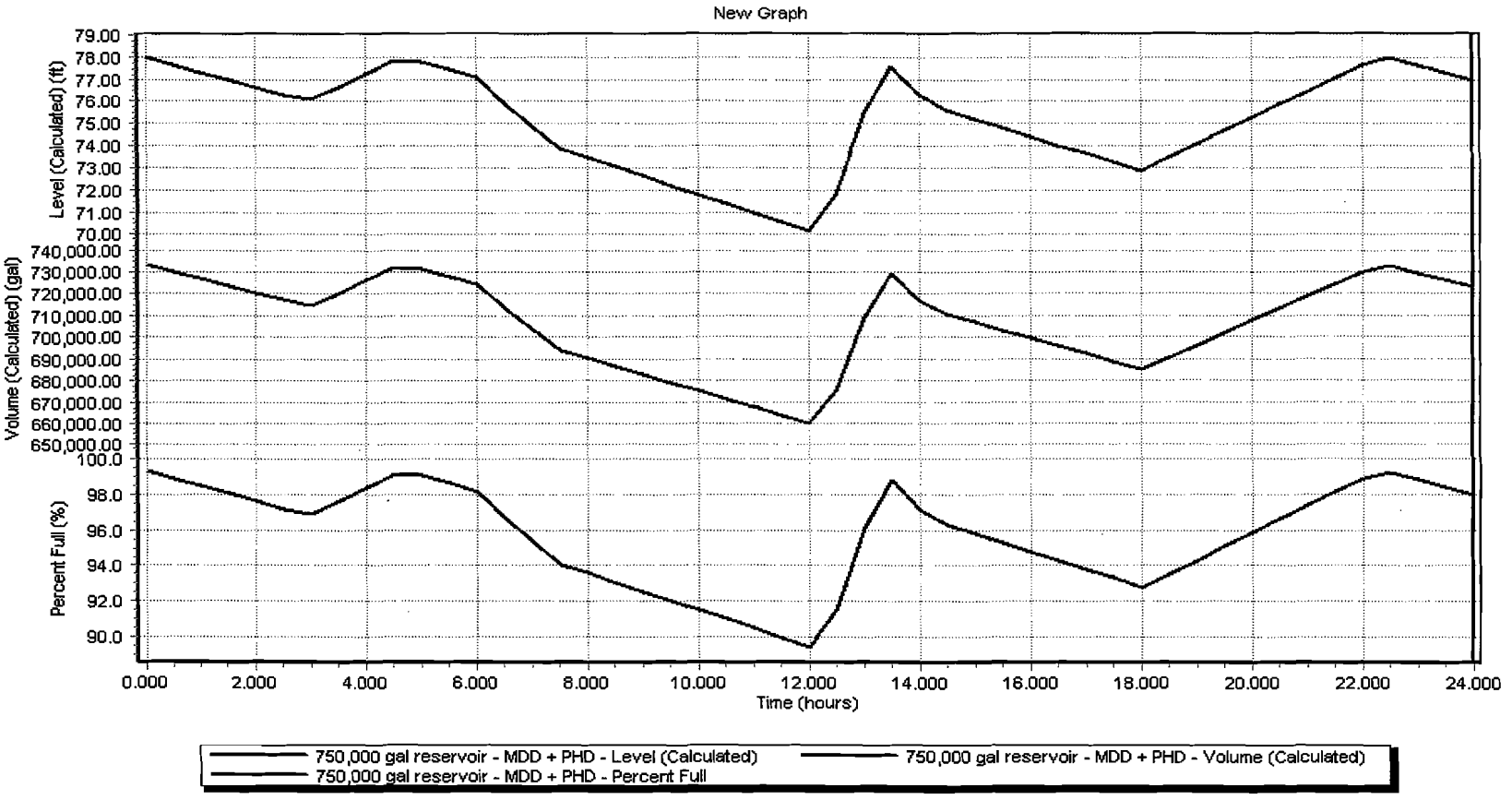
07/01/2009 3:43 PM

Time (hours)	Columbia Hills RV #2 - MDD +FSS - Demand (gpm)	Columbia Hills RV #2 - MDD +FSS - Pressure (psi)	BMI INC - MDD +FSS - Demand (gpm)	BMI INC - MDD +FSS - Pressure (psi)	Columbia Hills RV #1 - MDD +FSS - Demand (gpm)	Columbia Hills RV #1 - MDD +FSS - Pressure (psi)	Underground Specialties Trailer - MDD +FSS - Demand (gpm)	Underground Specialties Trailer - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	48.1	0.5	43.7	0.5	41.8	0.5	38.2
1.0	0.5	47.8	0.5	43.4	0.5	41.5	0.5	37.9
2.0	0.5	47.5	0.5	43.1	0.5	41.2	0.5	37.6
3.0	0.5	47.2	0.5	42.8	0.5	40.9	0.5	37.4
4.0	0.5	46.9	0.5	42.5	0.5	40.6	0.5	37.1
5.0	0.5	46.6	0.5	42.2	0.5	40.3	0.5	36.8
6.0	4.7	39.7	4.7	35.3	4.7	33.4	4.7	32.1
6.5	4.7	42.0	4.7	37.6	4.7	35.7	4.7	34.6
7.0	2.0	41.8	2.0	37.4	2.0	35.5	2.0	34.3
7.5	2.0	41.4	2.0	37.0	2.0	35.1	2.0	33.8
8.0	2.0	45.6	2.0	41.3	2.0	39.4	2.0	36.1
9.0	2.0	48.7	2.0	44.4	2.0	42.5	2.0	39.2
10.0	2.0	51.9	2.0	47.5	2.0	45.6	2.0	42.3
11.0	2.0	54.9	2.0	50.5	2.0	48.6	2.0	45.4
12.0	2.0	53.5	2.0	49.1	2.0	47.2	2.0	43.8
12.5	2.0	53.3	2.0	49.0	2.0	47.1	2.0	43.6
13.0	2.0	53.1	2.0	48.8	2.0	46.9	2.0	43.4
13.5	2.0	52.9	2.0	48.6	2.0	46.7	2.0	43.2
14.0	2.0	52.7	2.0	48.4	2.0	46.5	2.0	43.0
15.0	2.0	52.4	2.0	48.0	2.0	46.1	2.0	42.6
16.0	2.0	52.0	2.0	47.6	2.0	45.7	2.0	42.3
17.0	2.0	51.6	2.0	47.2	2.0	45.3	2.0	41.9
17.5	2.0	51.4	2.0	47.0	2.0	45.1	2.0	41.7
18.0	0.5	51.5	0.5	47.1	0.5	45.2	0.5	41.7
18.5	0.5	51.8	0.5	47.4	0.5	45.5	0.5	41.9
19.0	0.5	52.0	0.5	47.7	0.5	45.7	0.5	42.2
19.5	0.5	52.3	0.5	47.9	0.5	46.0	0.5	42.5
20.0	0.5	52.6	0.5	48.2	0.5	46.3	0.5	42.7
20.5	0.5	52.8	0.5	48.5	0.5	46.5	0.5	43.0
21.0	0.5	53.1	0.5	48.7	0.5	46.8	0.5	43.3
22.0	0.5	53.6	0.5	49.2	0.5	47.3	0.5	43.8
23.0	0.5	54.1	0.5	49.8	0.5	47.8	0.5	44.3
24.0	0.5	54.6	0.5	50.2	0.5	48.3	0.5	44.7

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

07/01/2009 3:43 PM

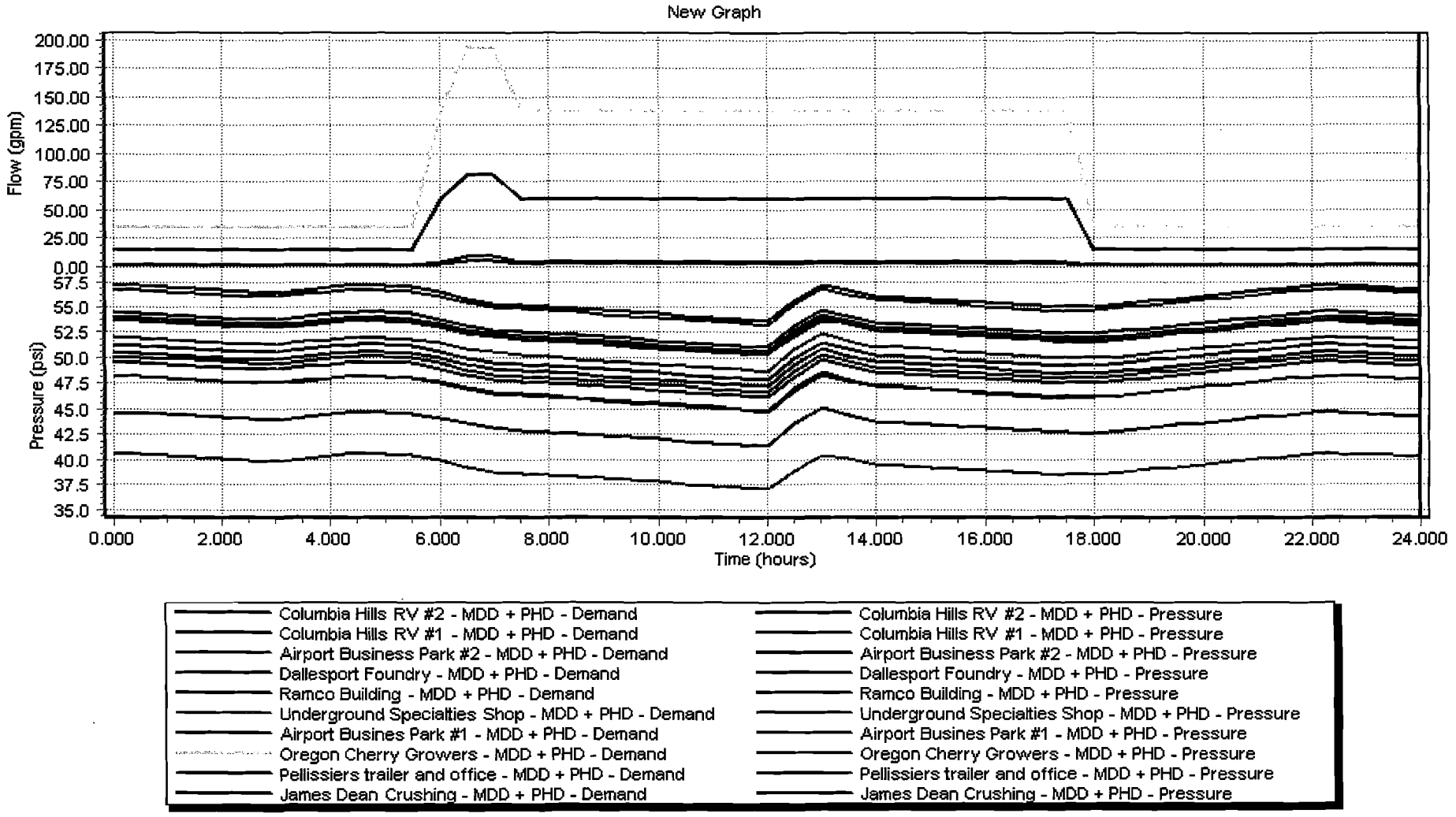
Time (hours)	Ramco Building - MDD +FSS - Demand (gpm)	Ramco Building - MDD +FSS - Pressure (psi)	Airport Business Park #2 - MDD +FSS - Demand (gpm)	Airport Business Park #2 - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**
0.0	0.5	47.2	14.6	34.1
1.0	0.5	46.9	14.6	33.9
2.0	0.5	46.6	14.6	33.6
3.0	0.5	46.4	14.6	33.3
4.0	0.5	46.1	14.6	33.0
5.0	0.5	45.8	14.6	32.7
6.0	4.7	40.4	65.7	21.3
6.5	4.7	42.9	65.7	23.4
7.0	2.0	42.6	65.7	23.0
7.5	2.0	42.2	65.7	22.6
8.0	2.0	45.0	65.7	31.4
9.0	2.0	48.1	65.7	34.5
10.0	2.0	51.2	65.7	37.6
11.0	2.0	54.3	65.7	40.7
12.0	2.0	52.7	65.7	39.5
12.5	2.0	52.6	65.7	39.4
13.0	2.0	52.4	65.7	39.2
13.5	2.0	52.2	65.7	39.0
14.0	2.0	52.0	65.7	38.8
15.0	2.0	51.6	65.7	38.4
16.0	2.0	51.2	65.7	38.0
17.0	2.0	50.8	65.7	37.6
17.5	2.0	50.7	65.7	37.4
18.0	0.5	50.7	14.6	37.5
18.5	0.5	50.9	14.6	37.8
19.0	0.5	51.2	14.6	38.1
19.5	0.5	51.5	14.6	38.4
20.0	0.5	51.7	14.6	38.6
20.5	0.5	52.0	14.6	38.9
21.0	0.5	52.3	14.6	39.2
22.0	0.5	52.8	14.6	39.7
23.0	0.5	53.3	14.6	40.2
24.0	0.5	53.7	14.6	40.6



Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

07/01/2009 3:43 PM

Time (hours)	750,000 gal reservoir - MDD + PHD - Level (Calculated) (ft)	750,000 gal reservoir - MDD + PHD - Volume (Calculated) (gal)	750,000 gal reservoir - MDD + PHD - Percent Full (%)
Column1	Column2	Column3	Column4
0.0	78.0	733,223.23	99.4
1.0	77.32	726,850.89	98.50
2.0	76.64	720,478.27	97.6
3.0	76.06	714,985.77	96.9
4.0	77.25	726,170.43	98.4
5.0	77.78	731,131.06	99.1
6.0	77.10	724,758.72	98.2
6.5	75.86	713,106.46	96.6
7.0	74.85	703,597.43	95.3
7.5	73.84	694,148.08	94.1
8.0	73.46	690,553.26	93.6
9.0	72.63	682,734.79	92.5
10.0	71.81	675,012.99	91.5
11.0	71.00	667,387.30	90.4
12.0	70.20	659,855.99	89.4
12.5	71.82	675,086.43	91.5
13.0	75.48	709,528.85	96.2
13.5	77.60	729,482.39	98.9
14.0	76.27	716,948.57	97.2
15.0	75.20	706,889.89	95.8
16.0	74.42	699,563.69	94.8
17.0	73.65	692,329.30	93.8
17.5	73.27	688,746.24	93.3
18.0	72.85	684,835.85	92.8
18.5	73.43	690,289.33	93.5
19.0	74.05	696,054.65	94.3
19.5	74.66	701,783.82	95.1
20.0	75.26	707,477.12	95.9
20.5	75.9	713,134.28	96.6
21.0	76.5	718,755.87	97.4
22.0	77.7	729893.5	98.9
23.0	77.6	729612.9	98.9
24.0	76.9	723240.3	98.0


New Graph
Flow (gpm)
Pressure (psi)
Time (hours)
200.00
175.00
150.00
125.00
100.00
75.00
50.00
25.00
0.00
57.5
55.0
52.5
50.0
47.5
45.0
42.5
40.0
37.5
35.0
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Columbia Hills RV #2 - MDD + PHD - Demand
Columbia Hills RV #1 - MDD + PHD - Demand
Airport Business Park #2 - MDD + PHD - Demand
Dallesport Foundry - MDD + PHD - Demand
Ramco Building - MDD + PHD - Demand
Underground Specialties Shop - MDD + PHD - Demand
Airport Busines Park #1 - MDD + PHD - Demand
Oregon Cherry Growers - MDD + PHD - Demand
Pellissiers trailer and office - MDD + PHD - Demand
James Dean Crushing - MDD + PHD - Demand
Columbia Hills RV #2 - MDD + PHD - Pressure
Columbia Hills RV #1 - MDD + PHD - Pressure
Airport Business Park #2 - MDD + PHD - Pressure
Dallesport Foundry - MDD + PHD - Pressure
Ramco Building - MDD + PHD - Pressure
Underground Specialties Shop - MDD + PHD - Pressure
Airport Busines Park #1 - MDD + PHD - Pressure
Oregon Cherry Growers - MDD + PHD - Pressure
Pellissiers trailer and office - MDD + PHD - Pressure
James Dean Crushing - MDD + PHD - Pressure

Time (hours)	Columbia Hills RV #2 - MDD + PHD - Demand (gpm)	Columbia Hills RV #2 - MDD + PHD - Pressure (psi)	Columbia Hills RV #1 - MDD + PHD - Demand (gpm)	Columbia Hills RV #1 - MDD + PHD - Pressure (psi)	Airport Business Park #2 - MDD + PHD - Demand (gpm)	Airport Business Park #2 - MDD + PHD - Pressure (psi)	Dallesport Foundry - MDD + PHD - Demand (gpm)	Dallesport Foundry - MDD + PHD - Pressure (psi)
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9
0.0	0.5	54.6	0.5	48.3	14.6	40.6	0.5	53.7
1.0	0.5	54.3	0.5	48.0	14.6	40.3	0.5	53.4
2.0	0.5	54.0	0.5	47.7	14.6	40.1	0.5	53.1
3.0	0.5	53.8	0.5	47.5	14.6	39.9	0.5	52.9
4.0	0.5	54.3	0.5	48.0	14.6	40.4	0.5	53.5
5.0	0.5	54.5	0.5	48.2	14.6	40.5	0.5	53.6
6.0	2.0	53.8	2.0	47.5	58.4	39.9	2.0	53.0
6.5	4.7	53.2	4.7	46.9	80.3	39.2	4.7	52.5
7.0	4.7	52.7	4.7	46.4	80.3	38.7	4.7	52.0
7.5	2.0	52.6	2.0	46.3	58.4	38.6	2.0	51.8
8.0	2.0	52.4	2.0	46.1	58.4	38.5	2.0	51.6
9.0	2.0	52.1	2.0	45.8	58.4	38.1	2.0	51.3
10.0	2.0	51.7	2.0	45.4	58.4	37.7	2.0	50.9
11.0	2.0	51.4	2.0	45.1	58.4	37.4	2.0	50.6
12.0	2.0	51.0	2.0	44.7	58.4	37.0	2.0	50.2
12.5	2.0	53.1	2.0	46.8	58.4	38.9	2.0	52.4
13.0	2.0	54.6	2.0	48.4	58.4	40.4	2.0	54.0
13.5	2.0	54.1	2.0	47.8	58.4	40.1	2.0	53.3
14.0	2.0	53.5	2.0	47.2	58.4	39.5	2.0	52.7
15.0	2.0	53.2	2.0	46.9	58.4	39.2	2.0	52.4
16.0	2.0	52.8	2.0	46.6	58.4	38.9	2.0	52.1
17.0	2.0	52.5	2.0	46.2	58.4	38.5	2.0	51.7
17.5	2.0	52.3	2.0	46.1	58.4	38.4	2.0	51.6
18.0	0.5	52.4	0.5	46.1	14.6	38.5	0.5	51.6
18.5	0.5	52.7	0.5	46.4	14.6	38.7	0.5	51.8
19.0	0.5	52.9	0.5	46.6	14.6	39.0	0.5	52.1
19.5	0.5	53.2	0.5	46.9	14.6	39.3	0.5	52.3
20.0	0.5	53.5	0.5	47.2	14.6	39.5	0.5	52.6
20.5	0.5	53.7	0.5	47.4	14.6	39.8	0.5	52.9
21.0	0.5	54.0	0.5	47.7	14.6	40.0	0.5	53.1
22.0	0.5	54.5	0.5	48.2	14.6	40.5	0.5	53.6
23.0	0.5	54.4	0.5	48.1	14.6	40.5	0.5	53.5
24.0	0.5	54.1	0.5	47.8	14.6	40.2	0.5	53.2

Time (hours)	Ramco Building - MDD + PHD - Demand (gpm)	Ramco Building - MDD + PHD - Pressure (psi)	Underground Specialties Shop - MDD + PHD - Demand (gpm)	Underground Specialties Shop - MDD + PHD - Pressure (psi)	Airport Busines Park #1 - MDD + PHD - Demand (gpm)	Airport Busines Park #1 - MDD + PHD - Pressure (psi)	Oregon Cherry Growers - MDD + PHD - Demand (gpm)	Oregon Cherry Growers - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	53.7	0.5	48.3	14.6	40.6	0.5	52.1
1.0	0.5	53.4	0.5	48.0	14.6	40.3	0.5	51.8
2.0	0.5	53.1	0.5	47.7	14.6	40.1	0.5	51.5
3.0	0.5	53.0	0.5	47.5	14.6	39.9	0.5	51.3
4.0	0.5	53.5	0.5	48.0	14.6	40.4	0.5	51.8
5.0	0.5	53.6	0.5	48.2	14.6	40.5	0.5	52.0
6.0	2.0	53.1	2.0	47.6	58.4	39.9	2.0	51.5
6.5	4.7	52.5	4.7	47.1	80.3	39.2	4.7	51.0
7.0	4.7	52.1	4.7	46.7	80.3	38.7	4.7	50.5
7.5	2.0	51.8	2.0	46.4	58.4	38.6	2.0	50.2
8.0	2.0	51.7	2.0	46.3	58.4	38.5	2.0	50.1
9.0	2.0	51.3	2.0	45.9	58.4	38.1	2.0	49.7
10.0	2.0	51.0	2.0	45.5	58.4	37.7	2.0	49.4
11.0	2.0	50.6	2.0	45.2	58.4	37.4	2.0	49.0
12.0	2.0	50.3	2.0	44.8	58.4	37.0	2.0	48.7
12.5	2.0	52.5	2.0	47.1	58.4	38.9	2.0	50.9
13.0	2.0	54.0	2.0	48.6	58.4	40.4	2.0	52.5
13.5	2.0	53.3	2.0	47.9	58.4	40.1	2.0	51.7
14.0	2.0	52.7	2.0	47.3	58.4	39.5	2.0	51.1
15.0	2.0	52.4	2.0	47.0	58.4	39.2	2.0	50.8
16.0	2.0	52.1	2.0	46.7	58.4	38.9	2.0	50.5
17.0	2.0	51.8	2.0	46.3	58.4	38.5	2.0	50.2
17.5	2.0	51.6	2.0	46.2	58.4	38.4	2.0	50.0
18.0	0.5	51.6	0.5	46.1	14.6	38.5	0.5	49.9
18.5	0.5	51.8	0.5	46.4	14.6	38.7	0.5	50.2
19.0	0.5	52.1	0.5	46.6	14.6	39.0	0.5	50.5
19.5	0.5	52.4	0.5	46.9	14.6	39.3	0.5	50.7
20.0	0.5	52.6	0.5	47.2	14.6	39.5	0.5	51.0
20.5	0.5	52.9	0.5	47.4	14.6	39.8	0.5	51.2
21.0	0.5	53.1	0.5	47.7	14.6	40.0	0.5	51.5
22.0	0.5	53.7	0.5	48.2	14.6	40.5	0.5	52.0
23.0	0.5	53.6	0.5	48.1	14.6	40.5	0.5	51.9
24.0	0.5	53.3	0.5	47.8	14.6	40.2	0.5	51.6

Time (hours)	Pellissiers trailer and office - MDD + PHD - Demand (gpm)	Pellissiers trailer and office - MDD + PHD - Pressure (psi)	James Dean Crushing - MDD + PHD - Demand (gpm)	James Dean Crushing - MDD + PHD - Pressure (psi)	Waste Water Treatment Facility - MDD + PHD - Demand (gpm)	Waste Water Treatment Facility - MDD + PHD - Pressure (psi)	Eternal Rest - MDD + PHD - Demand (gpm)	Eternal Rest - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	1.0	51.4	0.5	50.6	0.5	54.0	0.5	49.7
1.0	1.0	51.1	0.5	50.3	0.5	53.7	0.5	49.4
2.0	1.0	50.8	0.5	50.0	0.5	53.5	0.5	49.1
3.0	1.0	50.6	0.5	49.9	0.5	53.3	0.5	48.9
4.0	1.0	51.1	0.5	50.4	0.5	53.8	0.5	49.4
5.0	1.0	51.3	0.5	50.5	0.5	53.9	0.5	49.6
6.0	4.0	50.7	2.0	50.0	2.0	53.4	2.0	49.0
6.5	9.4	50.0	4.7	49.4	4.7	52.8	4.7	48.3
7.0	9.4	49.5	4.7	49.0	4.7	52.3	4.7	47.9
7.5	4.0	49.4	2.0	48.7	2.0	52.1	2.0	47.7
8.0	4.0	49.2	2.0	48.6	2.0	52.0	2.0	47.6
9.0	4.0	48.9	2.0	48.2	2.0	51.6	2.0	47.2
10.0	4.0	48.5	2.0	47.9	2.0	51.3	2.0	46.8
11.0	4.0	48.2	2.0	47.5	2.0	50.9	2.0	46.5
12.0	4.0	47.8	2.0	47.2	2.0	50.6	2.0	46.1
12.5	4.0	49.9	2.0	49.4	2.0	52.7	2.0	48.2
13.0	4.0	51.5	2.0	50.9	2.0	54.3	2.0	49.8
13.5	4.0	50.9	2.0	50.2	2.0	53.6	2.0	49.2
14.0	4.0	50.3	2.0	49.6	2.0	53.0	2.0	48.6
15.0	4.0	50.0	2.0	49.3	2.0	52.7	2.0	48.3
16.0	4.0	49.7	2.0	49.0	2.0	52.4	2.0	48.0
17.0	4.0	49.3	2.0	48.7	2.0	52.1	2.0	47.6
17.5	4.0	49.2	2.0	48.5	2.0	51.9	2.0	47.5
18.0	1.0	49.2	0.5	48.5	0.5	51.9	0.5	47.5
18.5	1.0	49.5	0.5	48.7	0.5	52.1	0.5	47.8
19.0	1.0	49.7	0.5	49.0	0.5	52.4	0.5	48.1
19.5	1.0	50.0	0.5	49.2	0.5	52.7	0.5	48.3
20.0	1.0	50.3	0.5	49.5	0.5	52.9	0.5	48.6
20.5	1.0	50.5	0.5	49.8	0.5	53.2	0.5	48.8
21.0	1.0	50.8	0.5	50.0	0.5	53.5	0.5	49.1
22.0	1.0	51.3	0.5	50.5	0.5	54.0	0.5	49.6
23.0	1.0	51.2	0.5	50.4	0.5	53.9	0.5	49.5
24.0	1.0	50.9	0.5	50.1	0.5	53.6	0.5	49.2

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

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Time (hours)	DIP Entry Irrigation - MDD + PHD - Demand (gpm)	DIP Entry Irrigation - MDD + PHD - Pressure (psi)	BMI INC - MDD + PHD - Demand (gpm)	BMI INC - MDD + PHD - Pressure (psi)	Dallesport Industrial Park #2 - MDD + PHD - Demand (gpm)	Dallesport Industrial Park #2 - MDD + PHD - Pressure (psi)	Dallesport Industrial Park #1 - MDD + PHD - Demand (gpm)	Dallesport Industrial Park #1 - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	57.2	0.5	50.2	35.0	53.9	35.0	56.8
1.0	0.5	56.9	0.5	49.9	35.0	53.6	35.0	56.5
2.0	0.5	56.6	0.5	49.6	35.0	53.3	35.0	56.2
3.0	0.5	56.4	0.5	49.4	35.0	53.1	35.0	56.1
4.0	0.5	56.9	0.5	49.9	35.0	53.6	35.0	56.6
5.0	0.5	57.1	0.5	50.1	35.0	53.8	35.0	56.7
6.0	2.0	56.4	2.0	49.5	136.5	53.2	136.5	56.1
6.5	4.7	55.8	4.7	48.8	192.5	52.6	192.5	55.4
7.0	4.7	55.3	4.7	48.4	192.5	52.1	192.5	54.9
7.5	2.0	55.2	2.0	48.2	136.5	52.0	136.5	54.8
8.0	2.0	55.0	2.0	48.1	136.5	51.8	136.5	54.7
9.0	2.0	54.7	2.0	47.7	136.5	51.4	136.5	54.3
10.0	2.0	54.3	2.0	47.3	136.5	51.1	136.5	53.9
11.0	2.0	54.0	2.0	47.0	136.5	50.7	136.5	53.6
12.0	2.0	53.6	2.0	46.6	136.5	50.4	136.5	53.2
12.5	2.0	55.6	2.0	48.7	136.5	52.1	136.5	55.3
13.0	2.0	57.2	2.0	50.3	136.5	53.7	136.5	56.8
13.5	2.0	56.7	2.0	49.7	136.5	53.4	136.5	56.3
14.0	2.0	56.1	2.0	49.1	136.5	52.9	136.5	55.7
15.0	2.0	55.8	2.0	48.8	136.5	52.5	136.5	55.4
16.0	2.0	55.4	2.0	48.5	136.5	52.2	136.5	55.1
17.0	2.0	55.1	2.0	48.1	136.5	51.9	136.5	54.7
17.5	2.0	54.9	2.0	48.0	136.5	51.7	136.5	54.6
18.0	0.5	55.0	0.5	48.0	35.0	51.7	35.0	54.7
18.5	0.5	55.3	0.5	48.3	35.0	52.0	35.0	54.9
19.0	0.5	55.6	0.5	48.6	35.0	52.3	35.0	55.2
19.5	0.5	55.8	0.5	48.8	35.0	52.5	35.0	55.4
20.0	0.5	56.1	0.5	49.1	35.0	52.8	35.0	55.7
20.5	0.5	56.3	0.5	49.3	35.0	53.0	35.0	56.0
21.0	0.5	56.6	0.5	49.6	35.0	53.3	35.0	56.2
22.0	0.5	57.1	0.5	50.1	35.0	53.8	35.0	56.7
23.0	0.5	57.0	0.5	50.0	35.0	53.7	35.0	56.7
24.0	0.5	56.7	0.5	49.7	35.0	53.5	35.0	56.4

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

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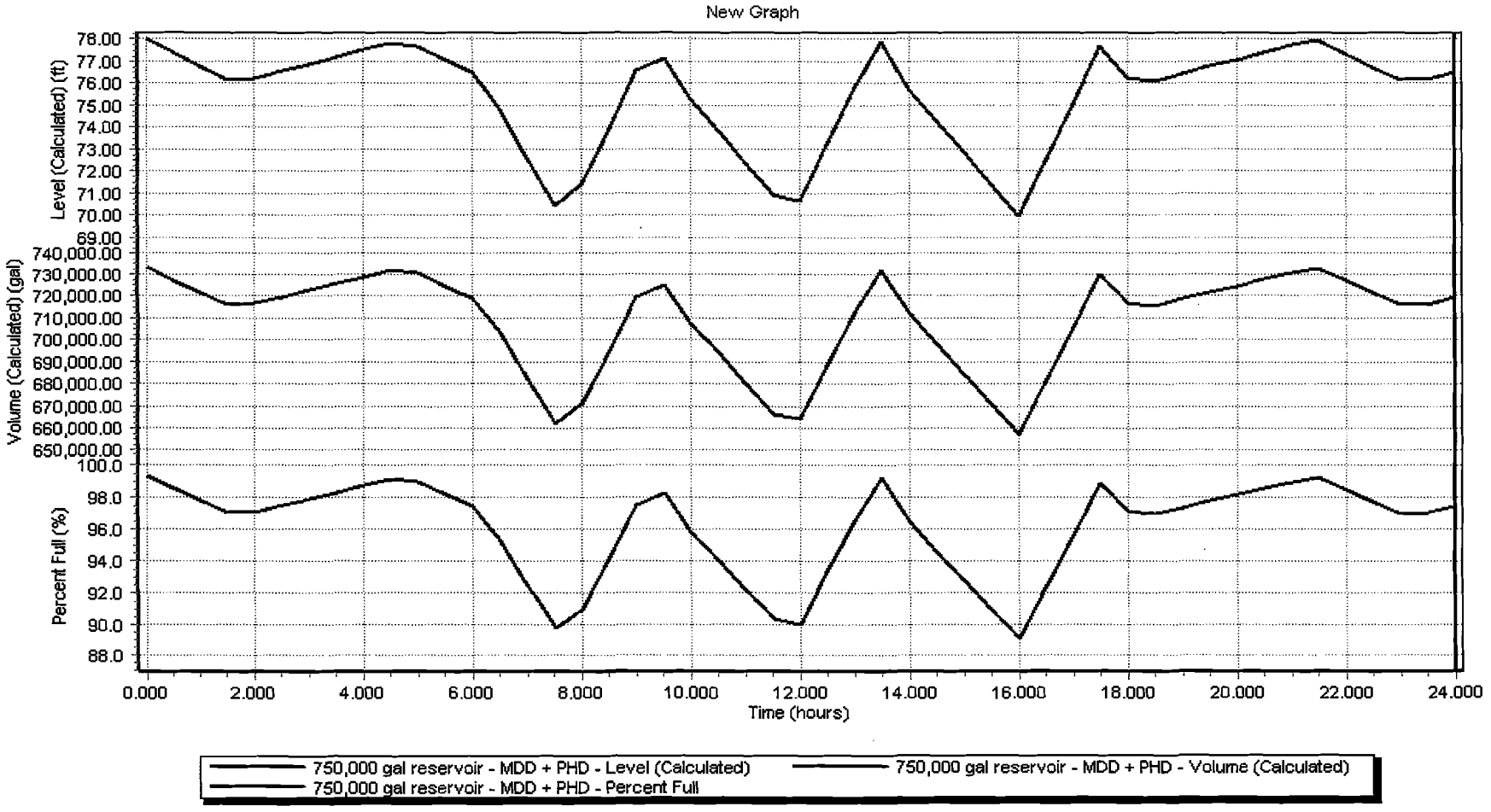
Time (hours)	Underground Specialties Trailer - MDD + PHD - Demand (gpm)	Underground Specialties Trailer - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**
0.0	0.5	44.7
1.0	0.5	44.4
2.0	0.5	44.1
3.0	0.5	44.0
4.0	0.5	44.5
5.0	0.5	44.6
6.0	2.0	44.1
6.5	4.7	43.6
7.0	4.7	43.1
7.5	2.0	42.9
8.0	2.0	42.7
9.0	2.0	42.3
10.0	2.0	42.0
11.0	2.0	41.6
12.0	2.0	41.3
12.5	2.0	43.6
13.0	2.0	45.1
13.5	2.0	44.3
14.0	2.0	43.7
15.0	2.0	43.5
16.0	2.0	43.1
17.0	2.0	42.8
17.5	2.0	42.6
18.0	0.5	42.6
18.5	0.5	42.8
19.0	0.5	43.1
19.5	0.5	43.4
20.0	0.5	43.6
20.5	0.5	43.9
21.0	0.5	44.1
22.0	0.5	44.7
23.0	0.5	44.6
24.0	0.5	44.3



Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

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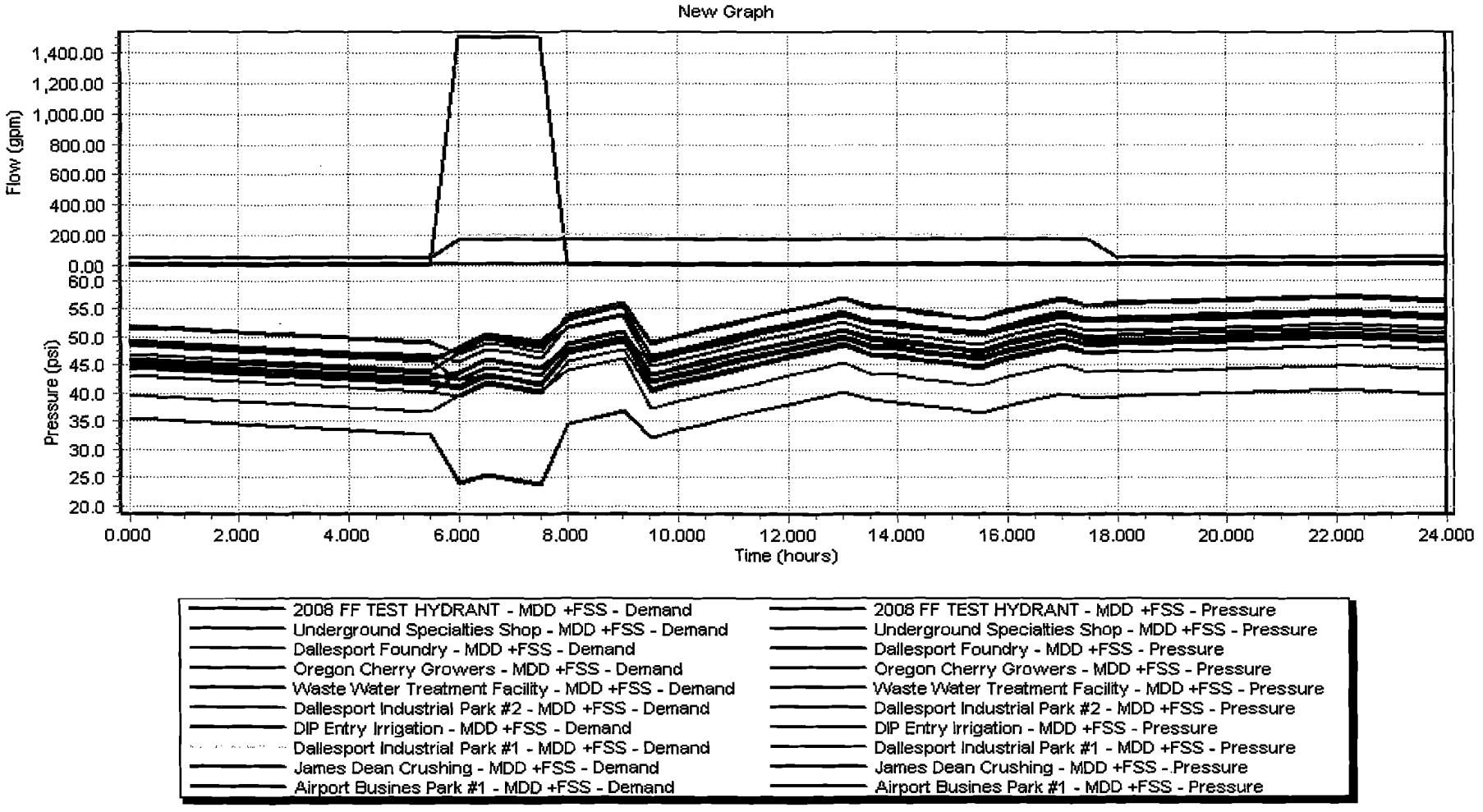
Time (hours)	750,000 gal reservoir - MDD + PHD - Level (Calculated) (ft)	750,000 gal reservoir - MDD + PHD - Volume (Calculated) (gal)	750,000 gal reservoir - MDD + PHD - Percent Full (%)
Column1	Column2	Column3	Column4
0.0	78.0	733223.2	99.4
1.0	76.8	721812.0	97.8
2.0	76.2	716563.3	97.1
3.0	76.9	722713.0	97.9
4.0	77.5	728,785.57	98.8
5.0	77.7	730,434.53	99.0
6.0	76.5	719023.2	97.4
6.5	74.8	702819.7	95.2
7.0	72.6	682398.6	92.5
7.5	70.4	662104.2	89.7
8.0	71.4	670889.8	90.9
9.0	76.6	719833.1	97.5
10.0	75.2	707312.5	95.9
11.0	72.4	680083.2	92.2
12.0	70.6	663986.7	90.0
12.5	73.2	688299.6	93.3
13.0	75.8	712849.1	96.6
13.5	77.9	732339.4	99.2
14.0	75.7	711708.2	96.4
15.0	72.8	684424.5	92.8
16.0	69.9	657201.8	89.1
17.0	75.1	705719.4	95.6
17.5	77.7	729982.1	98.9
18.0	76.3	716835.8	97.1
18.5	76.1	715533.4	97.0
19.0	76.5	718624.2	97.4
19.5	76.8	721696.1	97.8
20.0	77.1	724748.4	98.2
20.5	77.4	727781.5	98.6
21.0	77.7	730795.4	99.0
22.0	77.4	727214.7	98.5
23.0	76.2	715803.4	97.0
24.0	76.5	719348.3	97.5


New Graph
Flow (gpm)
1,400.00
1,200.00
1,000.00
800.00
600.00
400.00
200.00
0.00
Pressure (psi)
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (hours)
2008 FF TEST HYDRANT - MDD +FSS - Demand
Underground Specialties Shop - MDD +FSS - Demand
Dallesport Foundry - MDD +FSS - Demand
Oregon Cherry Growers - MDD +FSS - Demand
Waste Water Treatment Facility - MDD +FSS - Demand
Dallesport Industrial Park #2 - MDD +FSS - Demand
DIP Entry Irrigation - MDD +FSS - Demand
Dallesport Industrial Park #1 - MDD +FSS - Demand
James Dean Crushing - MDD +FSS - Demand
Airport Busines Park #1 - MDD +FSS - Demand
2008 FF TEST HYDRANT - MDD +FSS - Pressure
Underground Specialties Shop - MDD +FSS - Pressure
Dallesport Foundry - MDD +FSS - Pressure
Oregon Cherry Growers - MDD +FSS - Pressure
Waste Water Treatment Facility - MDD +FSS - Pressure
Dallesport Industrial Park #2 - MDD +FSS - Pressure
DIP Entry Irrigation - MDD +FSS - Pressure
Dallesport Industrial Park #1 - MDD +FSS - Pressure
James Dean Crushing - MDD +FSS - Pressure
Airport Busines Park #1 - MDD +FSS - Pressure

Time (hours)	2008 FF TEST HYDRANT - MDD +FSS - Demand (gpm)	2008 FF TEST HYDRANT - MDD +FSS - Pressure (psi)	Underground Specialties Shop - MDD +FSS - Demand (gpm)	Underground Specialties Shop - MDD +FSS - Pressure (psi)	Dallesport Foundry - MDD +FSS - Demand (gpm)	Dallesport Foundry - MDD +FSS - Pressure (psi)	Oregon Cherry Growers - MDD +FSS - Demand (gpm)	Oregon Cherry Growers - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.0	35.4	0.5	43.1	0.5	48.5	0.50	46.90
1.0	0.0	34.9	0.5	42.6	0.5	48.0	0.50	46.40
2.0	0.0	34.4	0.5	42.0	0.5	47.5	0.50	45.80
3.0	0.0	33.9	0.5	41.5	0.5	46.9	0.50	45.30
4.0	0.0	33.3	0.5	41.0	0.5	46.4	0.5	44.8
5.0	0.0	32.8	0.5	40.5	0.5	45.9	0.5	44.3
6.0	1500.0	24.0	4.7	43.4	4.7	48.0	4.7	47.1
6.5	1500.0	25.3	4.7	45.7	4.7	50.2	4.7	49.5
7.0	1500.0	24.5	2.0	45.0	2.0	49.6	2.0	48.8
7.5	1500.0	23.7	2.0	44.1	2.0	48.7	2.0	48.0
8.0	0.0	34.5	2.0	47.7	2.0	53.0	2.0	51.5
9.0	0.0	36.7	2.0	49.9	2.0	55.2	2.0	53.6
10.0	0.0	33.3	2.0	41.9	2.0	47.2	2.0	45.8
11.0	0.0	35.7	2.0	44.3	2.0	49.5	2.0	48.1
12.0	0.0	37.9	2.0	46.5	2.0	51.8	2.0	50.4
12.5	0.0	39.1	2.0	47.6	2.0	52.9	2.0	51.5
13.0	0.0	40.1	2.0	48.7	2.0	54.0	2.0	52.5
13.5	0.0	38.8	2.0	47.0	2.0	52.3	2.0	50.8
14.0	0.0	38.3	2.0	46.6	2.0	51.9	2.0	50.4
15.0	0.0	37.1	2.0	45.3	2.0	50.6	2.0	49.2
16.0	0.0	37.8	2.0	46.4	2.0	51.6	2.0	50.2
17.0	0.0	40.0	2.0	48.5	2.0	53.8	2.0	52.4
17.5	0.0	38.9	2.0	47.1	2.0	52.5	2.0	51.0
18.0	0.0	39.4	0.5	47.1	0.5	52.5	0.5	50.9
18.5	0.0	39.5	0.5	47.2	0.5	52.7	0.5	51.0
19.0	0.0	39.7	0.5	47.4	0.5	52.8	0.5	51.2
19.5	0.0	39.8	0.5	47.5	0.5	52.9	0.5	51.3
20.0	0.0	40.0	0.5	47.7	0.5	53.1	0.5	51.5
20.5	0.0	40.1	0.5	47.8	0.5	53.2	0.5	51.6
21.0	0.0	40.3	0.5	48.0	0.5	53.4	0.5	51.8
22.0	0.0	40.5	0.5	48.2	0.5	53.7	0.5	52.0
23.0	0.0	40.2	0.5	47.9	0.5	53.3	0.5	51.7
24.0	0.0	39.7	0.5	47.4	0.5	52.8	0.5	51.2

Time (hours)	Waste Water Treatment Facility - MDD +FSS - Demand (gpm)	Waste Water Treatment Facility - MDD +FSS - Pressure (psi)	Dallesport Industrial Park #2 - MDD +FSS Demand (gpm)	Dallesport Industrial Park #2 - MDD +FSS Pressure (psi)	DIP Entry Irrigation - MDD +FSS - Demand (gpm)	DIP Entry Irrigation - MDD +FSS - Pressure (psi)	Dallesport Industrial Park #1 - MDD +FSS Demand (gpm)	Dallesport Industrial Park #1 - MDD +FSS Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.50	48.8	50.3	48.7	0.5	52.0	50.05	51.6
1.0	0.50	48.3	50.3	48.2	0.5	51.5	50.05	51.1
2.0	0.50	47.8	50.3	47.7	0.5	50.9	50.05	50.6
3.0	0.50	47.3	50.3	47.2	0.5	50.4	50.05	50.0
4.0	0.5	46.8	50.3	46.6	0.5	49.9	50.1	49.5
5.0	0.5	46.2	50.3	46.1	0.5	49.4	50.1	49.0
6.0	4.7	47.8	201.0	42.3	4.7	46.9	200.2	46.8
6.5	4.7	49.9	201.0	43.1	4.7	48.8	200.2	48.8
7.0	2.0	49.3	201.0	42.2	2.0	48.1	200.2	48.1
7.5	2.0	48.4	201.0	41.4	2.0	47.3	200.2	47.3
8.0	2.0	53.0	201.0	47.0	2.0	53.8	200.2	53.6
9.0	2.0	55.1	201.0	49.3	2.0	56.0	200.2	55.8
10.0	2.0	47.5	201.0	46.8	2.0	50.2	200.2	49.8
11.0	2.0	49.8	201.0	49.1	2.0	52.5	200.2	52.2
12.0	2.0	52.1	201.0	51.4	2.0	54.8	200.2	54.4
12.5	2.0	53.2	201.0	52.5	2.0	55.9	200.2	55.5
13.0	2.0	54.2	201.0	53.6	2.0	57.0	200.2	56.6
13.5	2.0	52.6	201.0	52.4	2.0	55.4	200.2	55.1
14.0	2.0	52.2	201.0	51.9	2.0	55.0	200.2	54.6
15.0	2.0	50.9	201.0	50.6	2.0	53.7	200.2	53.4
16.0	2.0	51.9	201.0	51.2	2.0	54.6	200.2	54.3
17.0	2.0	54.1	201.0	53.4	2.0	56.8	200.2	56.4
17.5	2.0	52.7	201.0	52.5	2.0	55.6	200.2	55.2
18.0	0.5	52.8	50.3	52.7	0.5	56.0	50.1	55.6
18.5	0.5	53.0	50.3	52.8	0.5	56.1	50.1	55.7
19.0	0.5	53.1	50.3	53.0	0.5	56.3	50.1	55.9
19.5	0.5	53.3	50.3	53.1	0.5	56.4	50.1	56.0
20.0	0.5	53.4	50.3	53.3	0.5	56.6	50.1	56.2
20.5	0.5	53.6	50.3	53.4	0.5	56.7	50.1	56.3
21.0	0.5	53.7	50.3	53.5	0.5	56.8	50.1	56.5
22.0	0.5	54.0	50.3	53.8	0.5	57.1	50.1	56.7
23.0	0.5	53.6	50.3	53.5	0.5	56.8	50.1	56.4
24.0	0.5	53.1	50.3	53.0	0.5	56.3	50.1	55.9

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

07/01/2009 3:43 PM

Time (hours)	James Dean Crushing - MDD +FSS - Demand (gpm)	James Dean Crushing - MDD +FSS - Pressure (psi)	Airport Busines Park #1 - MDD +FSS - Demand (gpm)	Airport Busines Park #1 - MDD +FSS - Pressure (psi)	Pellissiers trailer and office - MDD +FSS - Demand (gpm)	Pellissiers trailer and office - MDD +FSS - Pressure (psi)	Eternal Rest - MDD +FSS - Demand (gpm)	Eternal Rest - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	45.4	40.7	35.4	1.0	46.2	0.5	44.5
1.0	0.5	44.9	40.7	34.9	1.0	45.7	0.5	44.0
2.0	0.5	44.4	40.7	34.4	1.0	45.1	0.5	43.4
3.0	0.5	43.9	40.7	33.9	1.0	44.6	0.5	42.9
4.0	0.5	43.3	40.7	33.3	1.0	44.1	0.5	42.4
5.0	0.5	42.8	40.7	32.8	1.0	43.6	0.5	41.9
6.0	4.7	43.6	162.8	24.3	9.4	42.4	4.7	40.7
6.5	4.7	46.0	162.8	25.6	9.4	44.5	4.7	42.8
7.0	2.0	45.3	162.8	24.8	4.0	43.9	2.0	42.2
7.5	2.0	44.4	162.8	24.0	4.0	43.0	2.0	41.3
8.0	2.0	48.5	162.8	34.3	4.0	48.7	2.0	47.0
9.0	2.0	50.7	162.8	36.6	4.0	50.9	2.0	49.2
10.0	2.0	44.2	162.8	33.3	4.0	44.5	2.0	42.9
11.0	2.0	46.5	162.8	35.7	4.0	46.9	2.0	45.2
12.0	2.0	48.8	162.8	37.9	4.0	49.1	2.0	47.4
12.5	2.0	49.9	162.8	39.1	4.0	50.2	2.0	48.5
13.0	2.0	50.9	162.8	40.1	4.0	51.3	2.0	49.6
13.5	2.0	49.3	162.8	38.8	4.0	49.7	2.0	48.0
14.0	2.0	48.8	162.8	38.3	4.0	49.3	2.0	47.6
15.0	2.0	47.6	162.8	37.1	4.0	48.1	2.0	46.4
16.0	2.0	48.6	162.8	37.8	4.0	49.0	2.0	47.3
17.0	2.0	50.8	162.8	40.0	4.0	51.2	2.0	49.5
17.5	2.0	49.4	162.8	38.9	4.0	49.9	2.0	48.2
18.0	0.5	49.4	40.7	39.4	1.0	50.2	0.5	48.5
18.5	0.5	49.6	40.7	39.5	1.0	50.3	0.5	48.6
19.0	0.5	49.7	40.7	39.7	1.0	50.5	0.5	48.8
19.5	0.5	49.9	40.7	39.8	1.0	50.6	0.5	48.9
20.0	0.5	50.0	40.7	40.0	1.0	50.8	0.5	49.1
20.5	0.5	50.1	40.7	40.1	1.0	50.9	0.5	49.2
21.0	0.5	50.3	40.7	40.3	1.0	51.0	0.5	49.3
22.0	0.5	50.6	40.7	40.5	1.0	51.3	0.5	49.6
23.0	0.5	50.2	40.7	40.2	1.0	51.0	0.5	49.3
24.0	0.5	49.7	40.7	39.7	1.0	50.5	0.5	48.8

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

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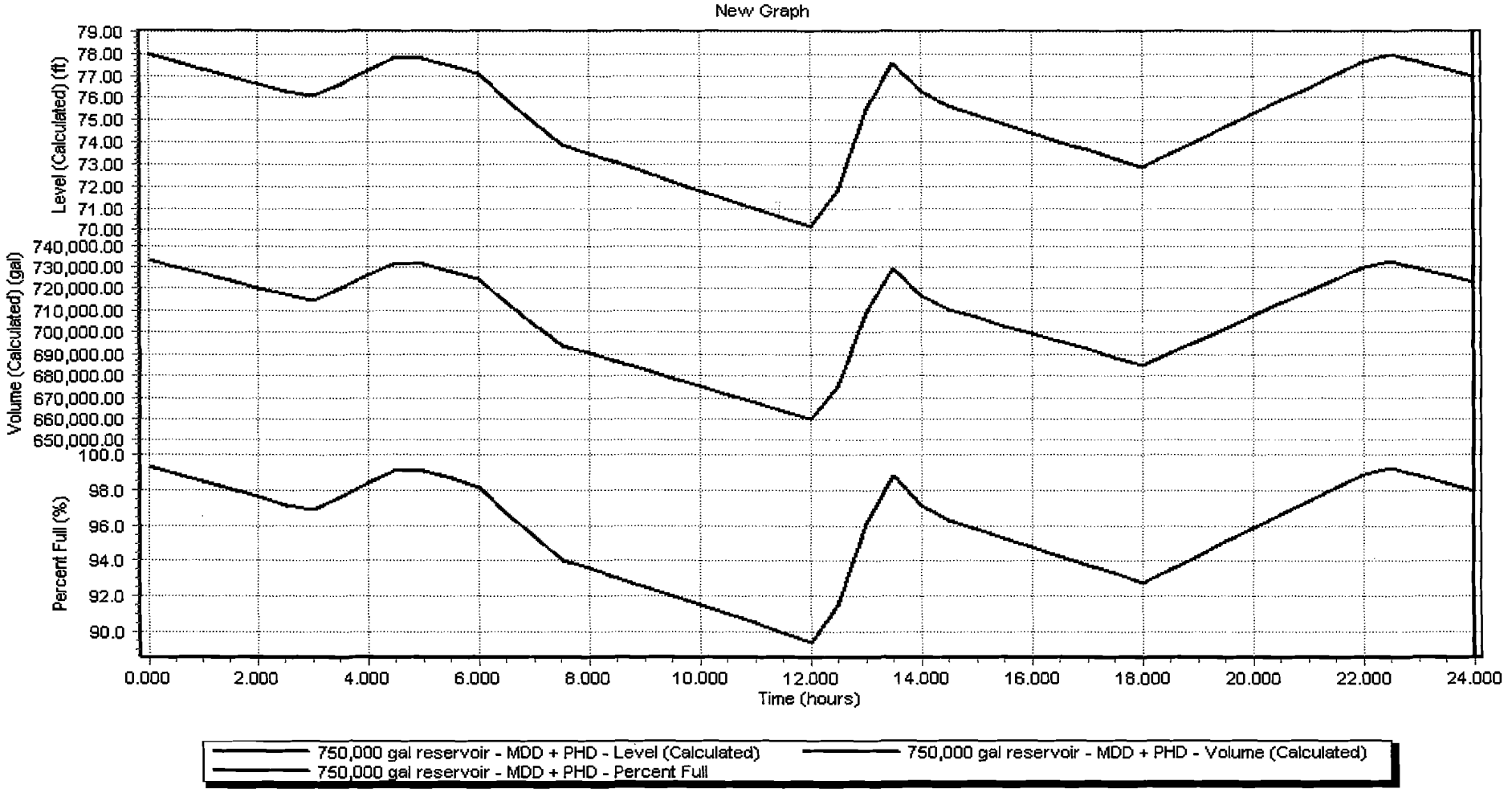
Time (hours)	Columbia Hills RV #2 - MDD +FSS - Demand (gpm)	Columbia Hills RV #2 - MDD +FSS - Pressure (psi)	BMI INC - MDD +FSS - Demand (gpm)	BMI INC - MDD +FSS - Pressure (psi)	Columbia Hills RV #1 - MDD +FSS - Demand (gpm)	Columbia Hills RV #1 - MDD +FSS - Pressure (psi)	Underground Specialties Trailer - MDD +FSS - Demand (gpm)	Underground Specialties Trailer - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	49.4	0.5	45.0	0.5	43.1	0.5	39.5
1.0	0.5	48.8	0.5	44.5	0.5	42.5	0.5	39.0
2.0	0.5	48.3	0.5	43.9	0.5	42.0	0.5	38.5
3.0	0.5	47.8	0.5	43.4	0.5	41.5	0.5	38.0
4.0	0.5	47.3	0.5	42.9	0.5	41.0	0.5	37.5
5.0	0.5	46.8	0.5	42.4	0.5	40.5	0.5	36.9
6.0	4.7	45.6	4.7	41.2	4.7	39.3	4.7	39.6
6.5	4.7	47.7	4.7	43.3	4.7	41.4	4.7	41.9
7.0	2.0	47.1	2.0	42.7	2.0	40.8	2.0	41.2
7.5	2.0	46.2	2.0	41.8	2.0	39.9	2.0	40.4
8.0	2.0	51.8	2.0	47.5	2.0	45.6	2.0	44.0
9.0	2.0	54.0	2.0	49.7	2.0	47.7	2.0	46.2
10.0	2.0	47.7	2.0	43.4	2.0	41.4	2.0	38.4
11.0	2.0	50.1	2.0	45.7	2.0	43.8	2.0	40.7
12.0	2.0	52.3	2.0	47.9	2.0	46.0	2.0	43.0
12.5	2.0	53.4	2.0	49.0	2.0	47.1	2.0	44.1
13.0	2.0	54.5	2.0	50.1	2.0	48.2	2.0	45.1
13.5	2.0	52.9	2.0	48.5	2.0	46.6	2.0	43.4
14.0	2.0	52.5	2.0	48.1	2.0	46.2	2.0	43.0
15.0	2.0	51.2	2.0	46.9	2.0	44.9	2.0	41.8
16.0	2.0	52.2	2.0	47.8	2.0	45.9	2.0	42.8
17.0	2.0	54.3	2.0	50.0	2.0	48.0	2.0	45.0
17.5	2.0	53.1	2.0	48.7	2.0	46.8	2.0	43.6
18.0	0.5	53.4	0.5	49.0	0.5	47.1	0.5	43.5
18.5	0.5	53.5	0.5	49.1	0.5	47.2	0.5	43.7
19.0	0.5	53.7	0.5	49.3	0.5	47.4	0.5	43.8
19.5	0.5	53.8	0.5	49.4	0.5	47.5	0.5	44.0
20.0	0.5	53.9	0.5	49.6	0.5	47.6	0.5	44.1
20.5	0.5	54.1	0.5	49.7	0.5	47.8	0.5	44.3
21.0	0.5	54.2	0.5	49.8	0.5	47.9	0.5	44.4
22.0	0.5	54.5	0.5	50.1	0.5	48.2	0.5	44.7
23.0	0.5	54.2	0.5	49.8	0.5	47.9	0.5	44.3
24.0	0.5	53.6	0.5	49.3	0.5	47.3	0.5	43.8

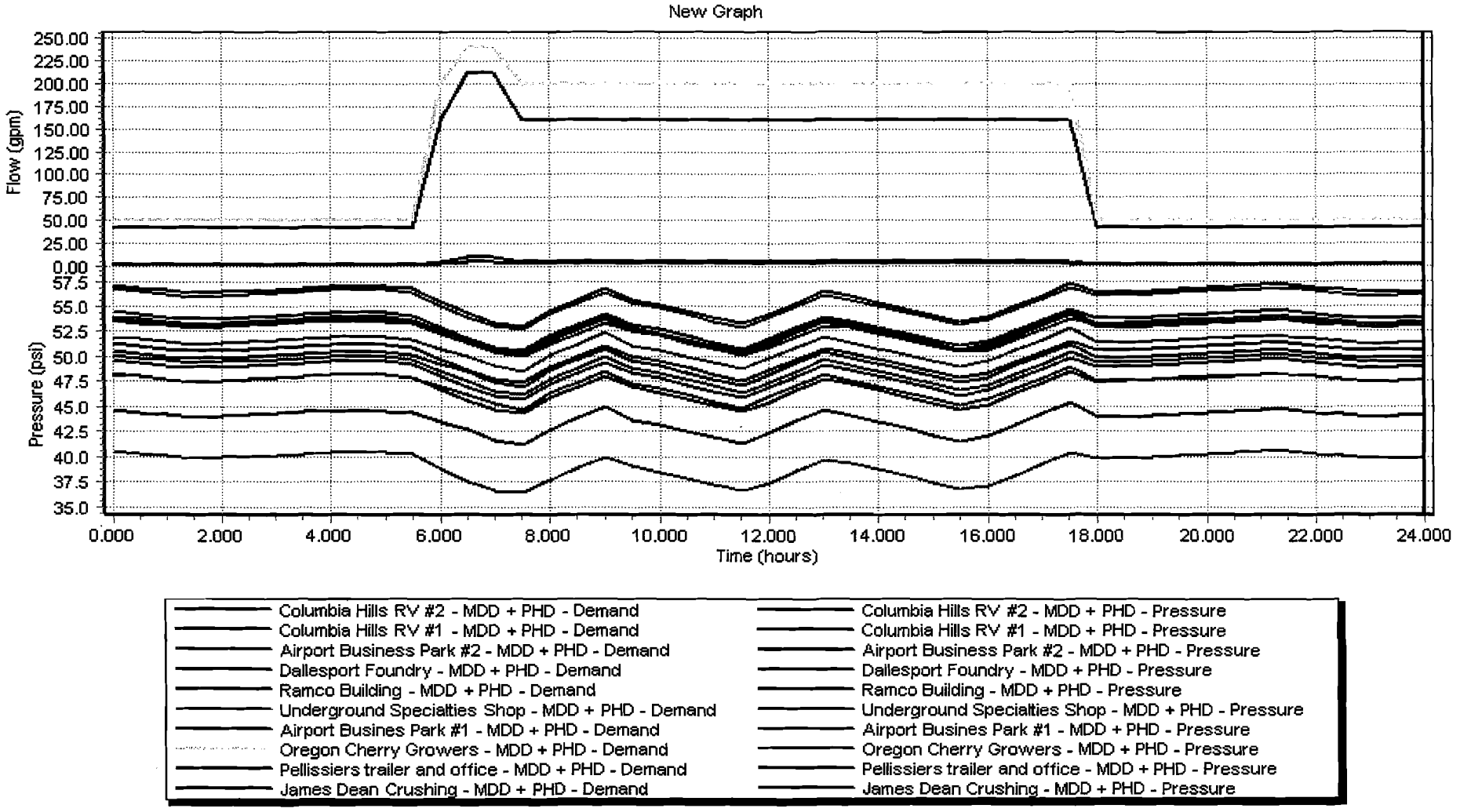
Time (hours)	Ramco Building - MDD +FSS - Demand (gpm)	Ramco Building - MDD +FSS - Pressure (psi)	Airport Business Park #2 - MDD +FSS - Demand (gpm)	Airport Business Park #2 - MDD +FSS - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**
0.0	0.5	48.5	40.7	35.4
1.0	0.5	48.0	40.7	34.9
2.0	0.5	47.5	40.7	34.4
3.0	0.5	47.0	40.7	33.9
4.0	0.5	46.4	40.7	33.3
5.0	0.5	45.9	40.7	32.8
6.0	4.7	48.3	162.8	24.3
6.5	4.7	50.5	162.8	25.6
7.0	2.0	49.8	162.8	24.8
7.5	2.0	48.9	162.8	24.0
8.0	2.0	53.1	162.8	34.6
9.0	2.0	55.3	162.8	36.8
10.0	2.0	47.3	162.8	33.4
11.0	2.0	49.6	162.8	35.7
12.0	2.0	51.8	162.8	37.9
12.5	2.0	52.9	162.8	39.1
13.0	2.0	54.0	162.8	40.1
13.5	2.0	52.3	162.8	38.8
14.0	2.0	51.9	162.8	38.3
15.0	2.0	50.7	162.8	37.1
16.0	2.0	51.7	162.8	37.8
17.0	2.0	53.8	162.8	40.0
17.5	2.0	52.5	162.8	38.9
18.0	0.5	52.5	40.7	39.4
18.5	0.5	52.7	40.7	39.5
19.0	0.5	52.8	40.7	39.7
19.5	0.5	53.0	40.7	39.8
20.0	0.5	53.1	40.7	40.0
20.5	0.5	53.3	40.7	40.1
21.0	0.5	53.4	40.7	40.3
22.0	0.5	53.7	40.7	40.5
23.0	0.5	53.3	40.7	40.2
24.0	0.5	52.8	40.7	39.7



Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

07/01/2009 3:43 PM

Time (hours)	750,000 gal reservoir - MDD + PHD - Level (Calculated) (ft)	750,000 gal reservoir - MDD + PHD - Volume (Calculated) (gal)	750,000 gal reservoir - MDD + PHD - Percent Full (%)
Column1	Column2	Column3	Column4
0.0	78.0	733,223.23	99.4
1.0	77.32	726,850.89	98.50
2.0	76.64	720,478.27	97.6
3.0	76.06	714,985.77	96.9
4.0	77.25	726,170.43	98.4
5.0	77.78	731,131.06	99.1
6.0	77.10	724,758.72	98.2
6.5	75.86	713,106.46	96.6
7.0	74.85	703,597.43	95.3
7.5	73.84	694,148.08	94.1
8.0	73.46	690,553.26	93.6
9.0	72.63	682,734.79	92.5
10.0	71.81	675,012.99	91.5
11.0	71.00	667,387.30	90.4
12.0	70.20	659,855.99	89.4
12.5	71.82	675,086.43	91.5
13.0	75.48	709,528.85	96.2
13.5	77.60	729,482.39	98.9
14.0	76.27	716,948.57	97.2
15.0	75.20	706,889.89	95.8
16.0	74.42	699,563.69	94.8
17.0	73.65	692,329.30	93.8
17.5	73.27	688,746.24	93.3
18.0	72.85	684,835.85	92.8
18.5	73.43	690,289.33	93.5
19.0	74.05	696,054.65	94.3
19.5	74.66	701,783.82	95.1
20.0	75.26	707,477.12	95.9
20.5	75.9	713,134.28	96.6
21.0	76.5	718,755.87	97.4
22.0	77.7	729893.5	98.9
23.0	77.6	729612.9	98.9
24.0	76.9	723240.3	98.0


New Graph
Flow (gpm)
250.00
225.00
200.00
175.00
150.00
125.00
100.00
75.00
50.00
25.00
0.00
Pressure (psi)
57.5
55.0
52.5
50.0
47.5
45.0
42.5
40.0
37.5
35.0
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (hours)
Columbia Hills RV #2 - MDD + PHD - Demand
Columbia Hills RV #1 - MDD + PHD - Demand
Airport Business Park #2 - MDD + PHD - Demand
Dallesport Foundry - MDD + PHD - Demand
Ramco Building - MDD + PHD - Demand
Underground Specialties Shop - MDD + PHD - Demand
Airport Busines Park #1 - MDD + PHD - Demand
Oregon Cherry Growers - MDD + PHD - Demand
Pellissiers trailer and office - MDD + PHD - Demand
James Dean Crushing - MDD + PHD - Demand
Columbia Hills RV #2 - MDD + PHD - Pressure
Columbia Hills RV #1 - MDD + PHD - Pressure
Airport Business Park #2 - MDD + PHD - Pressure
Dallesport Foundry - MDD + PHD - Pressure
Ramco Building - MDD + PHD - Pressure
Underground Specialties Shop - MDD + PHD - Pressure
Airport Busines Park #1 - MDD + PHD - Pressure
Oregon Cherry Growers - MDD + PHD - Pressure
Pellissiers trailer and office - MDD + PHD - Pressure
James Dean Crushing - MDD + PHD - Pressure

Time (hours)	Columbia Hills RV #2 - MDD + PHD - Demand (gpm)	Columbia Hills RV #2 - MDD + PHD - Pressure (psi)	Columbia Hills RV #1 - MDD + PHD - Demand (gpm)	Columbia Hills RV #1 - MDD + PHD - Pressure (psi)	Airport Business Park #2 - MDD + PHD - Demand (gpm)	Airport Business Park #2 - MDD + PHD - Pressure (psi)	Dallesport Foundry - MDD + PHD - Demand (gpm)	Dallesport Foundry - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	54.5	0.5	48.2	41.6	40.6	0.5	53.7
1.0	0.5	54.0	0.5	47.7	41.6	40.0	0.5	53.1
2.0	0.5	53.8	0.5	47.5	41.6	39.9	0.5	53.0
3.0	0.5	54.1	0.5	47.8	41.6	40.1	0.5	53.3
4.0	0.5	54.4	0.5	48.1	41.6	40.4	0.5	53.5
5.0	0.5	54.4	0.5	48.1	41.6	40.4	0.5	53.5
6.0	2.0	52.9	2.0	46.6	159.3	38.7	2.0	52.2
6.5	4.7	51.8	4.7	45.6	212.4	37.6	4.7	51.4
7.0	4.7	50.9	4.7	44.6	212.4	36.6	4.7	50.5
7.5	2.0	50.6	2.0	44.3	159.3	36.4	2.0	50.0
8.0	2.0	52.1	2.0	45.8	159.3	37.7	2.0	51.6
9.0	2.0	54.3	2.0	48.0	159.3	39.9	2.0	53.8
10.0	2.0	52.7	2.0	46.4	159.3	38.5	2.0	52.0
11.0	2.0	51.4	2.0	45.1	159.3	37.2	2.0	50.8
12.0	2.0	51.8	2.0	45.5	159.3	37.4	2.0	51.2
12.5	2.0	52.9	2.0	46.6	159.3	38.5	2.0	52.3
13.0	2.0	54.0	2.0	47.7	159.3	39.6	2.0	53.4
13.5	2.0	53.5	2.0	47.2	159.3	39.3	2.0	52.8
14.0	2.0	52.9	2.0	46.6	159.3	38.7	2.0	52.2
15.0	2.0	51.6	2.0	45.3	159.3	37.4	2.0	51.0
16.0	2.0	51.5	2.0	45.2	159.3	37.1	2.0	50.9
17.0	2.0	53.7	2.0	47.4	159.3	39.3	2.0	53.1
17.5	2.0	54.8	2.0	48.5	159.3	40.4	2.0	54.2
18.0	0.5	53.8	0.5	47.5	41.6	39.8	0.5	52.9
18.5	0.5	53.8	0.5	47.5	41.6	39.8	0.5	52.9
19.0	0.5	53.9	0.5	47.6	41.6	40.0	0.5	53.1
19.5	0.5	54.1	0.5	47.8	41.6	40.1	0.5	53.2
20.0	0.5	54.2	0.5	47.9	41.6	40.2	0.5	53.4
20.5	0.5	54.3	0.5	48.0	41.6	40.4	0.5	53.5
21.0	0.5	54.5	0.5	48.2	41.6	40.5	0.5	53.6
22.0	0.5	54.2	0.5	47.9	41.6	40.3	0.5	53.4
23.0	0.5	53.7	0.5	47.4	41.6	39.8	0.5	52.9
24.0	0.5	54.0	0.5	47.7	41.6	40.0	0.5	53.1

Time (hours)	Ramco Building - MDD + PHD - Demand (gpm)	Ramco Building - MDD + PHD - Pressure (psi)	Underground Specialties Shop - MDD + PHD - Demand (gpm)	Underground Specialties Shop - MDD + PHD - Pressure (psi)	Airport Busines Park #1 - MDD + PHD - Demand (gpm)	Airport Busines Park #1 - MDD + PHD - Pressure (psi)	Oregon Cherry Growers - MDD + PHD - Demand (gpm)	Oregon Cherry Growers - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	53.7	0.5	48.2	41.6	40.6	0.5	52.0
1.0	0.5	53.2	0.5	47.7	41.6	40.0	0.5	51.5
2.0	0.5	53.0	0.5	47.6	41.6	39.9	0.5	51.4
3.0	0.5	53.3	0.5	47.8	41.6	40.1	0.5	51.6
4.0	0.5	53.6	0.5	48.1	41.6	40.4	0.5	51.9
5.0	0.5	53.6	0.5	48.1	41.6	40.4	0.5	51.9
6.0	2.0	52.3	2.0	46.9	159.3	38.7	2.0	50.7
6.5	4.7	51.4	4.7	46.2	212.4	37.6	4.7	50.0
7.0	4.7	50.5	4.7	45.2	212.4	36.6	4.7	49.1
7.5	2.0	50.0	2.0	44.6	159.3	36.4	2.0	48.5
8.0	2.0	51.6	2.0	46.3	159.3	37.7	2.0	50.1
9.0	2.0	53.8	2.0	48.5	159.3	39.9	2.0	52.3
10.0	2.0	52.1	2.0	46.7	159.3	38.5	2.0	50.6
11.0	2.0	50.8	2.0	45.5	159.3	37.2	2.0	49.3
12.0	2.0	51.3	2.0	46.0	159.3	37.4	2.0	49.8
12.5	2.0	52.4	2.0	47.1	159.3	38.5	2.0	50.9
13.0	2.0	53.5	2.0	48.2	159.3	39.6	2.0	52.0
13.5	2.0	52.9	2.0	47.5	159.3	39.3	2.0	51.4
14.0	2.0	52.3	2.0	46.9	159.3	38.7	2.0	50.8
15.0	2.0	51.0	2.0	45.7	159.3	37.4	2.0	49.5
16.0	2.0	51.0	2.0	45.7	159.3	37.1	2.0	49.5
17.0	2.0	53.2	2.0	47.8	159.3	39.3	2.0	51.7
17.5	2.0	54.3	2.0	48.9	159.3	40.4	2.0	52.8
18.0	0.5	52.9	0.5	47.5	41.6	39.8	0.5	51.3
18.5	0.5	53.0	0.5	47.5	41.6	39.8	0.5	51.3
19.0	0.5	53.1	0.5	47.6	41.6	40.0	0.5	51.5
19.5	0.5	53.2	0.5	47.8	41.6	40.1	0.5	51.6
20.0	0.5	53.4	0.5	47.9	41.6	40.2	0.5	51.7
20.5	0.5	53.5	0.5	48.1	41.6	40.4	0.5	51.9
21.0	0.5	53.7	0.5	48.2	41.6	40.5	0.5	52.0
22.0	0.5	53.4	0.5	48.0	41.6	40.3	0.5	51.8
23.0	0.5	52.9	0.5	47.4	41.6	39.8	0.5	51.2
24.0	0.5	53.1	0.5	47.7	41.6	40.0	0.5	51.5

Time (hours)	Pellissiers trailer and office - MDD + PHD - Demand (gpm)	Pellissiers trailer and office - MDD + PHD - Pressure (psi)	James Dean Crushing - MDD + PHD - Demand (gpm)	James Dean Crushing - MDD + PHD - Pressure (psi)	Waste Water Treatment Facility - MDD + PHD - Demand (gpm)	Waste Water Treatment Facility - MDD + PHD - Pressure (psi)	Eternal Rest - MDD + PHD - Demand (gpm)	Eternal Rest - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	1.0	51.3	0.5	50.6	0.5	54.0	0.5	49.6
1.0	1.0	50.8	0.5	50.0	0.5	53.5	0.5	49.1
2.0	1.0	50.6	0.5	49.9	0.5	53.3	0.5	48.9
3.0	1.0	50.9	0.5	50.2	0.5	53.6	0.5	49.2
4.0	1.0	51.2	0.5	50.4	0.5	53.9	0.5	49.5
5.0	1.0	51.2	0.5	50.4	0.5	53.9	0.5	49.5
6.0	4.0	49.7	2.0	49.2	2.0	52.5	2.0	48.0
6.5	9.4	48.7	4.7	48.4	4.7	51.7	4.7	47.0
7.0	9.4	47.7	4.7	47.5	4.7	50.7	4.7	46.0
7.5	4.0	47.4	2.0	46.9	2.0	50.2	2.0	45.7
8.0	4.0	48.9	2.0	48.5	2.0	51.8	2.0	47.2
9.0	4.0	51.1	2.0	50.7	2.0	54.0	2.0	49.4
10.0	4.0	49.5	2.0	49.0	2.0	52.3	2.0	47.8
11.0	4.0	48.2	2.0	47.7	2.0	51.1	2.0	46.5
12.0	4.0	48.6	2.0	48.2	2.0	51.5	2.0	46.9
12.5	4.0	49.7	2.0	49.3	2.0	52.6	2.0	48.0
13.0	4.0	50.8	2.0	50.4	2.0	53.7	2.0	49.1
13.5	4.0	50.3	2.0	49.8	2.0	53.1	2.0	48.6
14.0	4.0	49.7	2.0	49.2	2.0	52.5	2.0	48.0
15.0	4.0	48.4	2.0	47.9	2.0	51.3	2.0	46.7
16.0	4.0	48.3	2.0	47.9	2.0	51.2	2.0	46.6
17.0	4.0	50.5	2.0	50.1	2.0	53.4	2.0	48.8
17.5	4.0	51.6	2.0	51.2	2.0	54.5	2.0	49.9
18.0	1.0	50.6	0.5	49.8	0.5	53.2	0.5	48.9
18.5	1.0	50.6	0.5	49.8	0.5	53.3	0.5	48.9
19.0	1.0	50.7	0.5	50.0	0.5	53.4	0.5	49.0
19.5	1.0	50.9	0.5	50.1	0.5	53.5	0.5	49.2
20.0	1.0	51.0	0.5	50.3	0.5	53.7	0.5	49.3
20.5	1.0	51.2	0.5	50.4	0.5	53.8	0.5	49.5
21.0	1.0	51.3	0.5	50.5	0.5	54.0	0.5	49.6
22.0	1.0	51.0	0.5	50.3	0.5	53.7	0.5	49.4
23.0	1.0	50.5	0.5	49.8	0.5	53.2	0.5	48.8
24.0	1.0	50.8	0.5	50.0	0.5	53.4	0.5	49.1

Darrin O. Eckman, P.E.
Ken Thiemann, E.I.T.

07/01/2009 3:43 PM

Time (hours)	DIP Entry Irrigation - MDD + PHD - Demand (gpm)	DIP Entry Irrigation - MDD + PHD - Pressure (psi)	BMI INC - MDD + PHD - Demand (gpm)	BMI INC - MDD + PHD - Pressure (psi)	Dallesport Industrial Park #2 - MDD + PHD - Demand (gpm)	Dallesport Industrial Park #2 - MDD + PHD - Pressure (psi)	Dallesport Industrial Park #1 - MDD + PHD - Demand (gpm)	Dallesport Industrial Park #1 - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
0.0	0.5	57.1	0.5	50.1	50.0	53.9	50.0	56.8
1.0	0.5	56.6	0.5	49.6	50.0	53.3	50.0	56.2
2.0	0.5	56.4	0.5	49.4	50.0	53.2	50.0	56.1
3.0	0.5	56.7	0.5	49.7	50.0	53.4	50.0	56.3
4.0	0.5	57.0	0.5	50.0	50.0	53.7	50.0	56.6
5.0	0.5	57.0	0.5	50.0	50.0	53.7	50.0	56.6
6.0	2.0	55.4	2.0	48.5	200.0	52.3	200.0	55.0
6.5	4.7	54.3	4.7	47.5	240.0	51.4	240.0	54.0
7.0	4.7	53.4	4.7	46.5	240.0	50.4	240.0	53.0
7.5	2.0	53.1	2.0	46.2	200.0	50.0	200.0	52.7
8.0	2.0	54.6	2.0	47.7	200.0	51.2	200.0	54.2
9.0	2.0	56.8	2.0	49.9	200.0	53.4	200.0	56.4
10.0	2.0	55.2	2.0	48.3	200.0	52.0	200.0	54.8
11.0	2.0	53.9	2.0	47.0	200.0	50.8	200.0	53.5
12.0	2.0	54.2	2.0	47.4	200.0	50.9	200.0	53.9
12.5	2.0	55.3	2.0	48.5	200.0	52.0	200.0	55.0
13.0	2.0	56.4	2.0	49.6	200.0	53.1	200.0	56.1
13.5	2.0	56.0	2.0	49.1	200.0	52.9	200.0	55.6
14.0	2.0	55.4	2.0	48.5	200.0	52.3	200.0	55.0
15.0	2.0	54.1	2.0	47.2	200.0	51.0	200.0	53.7
16.0	2.0	53.9	2.0	47.1	200.0	50.5	200.0	53.6
17.0	2.0	56.1	2.0	49.3	200.0	52.7	200.0	55.8
17.5	2.0	57.2	2.0	50.4	200.0	53.8	200.0	56.9
18.0	0.5	56.4	0.5	49.4	50.0	53.1	50.0	56.0
18.5	0.5	56.4	0.5	49.4	50.0	53.1	50.0	56.0
19.0	0.5	56.5	0.5	49.5	50.0	53.2	50.0	56.2
19.5	0.5	56.7	0.5	49.7	50.0	53.4	50.0	56.3
20.0	0.5	56.8	0.5	49.8	50.0	53.5	50.0	56.4
20.5	0.5	57.0	0.5	50.0	50.0	53.7	50.0	56.6
21.0	0.5	57.1	0.5	50.1	50.0	53.8	50.0	56.7
22.0	0.5	56.9	0.5	49.9	50.0	53.6	50.0	56.5
23.0	0.5	56.3	0.5	49.3	50.0	53.1	50.0	56.0
24.0	0.5	56.6	0.5	49.6	50.0	53.3	50.0	56.2

Time (hours)	Underground Specialties Trailer - MDD + PHD - Demand (gpm)	Underground Specialties Trailer - MDD + PHD - Pressure (psi)
Column1	**Column2**	**Column3**
0.0	0.5	44.7
1.0	0.5	44.2
2.0	0.5	44.0
3.0	0.5	44.3
4.0	0.5	44.6
5.0	0.5	44.6
6.0	2.0	43.4
6.5	4.7	42.6
7.0	4.7	41.7
7.5	2.0	41.1
8.0	2.0	42.7
9.0	2.0	44.9
10.0	2.0	43.2
11.0	2.0	41.9
12.0	2.0	42.4
12.5	2.0	43.5
13.0	2.0	44.6
13.5	2.0	44.0
14.0	2.0	43.4
15.0	2.0	42.1
16.0	2.0	42.1
17.0	2.0	44.3
17.5	2.0	45.4
18.0	0.5	43.9
18.5	0.5	44.0
19.0	0.5	44.1
19.5	0.5	44.2
20.0	0.5	44.4
20.5	0.5	44.5
21.0	0.5	44.7
22.0	0.5	44.4
23.0	0.5	43.9
24.0	0.5	44.1

Appendix H

Port Correspondence

Water System Plan Submittal Form

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

Dallesport Industrial Park	00238	Klickitat County Port District #1
1. Water System Name	2. PWS ID# or Owner ID#	3. System Owner Name
Marc Thornsbury	509-493-1655	Executive Director
4. Contact Name for Utility	Phone Number	Title
154 East Bingen Point Way Suite A	Bingen	WA 98605
Contact Address	City	State Zip
Tenneson Engineering Corporation, Darrin Eckman	541-296-9177	Project Manager
5. Project Engineer	Phone Number	Title
3313 West 2nd Street, Suite 100	The Dalles	OR 97058
Project Engineer Address	City	State Zip
6. Billing Contact Name (required if not the same as #4)	Billing Phone Number	Billing Fax Number
Billing Address	City	State Zip

6.	How many services are presently connected to the system?	17
7.	Is the system expanding? (seeking to extend service area or increase number of approved connections)	XX Yes ☐ No
8.	If number of services is expected to increase, how many new connections are proposed in the next six years?	38 (364 ERUs)
9.	If the system is private-for-profit, is it regulated by the State Utilities and Transportation Commission?	☐ Yes XX No
10.	Is the system located in a Critical Water Supply Service Area?	☐ Yes XX No
11.	Is the system a customer of a wholesale water purveyor?	☐ Yes XX No
12.	Will the system be pursuing additional water rights from the State Department of Ecology in the next ten years?	XX Yes ☐ No
13.	Is the system proposing a new intertie?	☐ Yes XX No
14.	Do you have projects currently under review by the Department of Health?	☐ Yes XX No
15.	Are you requesting distribution main project report and construction document submittal exception, and if so, does the WSP contain standard construction specifications for distribution mains?	XX Yes ☐ No
16.	Are you requesting distribution related project report and construction document submittal exception, and if so, does the WSP contain distribution facilities design and construction standards, including internal engineering review procedures?	XX Yes ☐ No
17.	Have you sent copies of the draft WSP to adjacent purveyors and the County for their review and comment?	XX Yes ☐ No

If answer to question 17 is yes, list adjacent utilities/entities that have received a copy of the draft WSP: Dallesport Water Association, Klickitat County Public Utility District, Klickitat County.

Is this plan: ☐ an Initial Submittal XX a Revised Submittal

Please enclose the following number of copies of the WSP:

2 copies for Department of Health
1 copy for Department of Ecology
1 additional copy if you answered "yes" to question 9

3 Copies Required

3 Total copies attached

Please return completed form to the Office of Drinking Water regional office checked below.

☐ **Northwest Drinking Water Operations**	☐ **Southwest Drinking Water Operations**	✻✻ **Eastern Drinking Water Operations**
Department of Health	**Department of Health**	**Department of Health**
20435 72nd Ave. S, Ste 200	**PO Box 47823**	**1500 W. Fourth Ave, Suite 305**
Kent, WA 98032-2358	**Olympia, WA 98504-7823**	**Spokane, WA 99201**
(253) 395-6750	**(360) 236-3030**	**(509) 456-3115**

For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

WSP Checklist

	CONTENT DESCRIPTION	MUST BE SUBMITTED (✓)*	PAGE # IN WSP
Chapter 1	**DESCRIPTION OF WATER SYSTEM**		
	Ownership and Management	(✓)	1-1
	System Background	(✓)	1-2
	Inventory of Existing Facilities	(✓)	1-3
	Related Plans (e.g., CWSP)	(✓)	1-4
	Existing and Future Service Area and Characteristics	(✓)	1-5
	Agreement	( )	
	Map	(✓)	Fig. 2
	Service Area Policies (Including SMA Policy and Conditions of Service	(✓)	1-5
Chapter 2	**BASIC PLANNING DATA**		
	Current Population, Number of Service Connections, and ERUs	(✓)	2-1
	Current Water Use and Data Reporting	(✓)	2-1
	Current and Future Land Use	(✓)	2-2
	Future Population, Number of Service Connections, and ERUs (6 and 20 years)	(✓)	2-3
	Future Water Use (Demand Forecast for 6 and 20 years)	(✓)	2-5
Chapter 3	**SYSTEM ANALYSIS**		
	System Design Standards	(✓)	3-1
	Water Quality Analysis	(✓)	3-3
	System Description and Analysis	(✓)	3-4
	Source	(✓)	3-4
	Treatment	(✓)	3-6
	Storage	(✓)	3-7
	Distribution System/Hydraulics	(✓)	3-9
	Summary of System Deficiencies	(✓)	3-16
	Analysis of Possible Improvement Projects	(✓)	3-11
Chapter 4	**CONSERVATION PROGRAM AND SOURCE OF SUPPLY ANALYSIS**		
	Conservation Program	(✓)	4-1
	Water Right Evaluation	(✓)	5-1
	Source of Supply Analysis	( )	
	Water Supply Reliability Analysis with Water Shortage Response Plan	(✓)	6-6
	Interties	( )	
Chapter 5	**SOURCE WATER PROTECTION (CHECK ONE OR BOTH)**		
	Wellhead Protection Program	(✓)	5-2
	Watershed Control Program	( )	
Chapter 6	**OPERATION AND MAINTENANCE PROGRAM**		
	Water System Management and Personnel	(✓)	6-1
	Operator Certification	(✓)	6-1
	Routine Operating Procedures, Preventive Maintenance and Record Keeping	(✓)	6-1
	Water Quality Sampling Procedures (Comprehensive Monitoring Plan)	(✓)	6-2
	Coliform Monitoring Plan	(✓)	6-9
	Emergency Response Program	(✓)	6-4
	Safety Procedures	(✓)	6-10
	Cross-connection Control Program	(✓)	6-8
	Customer Complaint Response Program	( )	
	Summary of O & M Deficiencies	(✓)	6-6
Chapter 7	**DISTRIBUTION FACILITIES DESIGN AND CONSTRUCTION STANDARDS**		
	Standard Construction Specification for Distribution Mains	(✓)	7-1
	Design and Construction Standards for Distribution Related Projects, including Internal Engineering Review Procedures (i.e., Alternative Review)	(✓)	7-1
Chapter 8	**IMPROVEMENT PROGRAM**		
	Selection and Justification of Proposed Capital Improvements Projects	(✓)	8-1
	Selection and Justification of Non-Capital Projects	( )	
	Improvement Schedule (6 and 20 years)	(✓)	8-4
Chapter 9	**FINANCIAL PROGRAM**		
	Identification of Cost of Capital and Non-Capital Improvements	(✓)	9-1
	Identification of Annual O & M Expenses	(✓)	9-1
	Six-Year Balanced Operating Budget	(✓)	9-5
	Discussion of Water Rates Including Proposed Increases and Rate Structures	(✓)	9-4
	Financial Viability Test (for systems serving less than 1000)	(✓)	9-4
	UTC Financial Viability and Feasibility Test (for UTC regulated systems)	( )	
Chapter 10	**MISCELLANEOUS DOCUMENTS**		
	County/Adjacent Utility Correspondence	(✓)	10-1
	State Environmental Policy Act (SEPA) Determination	(✓)	10-2
	Agreements	(✓)	10-1
	Satellite Management Program	( )	

*At the pre-plan conference, a formal determination will be made on what must be submitted.

DOH COMMENT RESPONSE FORM

Dallesport Industrial Park PWS #00238 05.26.10

DOH Comment No.	DOH Comment	Water System Response	Page Number of Response	Other Water System Comments
1.	On Page 1-4 please delete the last sentence from paragraph e)...	We have eliminated this sentence. The Port does have a meter maintenance / calibration plan in place and has replaced the source meters and is working on refurbishment and replacement of the customer meters.	1-4	
2.	As stated earlier, the Wellhead Protection Plan will need to be updated and included in the Plan.	Utilizing the Wellhead Protection Program provided in the 2003 Water System Plan, Tenneson Engineering has updated the possible contamination sources and has incorporated the Susceptibility Assessments, Well Logs, CFRs and other elements of the Wellhead Protection Program into a Wellhead Protection Plan in Appendix I.	5-3 and Appendix I	
3.	Appendix H – Please make sure the latest agreement...	The March 6, 2007, Special Agreement is the latest agreement in place between the Port and the Columbia Hills RV Park. This Agreement may be reviewed at the discretion of the Port Commission on an annual basis. There is only one page to this Special Agreement.	Appendix H	
4.	I need a signed Consistency Statement from Klickitat County Planning.	A Consistency Statement from both the Klickitat County Planning Department and also the Klickitat County Natural Resources Department regarding WRIA are provided in Appendix H.	Appendix H	
5.	As outlined in DOH 06/16/2009 email, the WUE Chapter needs to be completed also.	The Port intends to use the Water Use Efficiency Program and conservations measures as outlined in Section 4.5. Pursuant to Appendix K, the Water Use Efficiency Guide Book, they have set water saving goals as outlined on Page 4-4, Paragraph 2. They have identified water saving measures to meet goals as indentified on Page 4-4, Paragraph 3. They have identified how to evaluate,	4-4, 4-5, 4-6	

		report and manage water loss as identified on Page 4-5, Paragraph 1. They have educated customers about water use efficiency as identified on Page 4-4, Paragraph 3 and 4. They have installed consumption meters on all services as identified on Page 4-5, Paragraph 2. The Port intends to evaluate the Water Use Efficiency Programs effectiveness annually with the intention of reducing the unaccounted for volume to no more than 10% over the next 6 year planning cycle as identified on Page 4-6, Paragraph 2. In addition, they intend to report their success annually to all customers, through either a quarterly billing or a standalone document as identified on Page 4-6, Paragraph 3.		
6.	Update DOH phone numbers in the Plan because we have moved.	We have updated the DOH contact phone numbers located within the Emergency Response Plan with the current phone numbers.	Appendix L	
7.	Resolve the Service Area overlap.	The Service Area overlap is a Future Service Area Boundary around the proposed Airport Business Park. This area is identified both in the Dallesport Water District Water System Plan and also in the Port of Klickitat Dallesport Industrial Park Water System Plan as being a Future Service Area. Neither of these Water Systems have the exclusive right to serve and, therefore, as identified in Section 10.2, at such time when this area requests service, the Dallesport Water District and the Port of Klickitat will discuss terms for the service and preferred provider in this area.	10-1	
8.	Did you get a copy of the letter from the Fire Marshal agreeing to the...	Both the local fire district, Fire District #6, and also the local fire authority, the Klickitat County Building Department, have responded to the nesting of fire storage and also to the fire flow requirements. The letters from both organizations are included in Appendix H. Both organizations agree to nesting of the standby and fire suppression storage with the larger of the two volumes being the minimum available and also to a 1,500 gallon per minute fire flow for a 2 hour duration.	Appendix H	

9.	The language in Chapter 7, where the system is requesting a waiver for distribution related projects...	We have modified this paragraph to indicate that the Port still requests a Document Submittal Exception for distribution related projects. All distribution related projects will be designed, constructed, inspected and approved by a Washington State Registered Professional Engineer and/or an outside consultant will also review the plans for conformance with Port construction standards and specifications as found in Appendix D. Other forms of projects such as source development, transmission, storage, booster pump, etc. will be reviewed by the Port and their consultant with final approval coming from the Washington State Department of Health.	7-1	
10.	The Wellhead Protection Program was noted as not being complete...	Utilizing the Wellhead Protection Program provided in the 2003 Water System Plan, Tenneson Engineering has updated the possible contamination sources and has incorporated the Susceptibility Assessments, Well Logs, CFRs and other elements of the Wellhead Protection Program into a Wellhead Protection Plan in Appendix I.	5-3 and Appendix I	

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
1500 West 4th Avenue, Suite 305 • Spokane, Washington 99204
FAX: (509) 456-2997

May 16, 2008

Jared Ladwig
Dallesport Industrial Park
154 E Bingen Point Way #A
Bingen, WA 98605

Subject: Dallesport Industrial Park; PWS ID# 002385; Klickitat Co.
Water System Plan; DOH Project #08-0215; **DOH COMMENTS**

Dear Mr. Ladwig:

Thank you for providing the draft Water System Plan (WSP), received in this office on February 19, 2008. Please address the following comments so that we can issue a final approval of the plan:

Chapter 1 – Description of Water System

1. Please explain the temporary agreement with Columbia Hills RV Park. When does this agreement expire?

2. Please update the Water Facilities Inventory (WFI). The information provided in the plan must be consistent with the information on the WFI.

3. On Page 1-6, please provide a Duty to Serve Statement per RCW 43.20.260. Describe how the Dallesport Industrial Park responds to requests for water service including:
   a. How requests for service are processed and timeline for processing requests.
   b. How the Dallesport Industrial Park determines the water system's capacity is adequate to supply new services (including sufficient water rights).
   c. Conditions of a non-technical nature, which may affect the Dallesport Industrial Park's ability to provide new water service (annexation procedures, water rights issues, local ordinances, etc.).
   d. Dallesport Industrial Park procedures for granting or requesting extensions of time to complete a water service related project.
   e. Describe the procedure for handling disputes and appeals when water service requests are denied.

Chapter 2 – Planning Data

4. The WSP states meters will be replaced on a regular interval. Provide a schedule showing when all of the source and service meters will be replaced.

5. The plan shows a large variation in the Distribution System Leakage (DSL), between 70% and 8.5%. Also, the average over the last eight years (36%) is higher than the average over the last three years (20.2%). Identify whether a change in the operation, management, procedures, policies, equipment, or a combination of these examples explains the significant reduction in the DSL. As well as, whether the system expects the reduced DSL (actual or average) will be typical of the system's future water use.

6. Please explain the annual usage of water supplied to other systems.

Chapter 3 – System Analysis

7. Re-evaluate the analysis to show whether there is a significant impact from the recent decisions made by the airport and the developer(s) of the residential lots and golf course.

8. Include a summary showing the limiting factor for the water system, as well as, the total number of approved connections possible. Using a table format, the system can see the improvements and which order they must be completed to continue increasing the total number of approved connections. The order begins with the critical limiting factor affecting growth, such as source, storage and water rights (Qa and Qi).

9. Provide a document or agreement with the governing body of the airport identifying a set of procedures or conditions for using the airport well and include which system will complete the source approval process for the well.

10. Provide the comment letter from the Local Fire Authority, responding to the December 26, 2007, correspondence letter sent by Tenneson Engineering Corporation on behalf of the Port of Klickitat.

11. Complete a diagram for the old and proposed new reservoir showing the storage volumes and elevations shown in the enclosed Figure 9-1 from the Water System Design Manual.

Chapter 4 – Conservation & Source Supply Analysis

12. The Dallesport Industrial Park water system is included in those systems that must develop and implement a water use efficiency program that includes the following:

    - Description of existing program.
    - Description of chosen water use efficiency goals and the process used to select the measure.

- Evaluation of efficiency measures for cost-effectiveness (benefits exceed costs).
- Current implementation of at least 1 water use efficiency measure and estimate projected water savings and the evaluation process to be used to measure effectiveness.
- Description and evaluation of proposed water use efficiency measures for the next six years with a schedule and budget.
- Description of consumer education activities.
- Description of water distribution leakage per WAC 246-290-820 for the last six years recorded in annual percent and volume.

Please see the enclosed document titled *Water Use Efficiency Guidebook*, to assist you in adding this to the Water System Plan, Chapter 4.

13. A not-inconsistent determination is required from Klickitat County Planning and from the Klickitat WRIA #30. The forms are enclosed to assist you.

14. The plan identifies an unaccounted for water percentage that is higher than the new standard for distribution system leakage of 10%. Please address this by submitting a water loss control plan section with an implementation schedule that includes:
    - A budget for funding the water loss control plan
    - Description of technical or economic concerns that might affect the system's ability to implement a program for water loss.
    - Assessment of data accuracy and data collection procedures
    - Identification of field activities for leak repair or meter maintenance within 12 months of identification of the loss percentage.

15. Provide a schedule for implementing performance reporting under the Water Use Efficiency Rule. Dallesport Industrial Park is included with those systems under 1,000 connections, which begin performance reporting on water use efficiency in July of 2009.

16. Include legal descriptions for the locations of the wells in section 4.1.

17. The Airport water rights cannot be included in the Dallesport Industrial Park evaluation until the Dallesport Industrial Park actually acquires them.

18. Please fill out and return the enclosed Capacity Table.

19. Identify all the current interties the Dallesport Industrial Park uses to provide emergency or wholesale water to existing water systems.

Chapter 5 – Source Water Protection

20. Provide a Wellhead protection map for Well #2 (S02).

Chapter 6 - Operation & Maintenance Program

21. Please include the operator certification in this chapter.

22. List and describe the system's routine operating and preventive maintenance procedures.

23. Complete an Emergency Program (refer to the enclosed guidance document).

24. Include official adoption of the Cross Connection Control Program.

Chapter 7 – System Design Standards

25. The exception from departmental review and approval for the construction of distribution system related project will require:

    a. A licensed Professional Engineer on staff or a copy of the signed contract with the engineer who will review and approve the construction documents and reports referenced in Appendix D, Section 1.1. Please note the design engineer cannot review his own work.

    b. Provide design diagrams showing the typical construction for the components of the distribution related projects including but not limited to burial of the pipes, valves, hydrants, thrust blocking, bedding material, and pipe crossings.

    c. Include a narrative copy of the disinfection, leak, and pressure testing procedures, as well as, a blank copy of the reports contractors will use to certify the projects meet the water system's performance standards.

Chapter 9 – Financial Program

26. Include official adoption of the Cross Connection Control Program.

27. Please include the reserve accounts in the budget.

28. Please include evaluation of an affordable rate structure that encourages water demand efficiency.

End of Comments

A copy of the review letter dated April 24, 2008 from the Department of Ecology is enclosed. Please address any comments received from Ecology in the second draft submittal.

Per DOH policy, there is a fee assessed for the review of Water System Plans. Payment for our review is due at this time and an invoice in the amount of $1,206.00 has been enclosed.

Please complete the DOH comment response form and submit it along with 3 copies of your revised plan. Your revised plan is due by August 7, 2008.

Thank you again for submitting your draft Water System Plan for review. If you have any comments concerning this review, please contact Andy Cervantes at (509) 456-4430 or Christine Collins at (509) 456-2457.

Sincerely,

Andres R. Cervantes, PE
Regional Engineer
Office of Drinking Water
Division of Environmental Health

Christine Collins
Regional Planner
Office of Drinking Water
Division of Environmental Health

Enclosures: Invoice
Capacity Table
Consistency Checklist
Dept. of Ecology letter dated April 24, 2008
Water Use Efficiency Guidebook
Emergency Response Planning Guide
DOH Comment Response Form

cc: Klickitat Co. Health Dept.
Darren Eckman, P.E., Tenneson Engineering Corp.
Carol Mortenson, Dept. of Ecology – Central Regional Office
Klickitat County Planning

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
15 W Yakima Ave, Ste 200 • Yakima, WA 98902-3452 • (509) 575-2490

April 24, 2008

Jared Ladwig
Dallesport Industrial Park
154 E Bingen Point Way #A
Bingen WA 98605

Re: Dallesport Industrial Park Water System Plan (WSP)

Thank you for the opportunity to review and comment on the Dallesport Industrial Park (Port) Water System Plan (WSP) which the Department of Ecology (Ecology) received in our office on February 22, 2008. Based on my review of your submittal, I have the following comments.

1. The current water source is from two wells. Other components of the Port's water system includes one reservoir, a fire booster pump station, a fire suppression distribution system, a potable distribution system, and approximately three miles of pipe.

2. The Port's current water system serves 17 separate active connections, primarily commercial/industrial accounts. These are non-residential connections. The water use of the Port's 17 connections is equivalent to that of approximately 61 single-family homes (ERU).
   a. **"Equivalent residential unit (ERU)"** means a system-specific unit of measure used to express the amount of water consumed by a typical full-time single family residence.

3. According to RCW 90.03.015(4), municipal water supply purposes mean a beneficial use of water for residential purposes through 15 or more residential service connections. Until the water usage for the above system actually serves 15 or more residential service connections, the purpose of use is community domestic supply. When 15 residential connections are served, the water right purpose will become, by operation of law, a municipal water supply right.

4. At this time this water system does not qualify as a Municipal Water System as defined in RCW 90.03.015. Ecology, therefore, has no comments on the water system as it exists at this time.

Feel free to contact me at 509-454-4256 if you have questions. There is an answering system at that number to cover when I am away from my desk.

Sincerely,

Carol Mortensen

Carol Mortensen
Water Resources Program

CM:gg/080437
cc: Christine Collins, Department of Health, Division of Drinking Water, Spokane

Local Government Consistency Review Checklist

A consistency review between DOH planning and engineering documents and adopted comprehensive plans and development regulations is required in certain situations. This checklist may be used to document the consistency review as required in WAC 246-290-108. A consistency review is required for each local government with jurisdiction over the applicable service area.

Water System Name: Dallesport Industrial Park PWS ID: 00238

Planning Document Title: Water System Plan Plan Date: June 2009

Local Government with Jurisdiction: Klickitat County - Natural Resources Dept.

Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
The applicable service area is consistent with the land use and zoning in the adopted comprehensive plan and adopted development regulations.	1-5	Yes
For Water System Plans: The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection was used, the alternative growth projection and methodology proposed is acceptable based on explanation given.	2-2 & 2-3	Yes
For Water System Plans: Provisions of water service for new service connections are consistent with the adopted comprehensive plan and adopted development regulations.	1-5 & 1-6	Yes
For city-owned systems only: All utility service extension ordinances regarding water service are included in the plan. These policies are consistent with the adopted comprehensive plan and adopted development regulations.	Not Applicable	
Other relevant elements related to water supply (as determined by DOH) is consistent with the adopted comprehensive plan and adopted development regulations.		
Where the local government with jurisdiction did not provide a Consistency Review: Provide documentation of efforts taken and amount of time provided. 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 5/25/10 Date

Joe Sheridan, Senior Planner Klickitat County
Printed Name, Title, & Jurisdiction

****For any issues of inconsistency, please document the inconsistency, including the citation from the comprehensive plan or development regulation. Provide direction on how this inconsistency can be resolved. ****

Consistency Review Guidance

This checklist may be used to meet the requirements of WAC 246-290-108.

For water system plans, a consistency review is required for the retail service area and any additional areas where a municipal water supplier wants to expand their water right's place of use.

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

For engineering documents, a consistency review is only required for areas where a municipal water supplier wants to expand its water right's place of use. This is only allowed for non-community water systems.

Documenting consistency:

- Provide a copy of the adopted land use/zoning map that corresponds to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map.
- Include a copy of service area policies on how new water service will be provided to new customers. Cities and towns must include all service extension ordinances.
- Include a copy of the growth projections that corresponds to the service area. 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.
- Include any other portions of comprehensive plans or development regulations which are related to water supply.

Local Government Consistency Review Checklist

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For Water System Plans: Provisions of water service for new service connections are consistent with the adopted comprehensive plan and adopted development regulations.	1-5 & 1-6	
For city-owned systems only: All utility service extension ordinances regarding water service are included in the plan. These policies are consistent with the adopted comprehensive plan and adopted development regulations.	Not Applicable	
Other relevant elements related to water supply (as determined by DOH) is consistent with the adopted comprehensive plan and adopted development regulations.	Page 1-4 Section 1.5b	Yes
Where the local government with jurisdiction did not provide a Consistency Review: Provide documentation of efforts taken and amount of time provided. 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 5/25/10

David McClure Director Klickitat County Natural Resources Dept.

Printed Name, Title, & Jurisdiction

****For any issues of inconsistency, please document the inconsistency, including the citation from the comprehensive plan or development regulation. Provide direction on how this inconsistency can be resolved. ****

Consistency Review Guidance

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- Include a copy of the growth projections that corresponds to the service area. 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.
- Include any other portions of comprehensive plans or development regulations which are related to water supply.

SPECIAL AGREEMENT

BY

KLICKITAT COUNTY PORT DISTRICT NO. 1,
A MUNICIPAL CORPORATION OF THE STATE OF WASHINGTON:

AN EXTENSION OF A SPECIAL AGREEMENT WITH COLUMBIA HILLS R.V. PARK

The Klickitat County Port District No. 1 approved on October 19, 1994, September 3, 1996 and May 22, 2001, special agreements to supply Columbia Hills R.V. Park (Eiesland) with temporary use of potable water from the Dallesport Industrial Park's water supply.

Jeff and Dennis Eiesland, Columbia Hills R.V. Park, have advised the Port that the Department of Ecology (DOE) have not yet granted them a water permit as of February 20, 2007. The Commission moves and approves granting an extension of the special agreement to supply water to their business on an "as needed" basis pending DOE's issuance of a water permit. All terms and conditions to remain the same as in the original agreement. The Port Commission may review this agreement on a yearly basis.

ADOPTED IN OPEN SESSION this 6th day of March, 2007.

KLICKITAT COUNTY PORT DISTRICT NO. 1
Board of Commissioners

Rodger Ford, Chairman

S. Wayne Vinyard, Commission Vice-President

Norman Deo, Commission Secretary

ATTEST

Margie Ziegler
Administrative Assistant

PORT SEAL

(1)

FILE COPY

Klickitat County Port District

April 3, 2007

Messieurs Bob, Dennis & Jeff Eiesland
COLUMBIA HILLS R.V. PARK
PO Box 1
Dallesport, WA 98617

RE: EXTENSION OF SPECIAL WATER AGREEMENT - PORT WATER SYSTEM

Gentlemen:

The Port appreciated hearing from Dennis & Jeff regarding the status of your Department of Ecology water right application, which you provided to the Port Commission at their meeting held February 20, 2007. (No word or permit yet.) The Port understands that you are still waiting for a permit which would enable you to drill a well for potable water.

The Port Commissioners, at their March 6, 2007 regularly scheduled meeting, moved and approved an extension of the October 19, 1994 special agreement for temporary use of potable water from the Port's Dallesport Industrial Park's water supply (enclosed).

Discussions with the Department of Health have clearly indicated that this extension approval must be for existing uses only. The Port's approval to grant an extension for potable water does not include any further expansion of your R.V. park. Any expansion would be contingent upon Columbia Hills R.V. Park's compliance with the conditions established by the Department of Health. (Please see the excerpt from their e-mailed correspondence, below, which outlines those conditions.) Non-compliance with their conditions would negatively impact the Port's existing water system permit, and must not occur, or the special agreement for potable water would be in jeopardy. If your plans for expansion move forward please provide the requested documents to the Port for review and so that they can be forwarded to the Department of Health.

DEPARTMENT OF HEALTH:
RV-Expansion

Submit a project report showing the construction details for the RV expansion. Project report must be completed by or under the direct supervision of a Professional Engineer licensed in Washington State. Standard Construction specifications were not approved with the plan. The Dallesport Industrial Area cannot construct new mainlines without submitting a project report for review and approval by DOH.

Include in the report:

- Construction drawings and specifications for the distribution system, typical RV-hook up.
- Narrative explaining the proposed project, water system demands, i.e. Peak Hourly, Average Daily, and Maximum Daily Demands (respectively, PHD, ADD, MDD).
- Water Right Self Assessment - The intent is to show the current water use data for the typical RV-Site compared with the typical water use for the commercial sites located on the Port Property. In this fashion, the report can be considered a plan amendment the number of existing connections increased to absorb the proposed expansion of the RV site. In addition, the majority of the remaining approved connections can be kept for future expansion of the Port's properties.

Please keep us informed of your expansion plans! If you have any questions, please do not hesitate to contact me.

Sincerely,

Dianne Sherwood
EXECUTIVE DIRECTOR

Enclosures

cc: Port Commissioners
Jared Ladwig & Margie Ziegler, Port Water System Certified Operators

C:\Documents and Settings\Dianne Sherwood\My Documents\MAINTEN\Water System Connections_Eiesland_040207.wpd

March 6, 2007

	PORT OF KLICKITAT BOARD OF COMMISSIONERS MEETING MINUTES March 6, 2007 REGULAR SESSION	
TOPIC	DISCUSSION/ASSESSMENT/FINDINGS	ACTION/FOLLOW UP
ATTENDANCE	**Commissioners/Staff Present:** Port Commissioners (PCs) Norm Deo, Rodger Ford & Wayne Vinyard; Executive Director (Exec.D) Dianne Sherwood and Administrative Assistant/Bookkeeper, Margie Ziegler. **PC/Staff Absent:** Port Counsel Teunis J. Wyers **Guests Present:** Matt Riley, (Rapid Ready Mix Inc); Jim Riley, (Riley Brothers Concrete); Peter Shames, (Hood River Sand & Gravel); Jeff Dean, (James Dean Construction); Lee Ast, (Ast Comm. Real Estate); Reggie Sherwood.	Meeting called to order 4:30 pm
PUBLIC COMMENT	Jeffery Dean, James Dean Construction, submitted a letter regarding the RFP for aggregate mining. (Exhibit A) The letter gave his opinion to the PC regarding the draw backs to having multiple operators and potential negative effects to servicing the local market.	
ADMINISTRATIVE MATTERS **Consent Agenda** **Dog Control**	Items approved: Minutes of February 20, 2007 Vouchers - February 28, 2007 Vouchers - March 6, 2007 There was discussion regarding the newly purchased Dogipot stations and the need for health issues and public awareness to the public and tenants. There was discussion of developing a dog control policy that would include making the Bingen Lake trails off leash areas and making the Marina Park and Bingen Point Sailboard Par a "dogs on leash only" or "under owner's control" areas.	*PC Deo M, PC Vinyard S a motio to approve the Consent Agenda. MP*
Special Agreement Water Columbia RV Park	Exec Dir Sherwood reported that in 1994 the RV Park hooked up to the Port's water system under a Special Agreement with the Port. The intent was for the RV Park to develop their own water source after the DOE issued the RV Park a water right. The DIP water system is now classified by the Dept of Health as BLUE, which means the system is adequate for existing uses, but not adequate for growth. The Eieslands informed the PC at the 2/20/07 PC Meeting that they anticipate increasing their RV sites to 100 from 42. This special agreement is for only 42 connections and all terms and conditions are the same as the original agreement with the Eieslands. A letter will be sent to the Eieslands requesting copies of their expansion plans prior to anticipating the need for additional water.. Once the plans are received from the Eieslands, they will be submitted to the Dept of Health for approval of the Port's expanded permit. The Eieslands agreement with KC County which provides payment of the RV Park's water billing to the Port was negotiated for a period of 10 years for the value of the wastewater line easement over their property. The Port's special agreement with the Eieslands will be reviewed on a yearly basis.	*PC Vinyard M, PC Deo S a motior to extended Special Agreement fo water with the Eieslands. MP*
Purchase of New Port Vehicle	Exec Dir Sherwood presented a list of bids for a new maintenance truck. PC Deo advised that the Dodge Dakota would be the best selection for the Port's needs.	*By consensus, the PC agreed the Dodge Dakota truck should be purchased.*

Q 1

SPECIAL AGREEMENT

This Agreement is to supply Columbia Hills R.V. Park (Eiesland) with temporary use of potable water from the Dallesport Industrial Park's water supply. The Port of Klickitat has signed a Resolution forbidding water hook-ups off of the Port's industrial property at Dallesport (see attached Resolution 2-1993). However, due to a prior commitment by Port Commissioners (see minutes of January 8, 1991), the expense incurred by Robert Eiesland, and after conferring with Carol Mortenson of the Department of Ecology, the Port of Klickitat grants to Columbia Hills R.V. Park a temporary hook-up with the maximum usage time of two (2) years. The term can, at the Port's discretion, be re-negotiated at the end of the two (2) year term, if a water right has not yet been obtained by Eiesland.

Mr. Eiesland has installed a six inch (6") water line, water meter and back-flow valve to the Port's water line. Water rates to be charged are the usual and customary rates as set from time to time by the Port Commission. Payment for water use is due and payable to the Port upon receipt of invoice. The Port makes no warranties as to the quality of water, and should a complaint arise concerning the quality of water, Mr. Eiesland's sole remedy is to develop a different source of water. Mr. Eiesland agrees to assume all costs of water testing, hook-up and insurance, assuring the Port of Klickitat against liabilities which may occur.

ADOPTED IN OPEN SESSION this 19th day of October, 1994.

KLICKITAT COUNTY PORT DISTRICT NO. 1
Board of Commissioners

M. Kathleen McCuistion

M. Kathleen McCuistion, President

Spencer Dan Frey

Spencer Dan Frey, Commission Vice-President

Samuel Wayne Vinyard

Samuel Wayne Vinyard, Commission Secretary

APPROVED 10/19/94
(Date)

Teunis Wyers
Port Attorney

ATTEST

Dianne Sherwood
Administrative Executive Assistant

PORT SEAL

RECEIVED

MAR 10 2010

KLICKITAT COUNTY

BUILDING DEPARTMENT

228 W. MAIN STREET, MS-CH-20, GOLDENDALE WASHINGTON 98620
PHONE 509 773-3706 • 800-583-8078 • FAX 509 773-2480
SKIP GRIMES: BUILDING & COMPLIANCE DIRECTOR

March 3, 2010

Marc Thornsbury
Port of Klickitat
154 E. Bingen Point Way, #A
Bingen, WA 98605

RE: Dallesport Industrial Park Water System Master Plan

Dear Mr. Thornsbury:

You have requested verification of agreement regarding the Port of Klickitat's Dallesport Industrial Park Water System Fire Storage and Flow Requirements. You have indicated available fire flow of 1500 gallons per minute for a two (2) hour duration. WAC 246-293-640(Table 1) requires a minimum fire flow of 1000 gallons per minute for sixty (60) minutes for an industrial development classification. As is indicated by the double asterisks, "Commercial and industrial buildings may be subject to higher flow requirements when evaluated on an individual basis by the local fire protection authority." No existing structures in the Port currently require a higher flow requirement by the Klickitat County Building Department. Therefore, the proposed 1500 gallon per minute for a two (2) hour duration is satisfactory to the Klickitat County Building Department.

In addition, pursuant to WAC 246-290-235(4), stand-by and fire suppression storage volumes may be nested with the larger of the two volumes being the minimum available. This is satisfactory to the Klickitat County Building Department.

It should be noted that as per WAC 246-293-640(Table 1), minimum standards may require less flow than categories in the guidelines published by the insurance services office and therefore, may not result in lower insurance rates.

Should you have any questions regarding these matters, please contact me.

Sincerely,

Skip Grimes,
Building & Compliance Director

SG/dg
Cc Andres R. Cervantes, P.E.

Volunteers Serving You!

KCFD 6
Dallesport/Murdock
630 Central Blvd
PO Box 215
Dallesport, WA 98617

Chief 509-767-1866
Station 509-767-1252
Fax 509-767-4014
E-Mail kcfd6@gorge.net
Website kcfd.com

March 15, 2010

To Whom It May Concern:

We Klickitat County Fire District #6 agree with the fire flow requirements set forth in the attached letter dated December 26, 2007 from Darrin O. Eckman of Tenneson Engineering Corporation as explained to Fire Chief Rhet Howard and Assistant Fire Chief Darren Lacock with the use of the attached pages from Water System Design Manual Pages 99 – 106.

Klickitat County Fire District #6
Fire Comminssioners

Ray Manning _____ 3/15/10
Ray Manning Date

Steve Nelson _____ 3-15-10
Steve Nelson Date

_____ _____
Jack Kinchloe Date

TENNESON
ENGINEERING CORPORATION
CONSULTING ENGINEERS • SURVEYORS • PLANNERS

409 LINCOLN STREET
THE DALLES, OR 97058

PHONE (541) 296-9177
FAX (541) 296-6657

December 26, 2007

Klickitat County Fire District #6
630 Central Boulevard
Dallesport, Washington 98617

Regarding: Port of Klickitat Fire Storage and Flow Requirement

Dear Sirs:

At the request of our client, the Port of Klickitat, Tenneson Engineering Corporation is hereby requesting the Klickitat County Fire District #6 assistance in determining the necessary fire storage volumes and fire flows for land served by the Port of Klickitat within your district boundaries. As you may be aware the Port of Klickitat is in the process of completing a Comprehensive Water System Plan that involves analysis of the existing system and its components and then makes recommendations for future improvements that will enhance the water service within the District's or service area.

One part of this analysis involves running various hydraulic models to calculate the pressures and flows that are available throughout their service area under different conditions. In order to allow us to continue with this modeling, we ask that the Commissioners consider and approve the use of a design fire flow of 1500 gallons per minute for a 2-hour duration. This equals 180,000 gallons of fire storage that would be required. This 1500 gallon per minute flow rate for a 2 hour duration seems reasonable in light of the type of structures that are within the service area and the larger lots that they sit upon. Based upon the amount of commercial, retail, and industrial property, this seems to be a reasonable amount of fire flow to combat any fires that may occur within this area.

In addition to this fire flow and duration resolution, we also request that the Fire District consider the use of "nested storage". The State of Washington Department of Health, within their Water System Design Manual, allows the use of "nested storage" to determine the storage requirements for a water system. "Nested storage", simply put, is the use of the larger of either the standby or fire suppression storage. The purpose of standby storage is to provide a measure of reliability should sources fail, or when unusual conditions impose higher demands than anticipated. Fire suppression storage must be capable of delivering fire flows in accordance with the determination of fire flow requirements made by the local fire protection authority or County Fire Marshal.

The standby storage is based upon the number of sources pumping into the reservoir, the average daily demand of the system, and the anticipated outage period. In the case of the currently approved system the standby storage volume is calculated at approximately 71,000 gallons. Since this was less than the fire suppression storage, assumed to be 180,000 gallons, only the fire suppression storage component was utilized in the water systems total storage requirement. This is allowed under WAC 246-290-235 (4).

We therefore request that the Klickitat County Fire District #6 agree to a fire flow requirement of 1500 gallons per minute for a 2 hour duration and to allow the Port of Klickitat to utilize the larger of either the standby storage or the fire suppression storage for calculation of their total storage requirement, as allowed under WAC 246-290-235 (4).

We would appreciate it if the Fire District is so inclined, to please provide a letter agreeing to these requirements.

Please feel free to contact me should you have any questions regarding this request.

Sincerely yours,

Darrin O Eckman

Darrin O. Eckman, P.E.

DOE:jw
<wo#12726>

cc: Port of Klickitat

Chapter 9: Reservoir Design and Storage Volume

Engineers are responsible for designing stable and durable reservoirs that protect the quality of stored water. DOH knows there may be more than one acceptable design concept for a particular reservoir project. Therefore, DOH intends the reservoir design criteria in this chapter to ensure water system adequacy, reliability, and compatibility with existing and future facilities, not to establish any particular design approach. See the references at the end of the chapter for more information on reservoir design (AWWA 1998; Ten State Standards 2007; Kirmeyer et al. 1999; Martel et al. 2002; Walski 2000).

9.0 Storage Volume Components

The engineer for a reservoir design **must** consider each of the five storage components discussed in Section 6.7.3 and listed below (WAC 246-290-235(3)):

1. Operational storage (OS)
2. Equalizing storage (ES)
3. Standby storage (SB)
4. Fire suppression storage (FSS)
5. Dead storage (DS), if any

Figure 9-1 illustrates, and Table 9-1 describes, a typical cross-section of the reservoir storage components. Section 9.0.5 explains when systems can exclude the smaller of the SB or FSS component from their total storage requirement. Section 9.1.3 explains when systems can use alternate designs to reduce or sometimes eliminate ES, SB, and FSS. Only **effective storage**, as defined in Section 9.0.1, can be used to determine the actual available, or design, storage volume.

9.0.1 Effective Storage

Total tank volume, as measured between the overflow and the tank outlet elevations, may not necessarily equal the effective volume available to the water system. **Effective storage volume** is equal to the total volume less any *DS* built in to the reservoir. For example, part of a standpipe's capacity is designed as dead storage. That means that below a certain water surface elevation within the tank, the pressure delivered to some customers falls below minimum pressure requirements for the water system.

Conversely, if a water system's source (well or booster pump) cannot deliver a design flow rate above a certain water surface elevation within the tank, this upper volume of the tank is considered unavailable to the water system and is not a part of the effective storage.

The amount of effective storage may also depend on the location of the storage relative to the place of its use. Is it in a different pressure zone? How far does the water need to travel?

9.0.2 Operational Storage

OS is the volume of the reservoir devoted to supplying the water system while, under normal operating conditions, the sources of supply are in "off" status (WAC 246-290-010). This volume will vary according to two main factors:

1. The sensitivity of the water level sensors controlling the source pumps.
2. The configuration of the tank designed to provide the volume required to prevent excessive cycling (starting and stopping) of the pump motor(s).

OS is in addition to the other storage components. When the reservoir is full, OS provides a safety factor beyond that provided by the ES, SB, and FSS.

There are various water level sensors, including float switches, ultrasonic sensors, and pressure switches. Some can detect water level changes as small as a fraction of an inch. Others require more than a foot. Tank designers must account for the type of level sensor they used to determine the vertical dimension needed for proper operation of the device. Manufacturer's specifications generally govern the determination of this dimension.

After selecting the pump control device, the tank designer can use the vertical dimension to determine other aspects of tank configuration, such as the width, height, and shape. The OS volume should be sufficient to avoid pump cycling in excess of the pump motor manufacturer's recommendation. In general, limit the motor to no more than six starts per hour. However, many manufacturers warrant more frequent cycling for their pump motors, depending on the size of the pump.

The OS volume in this situation is comparable to the withdrawal volume required when using hydropneumatic tanks for pump motor protection. The *Recommended Standards for Water Works* recommends that the gross volume of the hydropneumatic tank, in gallons, be at least 10 times the capacity of the largest pump, rated in gpm (Ten State Standards 2007). The withdrawal volume of a hydropneumatic tank is usually about 25 percent of the gross volume. Using this relationship, DOH recommends that the OS volume be about 2.5 times the capacity of the largest pump. Calculating the OS volume will verify that typically, for gravity storage tanks, it is substantially less than the remaining volume of the tank. The volume associated with the elevation difference required for the pump level sensors is usually larger than that required for pump motor protection, so that volume becomes the limiting factor when determining the required OS volume.

OS does not apply to water systems operating under a continuous pumping mode (see Section 9.0.3). This operational mode protects the pump motor. The designer needs to consider only the other components of effective storage (ES, SB, and FSS).

9.0.3 Equalizing Storage

When source pumping capacity cannot meet the periodic daily (or longer) peak demands placed on the water system, the water system **must** provide equalizing storage (ES) as a part of total storage (WAC 246-290-235(2)). ES **must** be available at 30 psi to all service connections. Several factors influence the ES volume, including peak diurnal variations in water system demand, source production capacity, and the mode of operation (continuous pumping for a select period or "call-on-demand" through reservoir level control switches).

The designer should use the mode of source pump operation and hydraulic capabilities to evaluate ES requirements for each water system.

1. **Continuous Pumping**
   ES sizing with continuous source pumping will require developing a maximum day demand (MDD) diurnal curve for the water system being evaluated. Diurnal demand varies due to water system size, season, and type of demand (residential, commercial, industrial, and recreational). After developing the MDD diurnal curve, the design engineer can calculate the required ES by determining the difference between supply and demand over the course of the day. Extended period simulation hydraulic models can be used for this purpose. As a general guideline, the volume of ES needed using constant pumping is about 10 to 25 percent of the MDD (Walski 2000).
2. **Call-on-Demand**
   Engineers should use Equation 9-1 to estimate minimum ES requirements unless actual water use records indicate a more applicable volume. Water systems with multiple sources may need to provide ES in excess of Equation 9-1 depending on the mode of operation. This may involve storing multiple days of volume to meet maximum water system demands.

Equation 9-1:

$$ES = (PHD - Q_S)(150 \text{ min.}), \text{ but in no case less than zero}$$

Where:

ES = Equalizing storage component, in gallons

PHD = Peak hourly demand, in gpm, as defined in Chapter5 of this manual

Q_S = Sum of all installed and active supply source capacities except emergency supply, in gpm. See Section 9.1.1 for source definitions

3. **Multiple Day Demand**
   The ES volume will increase significantly if the source(s) cannot meet the MDD. In such cases, the design engineer can calculate the difference between supply and demand over multiple days to determine the required ES. This approach requires developing water system-specific diurnal demand curves. Extended period simulation hydraulic modeling may be needed to confirm that minimum pressure requirements can consistently be met.

   Engineers **must** also design distribution reservoirs to maintain water circulation and prevent stagnation (WAC 246-290-235(1)(b)). Long residence times in reservoirs can lead to water quality problems. Complete turnover of the reservoir water should occur at least every 3 to 5 days (Kirmeyer et al. 1999). See Section 9.9 for guidance on maintaining water quality in reservoirs.

9.0.4 Standby Storage

Standby storage (SB) provides a measure of reliability in case sources fail or unusual conditions impose higher demands than anticipated. The SB volume recommended for water systems with one source may differ from that for water systems with multiple sources, as described in the following sections.

1. **Water Systems with a Single Source**
   Water systems served by a single source should have SB volume of twice the water system's ADD for the design year available to all service connections at 20 psi. See Chapter 5 for a definition of ADD. Water systems should consider additional SB volume for surface water sources vulnerable to flooding or other extreme weather events.

Equation 9-2:

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

Where:

SB_{TSS} = Total standby storage for a single source water system, in gallons

ADD = Average day demand for the design year, in gpd/ERU

N = Number of ERUs

2. **Water Systems with Multiple Sources**
   Water systems served by multiple sources **should** have SB volume based on Equation 9-3.

Equation 9-3:

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

Where:

SB_{TMS} = Total standby storage component for a multiple source water system; in gallons

ADD = Average day demand for the design year, in gpd/ERU

N = Number of ERUs

Q_S = Sum of all installed and continuously available supply source capacities, except emergency sources, in gpm. See Section 9.1.1 for the definition of a continuously available source

Q_L = The largest capacity source available to the water system, in gpm

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

Note: *Although SB volumes are intended to satisfy the requirements imposed by water system customers for unusual situations (WAC 246-290-420), DOH recommends that SB volume be no less than 200 gallons/ERU.*

3. **Standby Storage for Recreational and Non-critical Commercial Uses**
   Recreational water systems serve recreational lots that, through covenant or other means, have no permanently fixed-in-place residential structures. DOH has no SB recommendation for recreational water systems or water systems made up entirely of the noncommunity uses below:

   - RV parks
   - Campgrounds
   - Fair grounds
   - Outdoor concert grounds
   - Restaurants
   - Non-critical commercial uses

   If a loss of water-supply event occurs, these water systems could shut down without affecting public health and welfare.

4. **Standby Storage for Noncommunity Uses**
   DOH recommends that nontransient noncommunity water systems such as schools, hospitals, and recreational-residential water systems serving permanent fixed-in-place residential structures provide SB.

   - If these water systems rely on a single source, their SB is defined in Section 9.0.4(1).
   - If they have multiple sources, their SB is defined in Section 9.0.4(2).
   - Engineers **must** determine noncommunity water demands as defined in WAC 246-290-221(2). See Chapter 5 for recommended criteria that apply to noncommunity water uses.

5. **Reduction in Standby Storage**
   The purveyor and water system designer have various options available to decrease the volume of SB in the water system. As Section 9.0.4(2) indicates, they may reduce the volume if they develop additional supply sources. For DOH to consider SB equivalent to gravity storage, the sources must have auxiliary power that starts automatically if the primary power feed is disrupted.

   The purveyor may also reduce the volume if community expectations are amenable to a lesser SB capacity. That means they agree that the volume for one average day of service is sufficient for standby purposes instead of two days. A utility may also make better use of dead storage by providing booster pumps at the point where the pressure reaches the minimum established by the community in situations when the SB is used.

9.0.5 Fire Suppression Storage

The local fire protection authority or county fire marshal determines a fire flow requirement for water systems. This fire suppression storage (FSS) level depends on the maximum flow *rate* and *duration*. Water systems **must** build and maintain facilities, including storage reservoirs, capable of meeting fire flow requirements while maintaining 20 psi pressure throughout the distribution system (WAC 246-290-221(5)).

Water systems in areas governed under the Public Water System Coordination Act *of 1977* (chapter 70.116 RCW), **must** meet the minimum flow rates and durations for residential, commercial, and industrial developments specified in the Water System Coordination Act (see Section 10.1) (WAC 246-293-640). The local fire protection authority, county fire marshal, or a locally adopted coordinated water system plan, may specify greater FSS requirements.

Minimum FSS Volume

The minimum FSS volume for water systems served by single or multiple supply sources is the product of the required flow rate (expressed in gpm) multiplied by the flow duration (expressed in minutes). See Equation 9-4.

Equation 9-4:

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

Where:

FF = Required fire flow rate, expressed in gpm, as specified by fire protection authority or under WAC 246-293-640, whichever is greater

t_m = Duration of FF rate, expressed in minutes, as specified by fire protection authority or under WAC 246-293-640, whichever is greater

Consolidating Standby and Fire Suppression Storage (nesting)
Water systems can exclude the SB or FSS component, whichever is smaller, from a water system's total storage requirement unless such practice is 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 (see WAC 246-290-235(4)).

9.0.6 Dead Storage

Dead storage (DS) is the volume of stored water not available to all consumers at the minimum design pressure (WAC 246-290-230(5) and (6)). The reservoir- and water system-capacity analysis should clearly identify the DS volume.

9.0.7 Storage Used for Treatment Purposes

Water systems sometimes need storage volume to provide adequate contact time for routine disinfection or to meet surface water treatment requirements. When water systems need storage volume to meet a water treatment requirement, the designer must determine the volume necessary. The designer must describe how the reservoir design and configuration will provide adequate treatment and public health protection under all reasonably anticipated operating conditions. The engineer should not consider FSS or SB volume part of this volume.

The designer should ensure the water system owner understands that the risk to public health will increase if or when the storage volume is decreased and eventually depleted. It is also important to understand that a treatment technique violation can occur whenever storage is insufficient to provide the required disinfectant contact time. The owner or community may want to increase storage volumes to reduce that risk. DOH recommends that storage volume required to meet surface water treatment requirements be separate from the distribution storage provided.

9.1 Reservoir Sizing Considerations

Water systems may reduce all storage volumes if reliable source water is available to meet all demands at the required flow rate and duration. Following are some elements to evaluate when considering reductions for the designed storage volumes.

9.1.1 Source Definition Used in Sizing New Reservoirs

Engineers may consider any source classified as "permanent" or "seasonal" when designing new reservoir facilities if the source is **continuously available** to the water system and meets, at a minimum, all primary drinking water standards (WAC 246-290-010, 222(3), and 420(2) and (5)).

"Continuously available to the system" means all of the following:

- The source is equipped with functional pumping equipment (and treatment equipment, if required).
- The equipment is exercised regularly to ensure its integrity.
- Water is available from the source year round.
- The source activates automatically based on pre-set parameters (reservoir level, water system pressure, or other conditions).

For designing new reservoir facilities, DOH considers the following as sources:

1. Each pump in a booster pump station (pumps installed in parallel, not series) pumping into the zone served by that particular reservoir.
2. Each independent, parallel treatment train in a water treatment facility.
3. Each well, or well field comprised of wells, constructed according to the Minimum Standards for Construction and Maintenance of Wells (chapter 173-160 WAC) and capable of pumping concurrently as justified by actual pump test records.
4. Each pump installed in a large capacity, large diameter well if the water system can take each pump out of service without interrupting the operation of any other pump.
5. An emergency intertie, if all the following conditions are met:
   - It is equipped with an automatic valve.
   - There is an intertie agreement that specifically includes provision of SB, FSS, or both.
   - The intertie, supplying, and receiving distribution systems have sufficient hydraulic capacity to deliver the allocated flow at no less than the minimum pressure required by WAC 246-290-230. If the intertie requires booster-pumping facilities, then each pump installed in parallel constitutes a source.
6. A pressure reducing valve between pressure zones within the same water system if both:
   - Adequate volume is available in the upper zone's storage facilities.
   - The distribution system (from the upper zone through the PRV to the end use in the lower zone) has the hydraulic capacity to deliver the allocated flows to meet or augment peak hour flows or fire flows, at no less than the minimum pressure required by WAC 246-290-230.

Engineers need to use the actual installed capacity of the facilities and equipment when determining physical capacity based on storage requirements for existing water systems.

Port of Klickitat

June 8, 2007

Dear Tenant,

As you know, the Port of Klickitat operates the water system at Dallesport Industrial Park. In order to assure that we are accurately accounting for all water in the system, we are asking for your assistance in reporting any unauthorized use of our water.

Specifically, no one except authorized emergency personnel is allowed to fill trucks or draw water from hydrants on Port property. We have been informed that unauthorized trucks have been filling at Port hydrants. While these trucks are not from any of our Dallesport tenants, we are asking for your assistance in reporting any unauthorized use of Port water.

If you see or suspect an individual or company of taking water from Port hydrants, please report this use to the Port Office. Thank you for your time and assistance in this matter.

Sincerely

Jim Donnelly
DIRECTOR OF PUBLIC AFFAIRS AND MARKETING

Document57

E. Bingen Point Way
Bingen, WA 98605
(509) 493-1655
Fax: 509-493-4257
port@portofklickitat.com
www.portofklickitat.com

Port of Klickitat

June 12, 2007

Dallesport Fire Department
Po Box 215
Dallesport, WA 98617

To Whom It May Concern:

As you know, the Port of Klickitat operates a water system in the Dallesport area. We are working to meet state guidelines for tracking our water usage, and must now report water pumped as well as water used.

We are glad to provide water to the Dallesport Fire Department for use in emergencies.

If you could please provide us with an estimate of gallons used when utilizing our hydrants, we would very much appreciate it. Our goal is to track as close to 100 percent of our water as is possible.

Thank you for your assistance.

Sincerely

Jim Donnelly
DIRECTOR OF PUBLIC AFFAIRS AND MARKETING

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www.portofklickitat.com

Port of Klickitat

June 12, 2007

Scott Smith
Public Works, Director
115 S Golden St., MS-CH 19
Goldendale, WA 98620

Dear Mr. Smith

As you may know, the Port of Klickitat operates a water system in the Dallesport area. We are working to meet state guidelines for tracking our water usage and losses.

We have received reports of unknown trucks filling up at our hydrants and are asking those in the area to please inform the Port of any unauthorized use they may observe. No one except emergency personnel is allowed to utilize water from our water system hydrants.

We appreciate your attention to this matter and any tips you may be able to pass along. Thank you for your assistance.

Sincerely

Jim Donnelly
DIRECTOR OF PUBLIC AFFAIRS AND MARKETING

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COPY

MEMORANDUM OF UNDERSTANDING

MEMORANDUM OF UNDERSTANDING FOR THE ESTABLISHMENT OF WATER INTERCONNECT AGREEMENT BETWEEN THE FOLLOWING PARTIES:

THE COLUMBIA GORGE REGIONAL AIRPORT

AND

THE DALLESPORT WATER ASSOCIATION

AND

THE PORT OF KLICKITAT

THIS MEMORANDUM OF UNDERSTANDING (MOU) is entered into this 20th day of December, 2005, by and between **THE COLUMBIA GORGE REGIONAL AIRPORT, owned jointly by the County of Klickitat and the City of The DALLES, THE DALLESPORT WATER ASSOCIATION** and **THE PORT OF KLICKITAT,** herein referred to as **"ALLIANCE PARTNERS ".**

WITNESSETH:

WHEREAS: there is an established need for an interconnected water system for present and future growth in the areas served by the Alliance Partners; Each Alliance Partner has water rights, systems and abilities to form three interconnected water services, this alliance will provide improved service, enhanced funding opportunities and promote growth for each entity. The interconnect agreement will also provide more opportunity for improved quality control and health standards. The interconnect agreement is expected to allow expanded financial opportunities in the form of Federal, State and other potential grants and loans. Therefore, the Alliance Partners agree to execute a contract, to be prepared by a mutually agreed upon legal entity, setting forth all of the terms and conditions of the agreement entered into by this Memorandum of Understanding.

NOW, THEREFORE, the premises being in general as stated in the foregoing recitals, it is agreed by and between the parties hereto as follows:

The parties agree that this MOU is intended to set forth the intent of the parties to enter into a contract for all entities to mutually develop interconnected water

systems. The parties agree that a contract setting forth the terms and conditions of the Alliance will be prepared by a legal source acceptable to all parties of this MOU and that the parties hereto will use good faith and best efforts to negotiate and execute the same. The parties further intend to clarify any ambiguities in this MOU in the final contract.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

COLUMBIA GORGE REGIONAL AIRPORT

By: Chuck Covert
As Authorized Representative

DALLESPORT WATER ASSOCIATION

By: Robert D. Mathewson
As Authorized Representative

DALLESPORT WATER ASSOCIATION

By: Chris Jones
As Authorized Representative

PORT OF KLICKITAT

By: _____
As Authorized Representative

KLICKITAT COUNTY

By: Donald G. Struck
As Authorized Representative

CITY OF THE DALLES

By: Nolan K Young
As Authorized Representative

MITIGATED DETERMINATION OF NON-SIGNIFICANCE 2007-54

ENVIRONMENTAL CHECKLIST NO: SEP2007-54

PROPOSALS: Airport Business Park; Sundoon Destination Resort/Recreation Complex; and Public Water System

DESCRIPTION OF PROPOSALS:

Airport Business Park

Proposed binding site plan approval (BSP2007-01) to include 49 lots ranging in size from 0.99 to 4.56 acres for commercial/light industrial uses consistent with existing Airport Development zoning. No application for any specific project proposal has been submitted. Additional SEPA review will be required when this occurs.

Sundoon Destination Resort/Recreation Complex

Master Plan approval consistent with existing Tourist Commercial zoning. Included within the Master Plan area is a golf course, which has already been permitted and for which SEPA review is complete. The golf course is located on approximately 217-224 acres of which 80 will be maintained and the remaining acreage to be used for open space and flight protection of the Regional Airport. The Roseland Property Group is proposing the establishment of up to 400 hotel/resort/residential and/or condominium units, with up to approximately 25,000 square feet of supporting commercial uses, and no more than 5,000 square feet for a golf course shop, which would include airport offices. The Master Plan approval is conceptual. Additional detail will be required with later plat applications, which will require further SEPA review. (No plat or building permit application has been submitted.)

Public Water System

Establishment of water system to include: replacement well, water distribution lines, connection to Port of Klickitat reservoir, new 750,000 gallon storage reservoir with treatment and control equipment. Establishing the public water system is exempt from SEPA. The water system will provide for less than 1,000 connections. Also, the proposals being reviewed will require less than 2,250 gallons of water per minute. *See e.g.* WAC 197-11-800(4) and WAC 197-11-845.

PROPONENTS:

Roseland Property Group LLC (Sundoon Destination Resort/Recreation Complex)
Linda Rose, Manager
19363 Willamette Drive, Suite 228, West Linn, OR 97068-1869

Klickitat County (Airport Business Park/Public Water System)
Mike Canon, Economic Development Director
127 West Court Street, MF-CH-26, Goldendale, WA 98620

The City of The Dalles (Airport Business Park/Public Water System)
Nolan Young, City Manager
313 Court Street, The Dalles, OR 97058

MDNS COMMENT/APPEAL INFORMATION

COMMENT PERIOD: Comments received until January 11, 2008.

APPEAL PERIOD ENDS: January 11, 2008. Any appeals of this decision are to be filed under the County SEPA ordinance's provision for appeals of threshold determinations. Any appeal is therefore due no later than fifteen days from December 27, that is, on January 11, 2008. Appeals shall be in writing and filed with the County auditor. Appeals shall state with specificity the basis for the appeal and the errors to be asserted to the board. Appeals shall not be deemed complete without payment of a fee of $175 payable to the Klickitat County Planning Department.

RESPONSIBLE OFFICIAL:

Curt Dreyer
Klickitat County Planning Director
228 West Main, MS: CH-17
Goldendale, WA 98620

Telephone: 509-773-5703
FAX: 509-773-6206

SIGNED this 27th day of December 2007.

Curt Dreyer
Planning Director and
SEPA Responsible Official

MDNS CONDITIONS

Incorporated MDNS/Conditions

The golf course, as well as the legislative amendments authorizing the Sundoon Master Plan were reviewed through SEPA Mitigated Determination of Non-Significance, SEP2007-32. The conditions in this Incorporated MDNS apply to the current proposal. (SEP2007-32 also adopted previous environmental review for the golf course, EC-99-05. The conditions in that determination remain applicable to the golf course.)

EARTH

Grading, filling and excavation will be required for construction of roads, utilities, golf course, and home sites. The area of construction is a dry climate, with sparse natural vegetation and frequent wind – thus the area is subject to wind/water erosion. The Klickitat County Comprehensive Plan includes policies to prevent wind/water erosion. The following mitigation measures apply to each project and are intended to mitigate potential erosion due to wind and water:

1. Prior to commencing earth disturbing activities, grading/filling plans and dust/erosion control plans shall be submitted to the Planning Department for approval. See also Incorporated MDNS Conditions 2-7. The dust/erosion control plan(s) shall (1) secure and train personnel to implement the plan during all project phases; (2) provide for terminating construction activities during windy conditions if necessary; and (3) address provisions in WAC 173-400-040. All water used for dust suppression shall be used consistent with state laws regarding water use.
2. Areas to be disturbed shall be flagged so as to minimize disturbance.
3. Disturbed areas shall be revegetated or stabilized in a timely manner (e.g. six months).
4. Aggregate for roads, building site preparation, parking lots, etc., and other imported fill materials shall be derived from permitted sources
5. Before construction activities commence, and before building permits are issued, a qualified professional shall prepare an environmental site assessment confirming contamination levels and remediation work comply with all federal, state, and local laws. All development (including the golf course) shall be subject to a site management and environmental remediation plan, which the Planning Department shall approve, before building permits are issued and final plats approved.
6. To the extent feasible, development will avoid slopes in excess of 15%. Critical Areas Ordinance provisions regarding geological hazards shall be complied with.

WATER/UTILITIES

The Klickitat County Comprehensive Plan includes policies to ensure adequate ground/surface water quality and quantity; Washington State regulations provide standards and requirements to ensure surface/ground water quality and quantity. The following measures are intended to maintain surface/ground water quality/quantity:

7. The Sundoon developer (and future Business Park developers) shall enter into a contract for services with each utility purveyor providing service.
8. Improvements to public water and sewer systems shall be sized to serve development at "full-build out." Such improvements may include new sewage lift stations, new water distribution lines, fire hydrants, replacement of water distribution lines, etc. All costs associated with improvements are the developer's responsibility, except as otherwise provided by contract with the utility purveyor. The utility purveyor must approve all system improvements needed to service the development.
9. All state laws and regulations governing water usage shall be complied with. All permits and approvals required to establish utility service must be obtained before final plat approvals and building permits are issued.
10. Public water and sewer systems shall service the Sundoon Destination Resort/Recreation Complex and Business Park.
11. If stormwater runoff is diverted and used for irrigation, the Department of Ecology has indicated a water right permit would be required. The applicant shall comply with all such requirements.
12. The golf course developer will coordinate with the sanitary sewer provider on options for re-use of treated waste water. If feasible, reused water shall be used for irrigation.
13. A stormwater runoff plan shall be submitted to the Planning Department for approval prior to construction activities. The plan shall address construction and post-construction runoff. The stormwater runoff plan shall incorporate BMPs and engineering design features such as directing runoff to oil/water separators, bio-swales, diverting runoff away from roads into stormwater culverts, and ponding runoff prior to discharge from the site. The plan shall prohibit stormwater from entering the sanitary sewer system.
14. Water Conservation: Design development consistently with "xeriscape" or intelligent water usage principles: (1) Design landscaping according to plant material water usage and micro-climate; (2) Irrigate efficiently, using drip rather than spray wherever possible; (3) Select drought tolerant plants, and plants that can survive with regular, low levels of irrigation; (4) maintain topsoils, with regular applications of organic amendments and mulch; and (5) limit ornamental lawn areas. The golf course will use best management practices to improve golf course irrigation efficiency to the extent practicable.
15. Consistent with the SEPA Checklist, the Design Guidelines for the Sundoon Destination Resort/Recreation Complex master plan shall include strategies to reduce overall energy consumption, and encourage passive and active solar applications.

AIR

The County Comprehensive Plan encourages measures to mitigate air impacts.

16. The Sundoon Destination Resort/Recreation Complex developer has proposed prohibiting wood or pellet burning furnaces. Consistent with this proposal, prior to submittal of subdivision proposals or building permits, submit covenants and restrictions that prohibit use of wood or pellet burning furnaces or fireplaces within the development directly associated with the Sundoon Destination Resort/Recreation Complex, unless such devices have particulate emissions which are less than those associated with gas or oil furnaces.

17. Burning debris shall not be used as a method for maintaining landscaping within the Sundoon Destination Resort/Recreation Complex. (Alternatives include chipping debris and re-using on-site, community composing, etc.)
18. Construction vehicles shall comply with current state and federal laws governing vehicle emissions and shall be well maintained.

PLANTS/WILDLIFE

Noxious weeds have been identified on the project site. Excavation activities can result in spread of weeds to adjacent properties. Klickitat County regulations provide standards for control of weeds. The following mitigation is intended to minimize the potential for proliferation of weeds. Wetlands have been delineated on the project site, and shall be protected consistent with the Critical Areas Ordinance.

19. Prior to Sundoon Destination Resort/Recreation Complex master plan approval, submit a conceptual vegetation plan that shall be included as a requirement of covenants and restrictions applicable to all development. The Plan shall require use of fire and draught resistant vegetation, stabilization of disturbed and erosion prone areas.
20. See Incorporated MDNS Conditions 15 and 16 addressing Klickitat County Critical Areas Ordinance. Ecology and WDFW shall be consulted on wetland protection mitigation before the Sundoon Destination Resort/Recreation Complex master plan is approved. To the extent feasible, wetland mitigation shall be designed consistently with descriptions in the SEPA Checklist. However, consistent with conditions below on airport compatibility, the applicant shall ensure final mitigation design does not present a wildlife hazard to airport operations and shall consult with WDOT's Aviation Division on same.
21. Before the master plan for the Sundoon Destination Resort/Recreation Complex is approved, the applicant shall differentiate the types of open space uses, and note locations of open space corridors, buffers, and the golf course. The applicant shall consult with WDFW on same.

ENERGY

The County Comprehensive Plan addresses energy and utility issues.

22. As a condition of final approval of each phase of the Sundoon Destination Resort/Recreation Complex, natural gas utility lines shall be installed to each lot, except as otherwise approved by the Planning Department.

EMERGENCY SERVICES

The County Comprehensive Plan addresses the importance of ensuring adequate emergency services.

23. Prior to submittal and approval of subdivisions and other development proposals within the Sundoon Destination Resort/Recreation Complex, the local fire district shall be consulted regarding its ability to respond to emergencies; and if improvements within proposed development are required (e.g. design/construction of cul-de-sac, turning radius's fire hydrant placement, etc.) such improvements shall

be constructed; or if the local fire district does not have fire apparatus or equipment to respond to emergencies, the applicants shall cooperate toward fulfillment of those needs.

24. Covenants and restrictions of the Sundoon Destination Resort/Recreation Complex shall incorporate requirements that fire-resistant materials be used in construction.

NOISE

The County Comprehensive Plan addresses issues related to noise mitigation.

25. Covenants and restrictions of the Sundoon Destination Resort/Recreation Complex shall incorporate requirements that adequate sound proofing materials and methods be used in construction (to reduce sound of Highway 197 traffic, aircraft landings/takeoffs, aggregate mining operations nearby to the north and east).
26. Prior to submittal of applications for subdivisions and other development within the Sundoon Destination Resort/Recreation Complex, submit a noise reduction plan. The plan should include a buffer plan that provides for buffers that incorporate berms, vegetation, topography, property setbacks to reduce noise of surrounding traffic, airport operations, and industrial uses.

Aesthetics/Compatibility

Aesthetics and compatibility are core issues addressed in the County Comprehensive Plan.

27. Prior to final approval of development within the Sundoon Destination Resort/Recreation Complex, all required utilities shall be installed or bonded for underground installation.
28. Prior to submittal of development proposals for the Sundoon Destination Resort/Recreation Complex, submit plans for aesthetic controls that shall address outdoor lighting (lighting shall not interfere with adjacent properties or traffic or aircraft operations), height restrictions (to maintain views).
29. Before the Sundoon Destination Resort/Recreation Complex master plan is approved: (1) coordinate with WDOT's Aviation Division on master plan design and mitigation to address compatibility concerns; (2) ensure master plan consistency with the Airport Master Plan and coordinate with the FAA as needed on same; and (3) submit avigation easements to recognize pre-existing and future Airport uses which are satisfactory to the Airport, and record same against all non-publicly owned properties; and (4) conduct a wildlife hazards analysis, and develop mitigation to address hazardous wildlife attractants, including a long-term monitoring and re-evaluation plan.
30. Before the building permits are issued for any Business Park development: (1) coordinate with WDOT's Aviation Division on design and mitigation to address compatibility concerns; (2) confirm development is consistent with the Airport Master Plan; and (3) if necessary, conduct a wildlife hazards analysis, and develop mitigation to address hazardous wildlife attractants, including a long-term monitoring and re-evaluation plan.

CULTURAL

An archaeological report has been prepared. The Klickitat County Comprehensive Plan and Washington State regulations provide for preservation of significant sites. The following measures are intended to protect significant sites:

31. Each project shall be subject to the requirement of a plan for encountering significant archaeological sites during construction shall be prepared and submitted to Klickitat County Planning. The plan shall provide for monitoring and/or instruction to workers regarding identification of resources; the plan shall provide for immediate termination of work within 100 feet of the discovery and notification to SHPO and/or YIN to provide adequate time for response.

TRANSPORTATION

The County Comprehensive Plan encourages coordinated transportation planning to ensure adequate facilities are available for development.

32. Before preliminary plats and building permits are issued for the Sundoon Destination Resort/Recreation Complex, coordinate with the WDOT and Klickitat County Public Works to identify improvements required to accommodate "full build out" of the conceptual plan. Improvements to the transportation system shall be the responsibility of the applicant for the Sundoon Destination Resort/Recreation Complex.
33. Before any building permit is issued at the Business Park, coordinate with the WDOT and Klickitat County Public Works to identify needed improvements. Improvements to the transportation system shall be the responsibility of the developer.
34. Sundoon Destination Resort/Recreation Complex and Business Park developers shall coordinate with the Oregon Department of Transportation regarding developing mitigation to address impacts to the Highway 197/I-84 Intersection. This coordination shall occur before preliminary plats and building permits are issued.
35. Funding of required mitigation may include use of a road improvement district(s) or contracts for street, road, and highway projects under Chapter 35.72 RCW.
36. The Sundoon Destination Resort/Recreation Complex developer shall coordinate with WDOT on improvements required in WDOT right of way. If WDOT requires, the applicant shall construct a northbound left turn lane at the intersection of SR 197 and Dow Road. The applicant shall provide documentation confirming that WDOT drainage requirements are met for the improvements. The applicant shall consult with WDOT regarding the illumination required along SR 197 in the vicinity of the left turn lane. All required improvements shall be in place and operational prior to final subdivision approvals being issued for the development, unless otherwise approved by WDOT.
37. Business Park developers shall coordinate with WDOT on improvements required in WDOT right of way.

An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public upon request.

LEAD AGENCY: Klickitat County Planning Department
228 West Main, MS: CH-17
Goldendale, WA 98620

ADOPTION OF EXISTING ENVIRONMENTAL DOCUMENT: The lead agency for this proposal is also incorporating SEP2007-32 Mitigated Determination of Non-Significance (June 20, 2007), referred to throughout as the Incorporated MDNS. See below paragraph. This prior review addresses impacts associated with the golf course, which is part of the Sundoon Destination Resort/Recreation Complex. The County is incorporating this review, and addressing additional issues associated with the integrated master plan community.

INCORPORATION BY REFERENCE:

- The following document is incorporated by reference: SEP2007-32 Mitigated Determination of Non-Significance (June 20, 2007). The Incorporated MDNS addressed environmental impacts associated with (1) amendments to the Klickitat County Comprehensive Plan (Dallesport Sub-Area Plan); zoning text and zoning map (rezone) authorizing master planned review under the Tourist Commercial zone; and (2) the golf course, which is a part of the Sundoon Destination Resort/Recreation Complex.
- The following document is incorporated by reference: SEPA Checklist for Mid-Columbia Asphalt Company conditional use permit application, Circle-T Ranch Gravel Mine Extension, Dallesport, Klickitat County, WA (May 7, 2003). The document describes impacts from gravel mining. The document is on file and may be reviewed at the Klickitat County Planning Department, 228 West Main, MS: CH-17, Goldendale, WA 98620.

Both documents are on file and may be reviewed at the Klickitat County Planning Department, 228 West Main, MS: CH-17, Goldendale, WA 98620.

PHASED SEPA REVIEW: The County is requiring phased SEPA review. Additional SEPA review will be required for the Airport Business Park and Sundoon Destination Resort/Recreation Complex.

THRESHOLD DETERMINATION: The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request. A mitigated determination of non-significance is issued with the conditions listed below.

Appendix I

Wellhead Protection Plan

TENNESON
ENGINEERING CORPORATION
CONSULTING ENGINEERS • SURVEYORS • PLANNERS

3313 WEST SECOND STREET. SUITE 100
THE DALLES. OR 97058

PHONE (541) 296-9177
FAX (541) 296-6657

Dallesport Industrial Park

Wellhead Protection Plan

wo#12726

Section 1: Introduction

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 SWDA 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 lands surrounding public water supply wells in order to prevent groundwater contamination.

The State of Washington requires that all Group "A" Water Systems develop WHP programs as stated in 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 programs. In order to help systems comply with WHP requirements, Evergreen Rural Water of Washington provides assistance to small water systems. This assistance is provided at no cost to systems through funding provided by the DOH and EPA. This WHP is based on a template developed by Evergreen Rural Water.

1.1 Purpose

The purpose of a Wellhead Protection Plan is to provide an organized approach to effectively protect drinking water supplies from contamination. The plan seeks to identify and manage potential contaminant sources near public water supply wells in order to prevent future pollution problems. The program safeguards the health of community residents and avoids negative financial impacts associated with contamination. The cost of contamination typically include the investigation of sites, installation of treatment facilities and/or developing new water sources. In fact, Washington State Health Officials have identified nearly 20 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. The Wellhead Protection Program is a straightforward and cost effective method of accomplishing this goal.

1.2 Plan Overview

This Wellhead Protection Plan includes the following elements:

- A completed Susceptibility Assessment for each of the Port of Klickitat's two wells.
- Identification of the Wellhead Protection Zone and time of travel.
- An inventory of potential contaminates and land use activities.
- A discussion of the management strategy.
- Contingency and emergency response planning.

Completion of these elements meets the requirements of Washington State's Wellhead Protection Program.

Chapter 1 of the Water System Plan describes the physical character of the service area and land uses within said area. Chapter 3 of the Water System Plan describes the existing source supply facilities. Emergency Response Planning is provided in Appendix "L". For brevity, this information is not reiterated herein.

Section 2: Source Evaluation

This section includes an evaluation of the source hydrogeology, susceptibility to contamination, and the Wellhead Protection Zones.

2.1 Source Hydrogeology

An aquifer is a saturated underground soil or rock formation that yields water in sufficient quantity to be useful. Generally, the water system wells are developed in fractured basalt and interlaying unconsolidated deposits. Basalt rock was formed from fissure volcanic activity and is comprised of numerous lava flows which vary significantly in thickness. Oftentimes, the basalt flows are separated by unconsolidated sedimentary formations generated by river and lake deposits. A typical Miocene period basaltic lava flow of the northwest contains layers of varying permeability. Permeability is greatest near the top and bottom of the flow in the rubble and vesicular zones and least in the dense center part of the flow. Basaltic lavas tend to be fluid and they form thin flows that have considerable pore space at the tops and bottoms of the flows. Numerous basalt flows commonly overlap and the flows are separated by soil zones or alluvial material that can be permeable or confining. Columnar joints that develop in the central parts of the basalt flows create passages that allow water move vertically through the basalt. Basaltic rocks are the most productive aquifers in volcanic rocks. Those of the Columbia Plateau aquifer system in Washington are more than 15,000 feet thick in places.

Generally, each well is confined by an overlying thick layer of hard basalt and impermeable unconsolidated deposits, commonly referred to as an aquitard. The aquitard is comprised of material of low hydraulic conductivity. Because of the low permeability, aquitards limit the quantity of water that can move vertically to the aquifer. Rain and stormwater infiltrate the permeable soil at the surface and travel downward until vertical movement is impeded by the aquitard. Groundwater may pond and form a perched aquifer, wetland or lake, or the groundwater may move laterally down gradient within the watershed. Alternatively, it may find a hole in the aquitard, which is prevalent in heavily fractured basalt, and drain to a deeper aquifer.

A description of the water sources and their current pumping arrangements is described in Table 3-2 of the Water System Plan. The Well Logs, which are included as part of the Susceptibility Assessment, indicate that Well #1 was originally constructed by the Army Corp of Engineers in the early 1950s. No log was provided for this well. The concern with the construction details is the fact that it indicates a surface seal to a depth of only 2 feet. Well #2, which was constructed in 1982, has a surface seal to a depth of 98 feet below ground surface (bgs).

2.2 Aquifer Susceptibility

Susceptibility is determined by conditions that affect the movement of groundwater and thus contaminates from the land surface into an aquifer. Susceptibility is a qualitative measure of how quickly and how far groundwater must travel to reach a water source. Confining units are critical to susceptibility determinations. In general, a confining unit is any earth material that does not readily transmit water. Within bedrock aquifers, the presence of shale usually indicates a zone of confinement. Glacial material (clay) may also act as a confining unit depending upon its thickness. When confining layers are present, wells are less susceptible to contamination because they impede the movement of contaminates from the land surface into underlying aquifers. If confining layers are not present above the aquifer or if the well is not sealed below a confining unit, it may be susceptible to contaminates originating at the land surface. Private wells and abandoned wells can present a vulnerability even with confining layers since the well penetrates through the confining layer providing a direct conduit to the aquifer. Both of the Port wells have significant confining layers. Generally, for this reason, the aquifer has fairly good protection from surface contaminates. The Port wells are located in an industrial area with some potential sources of contamination within the longer time of travel zones. The time of travel (TOT) zones include several heavy equipment storage areas, processing facilities, and areas with a potential for fuel spills. No known groundwater contamination has occurred within the water system service area. Because of the industrial nature of development and existing uses, shallow groundwater may be susceptible to contamination.

Well #1, constructed in the early 1950s, appears to have a very short sanitary seal. This seal, which is estimated to be approximately 2 feet in length, may not prevent the intrusion of shallow groundwater into the well. However, in reading through the well log completed at a later date, it is difficult to state whether this surface seal statement is correct. This is due to the fact that the steel casing was actually installed to the full depth of the well, or 210 feet. In the well log itself, the owner describes the different materials that were found based upon other local sources. The depths of these materials begin at the top of the well, with an elevation of 203 feet, and go down to a depth of 0 feet, which would be at the bottom of the well. Since the surface seal is noted as two feet, it is possible that the surface seal actually extends from ground surface to a depth of 208 feet (210 feet – 2 feet) from the surface, thus providing an excellent surface seal. The character of land uses within the Port service area combined with the possible shallow seal at Well #1 results in this well being considered moderately susceptible to contamination.

2.3 Identification of Wellhead Protection Areas

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 for groundwater to permeate through the confining layers 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. Furthermore, once identified they often cover vast areas of land and thus become difficult to manage. These factors combine to make the identification of recharge areas an unrealistic expectation.

2.3.1 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 is easy to apply and inexpensive. However, it can tend to over simplify groundwater flow conditions and may or may not be very accurate depending upon site specific conditions. Therefore, other more complex delineation methods, such as computer modeling and hydrogeologic mapping, are encouraged but are not always required for small systems. Regardless of the method used, the State requires that the WHP areas include the 6-month, 1, 5 and 10 year time of travel zones for groundwater. The 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 1/2, 1, 5 or 10 years of pumping. The Port had previously identified the CFR for each well as part of the Susceptibility Assessments completed in 2003. The CFRs were reevaluated as part of this WHP plan. New estimates were necessary based on current demand data.

4.3.2 Results

The CFR utilizes a volumetric flow equation to determine the WHP area radius ($r=\sqrt{Qt/\pi nH}$).

Where: Q = Annual Flow (cf/yr)
t = Time of Travel (years)
n = Estimated porosity (~0.1445)
H = Open Interval (feet)

The estimated porosity is for vesicular basalt of the Columbia Plateau per *Whitman et al, 1994 USGS Professional paper 1413-B*. The new CFRs are based upon the well information the included in Susceptibility Assessments. It is important to emphasize that the WHP areas identified 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 that are currently available. Further, developing an awareness of the systems contamination potential is a higher priority at this time. The following table identifies each well and the CFR.

Table 1

Source Name	DOH ID	2005-2007 Average Q (CF/yr)	Open Interval (Ft)	6-month TOT (Ft)	1-year TOT (Ft)	5-year TOT (Ft)	10-year TOT (Ft)
Well #1	S01	1,107,709	10 feet	349	494	1,105	1,562
Well #2	S02	27,629	194 feet	13	18	40	56

Section 3: Potential Contaminates Inventory

The Port of Klickitat conducted an inventory of potential contaminates within the Wellhead Protection Area for each source. This inventory is to be updated on a bi-annual basis at a minimum and also as land use or tenants change within the Port area. This section describes the method used to conduct the inventory and the results of the inventory

3.1 Methods

A field survey was conducted of the WHP zones in order to inventory potential sources of contamination and identify land use activities which may post threats to groundwater quality. In addition to the field survey, a search of the Department of Ecology's databases was performed. It should be noted that many records have inaccurate coordinate data. The databases investigated were:

- DOE Well Logs – No well logs identified within the database search were within the time of travel zones for either Well #1 or Well #2.

- The DOE Confirmed and Suspected Cleanup Sites database was filtered for any sites within the 98617 zip code. The only listed site is that of the recycled aluminum metals company. While the address indicates 104 Parallel Street, the actual site of the cleanup is well outside the 10-year time of travel for both wells.

- The DOE Underground Storage Tank & Leaking Underground Storage Tank databases were filtered for any sites within the 98617 zip code. One LUST was identified in the database and is owned by the City of the Dalles and as having been cleaned up. This was probably a former storage tank for the airport and is not within the WHP area. Two underground storage tanks were listed in the regulated UST database. Each tank is in operation and located on airport property, once again outside the 10-year time of travel for both wells.

- The DOE database of Active Toxic Handlers was also reviewed for any facilities within the Port water system service area. None were identified.

- The DOE Facilities Site database was obtained and reviewed. A total of four facility sites were located within the WHP areas and within the service area. These sites include The Dalles Fruit Company, LLC; the Dallesport sewage treatment works; Dallesport Specialty Lumber; and Dallesport Foundry, Inc.

3.2 Results

The time of travel maps provided in the Susceptibility Assessment along with the field survey and DOE database search illustrates the results of the WHP contaminate inventory. Significant findings are listed in Table 2.

Table 2

Description of Significant Potential Contaminates Within Each Time of Travel (TOT) Zone					
Well #1 (S01)	**Fuel Storage**	**Storage**	**Private Wells**	**Agricultural Chemicals**	**Development**
Inside the 6-month TOT (349')	None	None	None	None	Gravel Road
Between the 6-month and 1-year TOT (494')	None	None	None	None	Railroad
Between the 1-year and 5-year TOT (1,105')	1,000 gallon steel diesel tank in a concrete containment vessel	Log yard w/ heavy equipment, steel materials and lumber	None	None	Industrial building, parking lots, substation
Between the 5-year and 10-year TOT (1,562')	None	Steel materials and lumber	None	None	Industrial buildings and parking lots
Well #2 (S02)	**Fuel Storage**	**Storage**	**Private Wells**	**Agricultural Chemicals**	**Development**
Inside the 6-month TOT (13')	None	None	None	None	None
Between the 6-month and 1-year TOT (18')	None	None	None	None	Pump building
Between the 1-year and 5-year TOT (40')	500 gallon diesel tank (double wall)	None	None	None	None
Between the 5-year and 10-year TOT (56')	None	None	None	None	Gravel Road

Section 4: Management Strategy

Management of the Port of Klickitat Dallesport Industrial Park Wellhead Protection Area will focus on public education, tenant notification, coordination with Klickitat County and contingency planning.

4.1 Public Notification

The Port has conducted a public notification campaign which has comprised of a general educational flier to the water system users. Property and business tenants with potentially harmful land use activities were provided an explanatory letter in order to heighten awareness and promote responsible management of potential contaminant sources. Copies of these letters are included. The DOE will be notified of the WHP areas and potential contaminant sources within these areas as part of the overall Water System Plan approval process. DOH will submit a copy of the plan to DOE for review. A copy of the WHP plan was sent to the Klickitat County Planning Department. The County has a Critical Areas Ordinance which includes regulation of aquifer recharge areas. The Port will encourage the County to use the WHP area map when making land use decisions within the service area. The Klickitat County Emergency Response Official, Mr. Steve Brown, was contacted by telephone and informed of the Wellhead Protection Planning effort. The County Emergency Response Office does not coordinate response to

groundwater contamination events. A copy of the WHP program was sent to the Dallesport Volunteer Fire Department. This notification is intended to inform emergency response officials of the location and potential threats to the Port water supply sources. A copy of the submittal letter is included.

4.2 Contingency Planning

A contingency Plan is needed in the event that a contamination event or natural disaster results in the temporary or permanent loss of a well source. To this end, the system has a measure of protection to ensure that consumers have an adequate supply of water. Contingency Planning for many types of emergencies is included in the Emergency Response Plan, which is part of the Water System Plan (Appendix L). The Emergency Response Plan did not include a Contingency Plan for loss of the water supply due to contamination. In the event of source water contamination, the affected well(s) will be immediately shut down. The Port would contact emergency services, the Department of Health, the Department of Ecology, direct notification to users and media announcements of the source contamination. Depending upon the extent of the emergency, the Port may initiate an emergency water conservation program that includes notifying customers of the situation and instructing them on water rationing. If the well closure results in the water system being unable to satisfy their rationed water demand, the Port may consider mitigating the capacity reduction by implementing one or more of the following:

- Constructing new well(s) at an unaffected location.
- Purchasing water from nearby water systems and transporting the water by truck.
- Installing a treatment system to remove the contaminates of concern.

Because there are no other large public water systems in the Port's vicinity, establishing a direct intertie with an adjacent system is not currently feasible. However, there are several smaller systems in the area, but the amount of water available from these systems may be limited.

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

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 : Klickitat County Port District No. 1

Water system name : Dallesport Industrial Park

County: Klickitat

Water system number: 002385 Source number: S01

Well depth: 210 (ft.) (From WFI form)

Source name: Well #1

WA well identification tag number: ____ ____ ____-____ ____ ____

__X__ well not tagged

Number of connections: 11 Population served: 750 persons per day

Township: 2 North Range: 13 East

Section: 25 1/4 1/4 Section: SW SW

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: __/__/__ month/day/year

last reconstruction: __/__/__ month/day/year

__X__ information unavailable

2) Well driller: U.S. Army Corps of Engineers

_____ well driller unknown

3) Type of well:

X Drilled: __ rotary __ bored X cable (percussion) _ Dug

__ Other: __ spring(s) __ lateral collector (Ranney)

__ driven __ jetted __ other: _____

Additional comments: _____

4) Well report available? X YES (attach copy to form) __ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 225 (gallons/min)

Source of information: Maintenance Personnel

If not documented, how was pumping rate determined? _____

_____ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

X disinfection __ filtration __ carbon filter __ air stripper __ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

Kill bacteria

7) If source is chlorinated, is a chlorine residual maintained: X YES __ NO

Residual level: 1mg/l (At the point closest to the source.)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

__ < 20 ft __ 20—50 ft __ 50—100 ft __ 100—200 ft __ >200 ft

_x_ 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?

_x_ 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 __ NO

5) Wellhead elevation (height above mean sea level): 202 (ft)

How was elevation determined? __ topographic map _x_ 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

__x__ 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 **bottom** of the **lowest confining layer**? __ YES __ NO

_____ information unavailable

7) Sanitary setback:

__ < 100 ft* _x_ 100—120 ft __ 120—200 ft __ > 200 ft

* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

_X_ wellhead enclosed in a wellhouse

_X_ controlled access (describe): Locked door

_____

_X_ other uses for wellhouse (describe): Disinfection and disinfectant (NaOCl) storage

__ no wellhead control

9) Surface seal:

__ 18 ft

_x_ < 18 ft (no Department of Ecology approval) ('<' means less than)

__ < 18 ft (Approved by Ecology, include documentation) ('<' means less than)

__ > 18 ft ('>' means greater than)

__ depth of seal unknown

__ no surface seal

10) Annual rainfall (inches per year):

__ < 10 in/yr _x_ 10—25 in/yr __ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 5,878,000 (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 : 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? __ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application				
stormwater injection wells			X	
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density > 1 house/acre				
residences commonly have septic tanks			X	
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

Industrial facilities and wastewater treatment facility may have potentially hazardous materials onsite.

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
Results greater than MCL	
< 2 mg/liter nitrate	x
2—5 mg/liter nitrate	
> 5 mg/liter nitrate	
Nitrate sampling records unavailable	

B. **VOCs:** (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	x
VOC sampling records unavailable	

C. **EDB/DBCP:**	YES
(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	
EDB/DBCP tests not required	x

D. Other SOCs (Pesticides):	YES
Other SOCs detected (pesticides and other synthetic organic chemicals)	
Other SOC tests performed but none detected (list test methods in comments)	
Other SOC tests not performed	x

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: _____

SOC sampling is waivered

E. Bacterial contamination: YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). _____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. _____

Source sampling records for bacteria unavailable _____

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

_X_ YES __ NO

Describe with references to map produced in Part IV:

Columbia River is within the 5- and 10-year travel zones. There is a steep bank within the 6-month, 1-year, 5-year, and 10-year travel zones.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

_X_ YES __ NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

__ YES __ NO

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 _x_ 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.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES _X_ NO

Did you find it useful? ___ YES ___NO

Did you seek outside assistance to complete the assessment? _X_ YES ___ NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

Original and First Copy with Division of Water Management
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. .....
Permit No. 9862

(1) OWNER: Name Klickitat County Port Dis. #1 Address P.O. Box 426, Bingen, Washington 98605

(2) LOCATION OF WELL: County Klickitat SW ¼ SW ¼ Sec. 25 T. 2 N., R. 13 E.W.M.
Bearing and distance from section or subdivision corner N. 81° 47' 56" E., W.M., 433.11'

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒ XX
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) .... No. 1
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6" dia. inches.
Drilled 210 ft. Depth of completed well 210 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" " Diam. from 0 ft. to 210 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.
Casing (see remarks in well log)
Perforations: Yes ☐ No ☐ Not known
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 ☐ Not known
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 Not known
Gravel placed from ft. to ft.
Surface seal: Yes ☒ No ☐ To what depth? 2 ft.
Material used in seal Concrete
Did any strata contain unusable water? Yes ☐ No ☐ XX
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Paco Pump
Type: Deep well turbine HP 30

(8) WATER LEVELS: Land-surface elevation above mean sea level 202 ft.
Static level 70 ft. below top of well Date 7-7-70
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? Tenneson Eng. Corp.
Yield: 250 gal/min. with 90 ft. drawdown after 4 hrs.
" 150 " 76 " 4 "
" 100 " 68 " 4 "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	-160				
1 min.	-70				

Date of test 7-7-70
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water 54° 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
This well was drilled under a contract is by the U.S. Army Corps of Engineers in conjunc with the construction of The Dalles Dam sometí in the early 1950s. The Corps has not been ab to provide us with a log or data on this well. Information from The Dalles Dam resident engin Mr. Dave Larsen, who is familiar with the con- struction stages of the project, certifies to fact that this well was used for the water su for the project headquarters complex, and then capped off at the completion of the constructi (Letter enclosed) Foundation & soils investig tions in the immediate area of the well indica a consistent picture as follows:		
Fine silty sand -	203	200
Medium gray sand with fine gravel layers -	200	180
Medium to coarse gray sand	180	175
Medium gray sand of fine gravel	175	168
Fine silty sand	168	165
Coarse sand & gravel	165	150
Black lava bedrock	150	on dow
Experience with the general area leaves us to believe the lava bedrock is a porous basalt formation and is the water bearing strata. It is noted that the relative elevation of the static water level (approximately 130') is considerably below the controlled pool elevati behind The Dalles Dam of 160' to 155'. Becaus of the lack of well log, the exact information construction details is limited to what can be determined by surface surveys, inspection, and plumbing of the well.		

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 Klickitat County Port District No. 1
(Person, firm, or corporation) (Type or print)

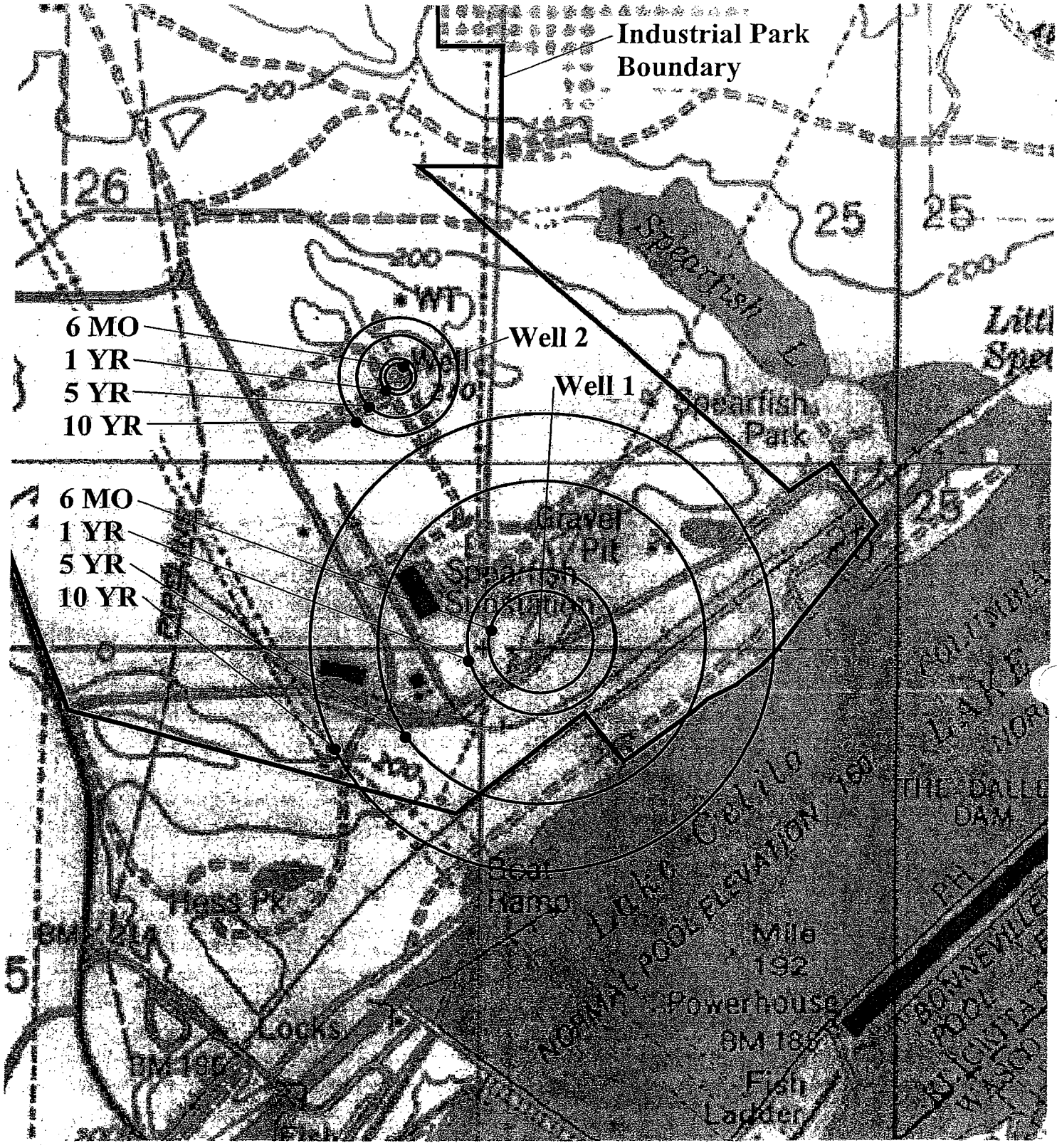
Address P. O. Box 426, Bingen, Wn. 98605

[Signed] Donald J. Pranton (Well Driller)

License No. 6622 Date ....., 19.....
Registered Professional Engineer for Washington

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 1356—OS—(Rev. 5-69)—5-69.



Kennedy/Jenks Consultants

PORT OF KLICKITAT
DALLESPORT, WA

DALLESPORT INDUSTRIAL PARK
GROUNDWATER TRAVEL TIME

K/J 016097.00/WATERSYSTEM/P02SK004

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

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 : Klickitat County Port District No. 1

Water system name : Dallesport Industrial Park

County: Klickitat

Water system number: 002385 Source number: SO2

Well depth: 292 (ft.) (From WFI form)

Source name: Well #2

WA well identification tag number: ____ ____ ____-____ ____ ____

X well not tagged

Number of connections: 11 Population served: >50 persons per day

Township: 2 North Range: 13 East

Section: 26 1/4 1/4 Section: NE SE

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: 12/4/82 month/day/year

last reconstruction: __/__/__ month/day/year

____ information unavailable

2) Well driller: M.K. Drilling Co. Dallesport, Washington

_____

_____

_____ well driller unknown

3) Type of well:

_x_ Drilled: _x_ rotary __ bored __ cable (percussion) __ Dug

__ Other: __ spring(s) __ lateral collector (Ranney)

__ driven __ jetted __ other: _____

Additional comments: _____

_____

4) Well report available? _x_ YES (attach copy to form) __ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 700 (gallons/min)

Source of information: Maintenance personnel

If not documented, how was pumping rate determined? _____

_____

_____ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

__ disinfection __ filtration __ carbon filter __ air stripper __ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

_____

_____

7) If source is chlorinated, is a chlorine residual maintained: __ YES __ NO

Residual level: _____ (At the point closest to the source.)

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 x 50—100 ft __ >100 ft

__ flowing well/spring (artesian)

How was water level determined?

x 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 __ NO

5) Wellhead elevation (height above mean sea level): 210 (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

x 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 **bottom** of the **lowest confining layer**? __ YES __ NO

_____ information unavailable

7) Sanitary setback:

__ < 100 ft* X 100—120 ft __ 120—200 ft __ > 200 ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

X wellhead enclosed in a wellhouse

X controlled access (describe): locked

X other uses for wellhouse (describe): Diesel fuel storage for backup booster pump

__ no wellhead control

9) Surface seal:

__ 18 ft

__ < 18 ft (no Department of Ecology approval) ('<' means less than)

__ < 18 ft (Approved by Ecology, include documentation) ('<' means less than)

X > 18 ft ('>' means greater than)

__ depth of seal unknown

__ no surface seal

10) Annual rainfall (inches per year):

__ < 10 in/yr X 10—25 in/yr __ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 30,000 (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 : 80 (ft)

1 year ground water travel time : 110 (ft)

5 year ground water travel time: 250 (ft)

10 year ground water travel time: 360 (ft)

Information available on length of screened/open interval?

X YES _ NO

Length of screened/open interval: 194 (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? __ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application	____	____	____	____
stormwater injection wells	____	____	____	____
other injection wells	____	____	____	____
abandoned ground water well	____	____	____	____
landfills, dumps, disposal areas	____	____	____	____
known hazardous materials clean-up site	____	____	____	____
water system(s) with known quality problems	____	____	____	____
population density > 1 house/acre	____	____	____	____
residences commonly have septic tanks	____	____	____	____
Wastewater treatment lagoons	____	____	____	____
sites used for land application of waste	____	____	____	____

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

_____

_____

_____

_____

_____

_____

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
Results greater than MCL	
< 2 mg/liter nitrate	X
2—5 mg/liter nitrate	
> 5 mg/liter nitrate	
Nitrate sampling records unavailable	

B. **VOCs:** (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	X
VOC sampling records unavailable	

C. **EDB/DBCP:**	YES
(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	
EDB/DBCP tests not required	X

D. Other SOCs (Pesticides):	YES
Other SOCs detected (pesticides and other synthetic organic chemicals)	
Other SOC tests performed but none detected (list test methods in comments)	
Other SOC tests not performed	X

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: _____

SOC sampling is waivered

E. Bacterial contamination: YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). _____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. _____

Source sampling records for bacteria unavailable _____

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

_X_ YES __ NO

Describe with references to map produced in Part IV:

Steep bank to northeast

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

_X_ YES __ NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

__ YES __ NO

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 _x_ 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.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES _x_ NO

Did you find it useful? ___ YES ___NO

Did you seek outside assistance to complete the assessment? _x_ YES ___ NO

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

e Original and First Copy with
partment of Ecology
cond Copy — Owner's Copy
ird Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No. 64235-6

(1) OWNER: Name Dallesport Industrial Park Address Dallesport WA 98617

(2) LOCATION OF WELL: County Klickitat NE ¼ SE ¼ Sec 26 T 2 N., R 13 E 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 292 ft. Depth of completed well 292 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 10 " Diam. from ft. to 98 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? 98 ft.
Material used in seal Cement grout
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 50 ft. below top of well Date Dec 4, 82
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
	blow test 1450 gpm				

Date of test Dec 4
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
Sand & broken basalt	0	6
Basalt, gray, med hard, fractured	6'	27'
Basalt, black, med hard, fractured	27'	56'
Basalt, brown & black, vescular & Pet. wood, WB 35 gpm	56'	70'
Basalt, brown & gray, porous WB	70'	84'
Basalt, brown, crevised WB	84'	86'
Basalt gray & brown med hard	86'	89'
Basalt, gray, hard	89'	92'
Basalt gray & brown fractured WB 150	92'	96'
Basalt gray w hard brown seams	96'	115'
Basalt brown & gray, vescubr & red shale WB 400	115'	127'
Basalt, gray, hard	127'	165'
Basalt, gray & brown crevised WB	165'	167'
Basalt, gray, hard	167'	200'
Basalt, brown & quartz vescular WB	200'	203'
Basalt, gray, hard	203'	278'
Basalt black fractured & lignite	278'	284'
Basalt black vescubr WB	284'	286'
Basalt, gray, med & green min.	286'	292

Work started Oct 14, 1982. Completed Dec 4, 1982

WELL DRILLER'S STATEMENT:

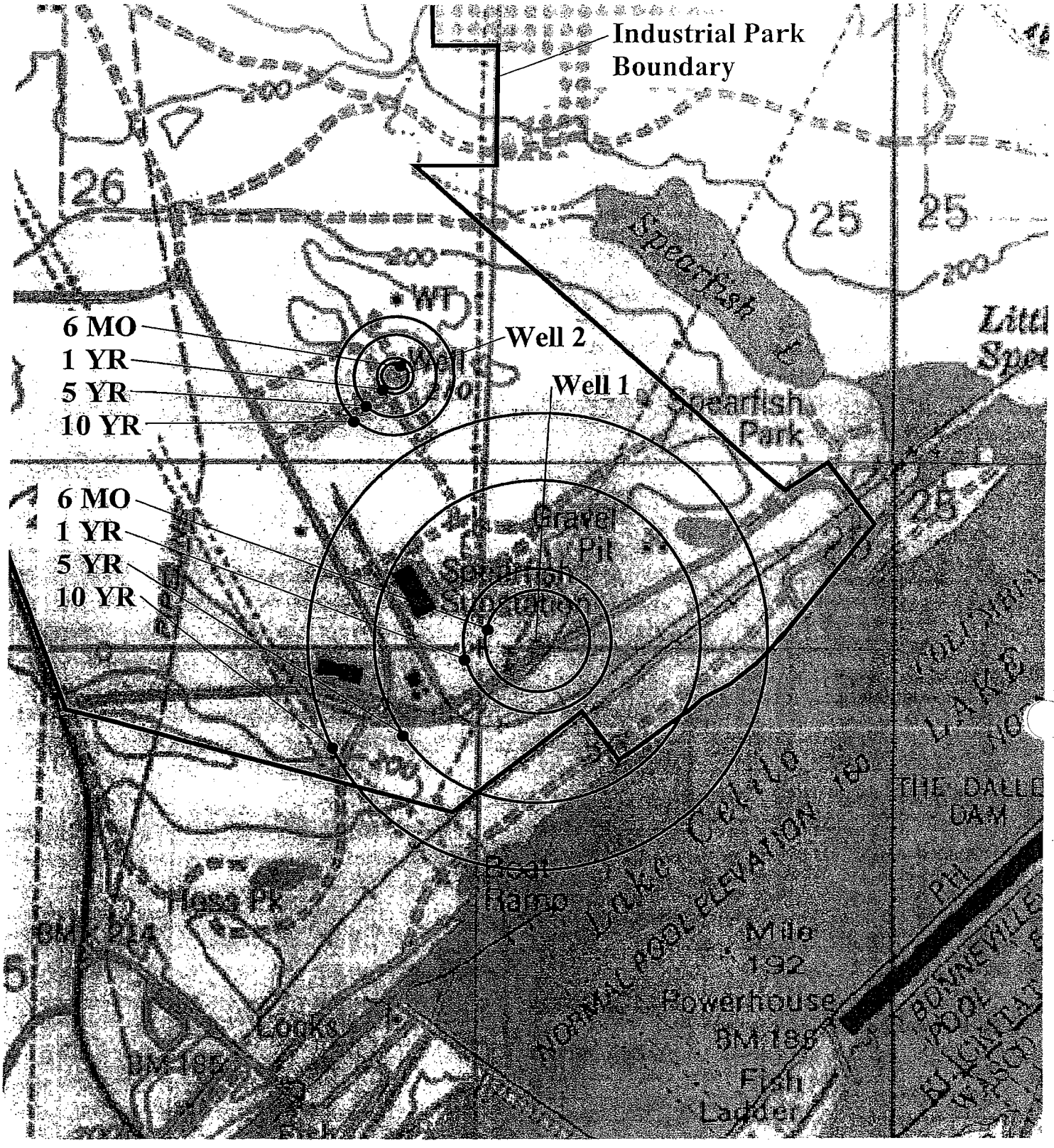
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME M.K Drilling Co.
(Person, firm, or corporation) (Type or print)

Address P.O. Box 373 Dallesport WA

[Signed] Charles L Moore
(Well Driller)

License No. 0833 Date Dec 30, 1982



Kennedy/Jenks Consultants

PORT OF KLICKITAT
DALLESPORT, WA

DALLESPORT INDUSTRIAL PA[illegible]
GROUNDWATER TRAVEL T[illegible]

K/J 016097.00/WATERSYSTEM/P02SK004

Port of Klickitat

May 26, 2010

Dallesport Fire District
Mr. Rhett Howard, Fire Chief
P.O. Box 215
Dallesport, WA 98617

Letter of Notification: Dallesport Industrial Park Wellhead Protection Plan

Dear Chief Howard:

The Dallesport Industrial Park is developing a wellhead protection plan as required by the State Department of Health. As part of this plan, our water system must coordinate with agencies responsible for incident/spill response procedures. 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 wellhead protection areas. 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."

The susceptibility assessment and a map of the wellhead protection areas with potential contaminant sources are enclosed for your review. An acknowledgement of receipt of this information and/or a response from your office would be appreciated.

Thank you for your attention in this matter. If you have any questions about the plan, please feel free to contact me.

Regards,

Margie Ziegler
Administrative Assistant/Port Auditor

Attachment

154 E Bingen Pt. Way Ste. A
Bingen, WA 98605
Office: 509-493-1655
Fax: 509-493-4257
www.portofklickitat.com

Good for business. Good for life.

Port of Klickitat

May 26, 2010

Columbia Hills RV Park
PO Box 1
Dallesport, WA 98617

The Dallesport Industrial Park water system is developing a wellhead protection plan as required by the State Department of Health. Wellhead protection involves protecting the land areas surrounding our wells in order to prevent contamination of the drinking water supply. Part of the plan requires notification to all potential sources of contamination to our wells, which are located at the Dallesport Industrial Park (see attached map).

One of the goals of this plan is to raise public awareness about the vulnerability of the groundwater in our area to contamination. The purpose of this letter is to inform you of the proximity of your business to our wellhead protection areas and to serve as a reminder that any hazardous material spilled onto the ground or put into a septic system has the potential of contaminating our drinking water supply. Some potential contamination sources 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.
- Leaking fuel storage tanks and distribution lines.
- Accidental spillage of fuel.

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 fee free to contact me.

Regards,

Margie Ziegler
Administrative Assistant/Port Auditor

Attachment

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Port of Klickitat

May 26, 2010

Klickitat Co. Public Works
228 W. Main St
Goldendale, WA 98620

The Dallesport Industrial Park water system is developing a wellhead protection plan as required by the State Department of Health. Wellhead protection involves protecting the land areas surrounding our wells in order to prevent contamination of the drinking water supply. Part of the plan requires notification to all potential sources of contamination to our wells, which are located at the Dallesport Industrial Park (see attached map).

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Regards,

Margie Ziegler
Administrative Assistant/Port Auditor

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Port of Klickitat

Wayne Vinyard
Port Commissioner
President

Port Commissioner
Vice President

Jim Herman
Port Commissioner
Secretary

Marc D. Thornsbury
Executive Director

Margie Ziegler
Administrative Assistant
Port Auditor

Terry Wroe
Maintenance Supervisor

Esteban Sanchez
Maintenance Assistant

May 26, 2010

Dallesport Foundry Inc
PO Box 209
Dallesport, WA 98617

The Dallesport Industrial Park water system is developing a wellhead protection plan as required by the State Department of Health. Wellhead protection involves protecting the land areas surrounding our wells in order to prevent contamination of the drinking water supply. Part of the plan requires notification to all potential sources of contamination to our wells, which are located at the Dallesport Industrial Park (see attached map).

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- Accidental spillage of fuel.

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Regards,

Margie Ziegler
Administrative Assistant/Port Auditor

Attachment

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Fax: 509-493-4257
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Good for business. Good for life.

Port of Klickitat

May 26, 2010

Mountain Logging
PO Box 253
White Salmon, WA 98672

The Dallesport Industrial Park water system is developing a wellhead protection plan as required by the State Department of Health. Wellhead protection involves protecting the land areas surrounding our wells in order to prevent contamination of the drinking water supply. Part of the plan requires notification to all potential sources of contamination to our wells, which are located at the Dallesport Industrial Park (see attached map).

One of the goals of this plan is to raise public awareness about the vulnerability of the groundwater in our area to contamination. The purpose of this letter is to inform you of the proximity of your business to our wellhead protection areas and to serve as a reminder that any hazardous material spilled onto the ground or put into a septic system has the potential of contaminating our drinking water supply. Some potential contamination sources are...

- Improper use of a septic system (dumping paint, cleaners, or solvents into your septic system).
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- Leaking fuel storage tanks and distribution lines.
- Accidental spillage of fuel.

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 fee free to contact me.

Regards,

Margie Ziegler
Administrative Assistant/Port Auditor

Attachment

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Bingen, WA 98605
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Fax: 509-493-4257
www.portofklickitat.com

Good for business. Good for life.

Port of Klickitat

May 26, 2010

Royal Hovinghoff
Eternal Rest Pet Services
PO Box 303
Lyle, WA 98635

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Regards,

Margie Ziegler
Administrative Assistant/Port Auditor

Attachment

154 E Bingen Pt. Way Ste. A
Bingen, WA 98605
Office: 509-493-1655
Fax: 509-493-4257
www.portofklickitat.com

Good for business. Good for life.

Port of Klickitat

Wayne Vinyard
Port Commissioner
President

Port Commissioner
Vice President

Jim Herman
Port Commissioner
Secretary

Marc D. Thornsbury
Executive Director

Margie Ziegler
Administrative Assistant
Port Auditor

Terry Wroe
Maintenance Supervisor

Esteban Sanchez
Maintenance Assistant

May 26, 2010

Pellisier Trucking
PO Box 192
The Dalles, OR 97058

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May 26, 2010

Klickitat County Pud
1313 S. Columbus Ave.
Goldendale, WA 98620

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Port of Klickitat

May 26, 2010

CBII Manufacturing
PO Box 606
Bingen, WA 98605

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May 26, 2010

James Dean Construction
55 Mt Adams Hwy
Glenwood, WA 98619

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Esteban Sanchez
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May 26, 2010

Underground Specialties
PO Box 547
Dallesport, WA 98617

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May 26, 2010

Columbia Phyto Technology
PO Box 296
Dallesport, WA 98617

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Port of Klickitat

May 26, 2010

Underwood Fruit & Whse
PO Box 1096
White Salmon, WA 98672

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May 26, 2010

Dallesport Log Yard
69 VanHoy Rd
Goldendale, WA 98620

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May 26, 2010

Amerigas Propane Inc.
PO Box 798
Valley Forge, PA 19482-9908

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James Riley Trustee
PO Box 1078
Goldendale, WA 98620

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Appendix J

Coliform Monitoring Plan

RESOLUTION NO. 01-2009

BY

KLICKITAT COUNTY PORT DISTRICT NO. 1,

A RESOLUTION ADOPTING THE DALLESPORT INDUSTRIAL PARK WATER SYSTEM COLIFORM MONITORING PLAN

WHEREAS, the Klickitat County Port District No. 1 ("Port") owns a public water supply system in Dallesport, Washington in order to provide water to tenants of its Dallesport Industrial Park and adjacent properties; and

WHEREAS, the Port is responsible for insuring that water delivered to customers meets state water quality standards; and

WHEREAS, the Port is responsible for protecting the health and safety of its water users;

NOW, THEREFORE BE IT RESOLVED, that the Klickitat County Port District No. 1 hereby adopts the Coliform Monitoring Plan described in detail in the Port's Water System Master Plan dated January 2008 and subsequently revised and submitted to the Washington Dept. of Health in June 2009.

ADOPTED IN OPEN SESSION this 2nd day of June 2009.

KLICKITAT COUNTY PORT DISTRICT NO. 1
Board of Commissioners

Norman Deo, President

Rodger Ford, Vice-President

S. Wayne Vinyard, Secretary

ATTEST

Margie Ziegler
Administrative Assistant

PORT SEAL

Coliform Monitoring Plan for: Dallesport Industrial Park Water System

A. System Information

Water System Name Dallesport Industrial Park Water System	County Klickitat	System I.D. Number 00238
Attach copy of current WFI		
Number of Routine Samples Required Monthly by Regulation: 1	Number of Sample Sites Needed to Represent the Distribution System: 3	

B. Routine and Repeat Sample Locations

Location/Address for Routine Sample Sites	Location/Address for Repeat Sample Sites
X1. 101 Parallel Building Bathroom Sink (See Map For Location)	1-1. Dallesport Waste Water Treatment Plant Lab Sink (See Map For Location)
	1-2. Dallesport Foundry Bathroom Sink (See Map For Location)
	1-3. Cam Thomas Property Hosebib (See Map For Location)
X2. Columbia Hills RV Park Bathroom Sink (See Map For Location)	2-1. James Dean Construction Process Area Hosebib (See Map For Location)
	2-2. Eternal Rest Pet Services Hosebib (See Map For Location)
	2-3. Underground Specialties Bathroom Sink (See Map For Location)
X3. James Dean Construction Process Area Hosebib (See Map For Location)	3-1. Dallesport Waste Water Treatment Plant Lab Sink (See Map For Location)
	3-2. Dallesport Foundry Bathroom Sink (See Map For Location)
	3-3. Pellissier Trucking Bathroom Sink (See Map For Location)

X4. Dallesport Specialty Lumber **Bathroom Sink (See Map For Location)**	**4-1. Columbia Hills RV Park** **Bathroom Sink (See Map For Location)**
	4-2. Dallesport Foundry **Bathroom Sink (See Map For Location)**
	4-3. Dallesport Waste Water Treatment Plant **Lab Sink (See Map For Location)**
X5. Pellissier Trucking **Bathroom Sink (See Map For Location)**	**5-1. Columbia Hills RV Park** **Bathroom Sink (See Map For Location)**
	5-2. James Dean Construction **Process Area Hosebib (See Map For Location)**
	5-3. Cam Thomas Property **Hosebib (See Map For Location)**

If the number of Routine samples needed to cover the distribution system requires more than three Routine sites, attach additional sheets as needed.

C. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	X1	July	X2
February	X2	August	X3
March	X3	September	X4
April	X4	October	X5
May	X5	November	X1
June	X1	December	X2

D. Month Following Unsatisfactory Samples

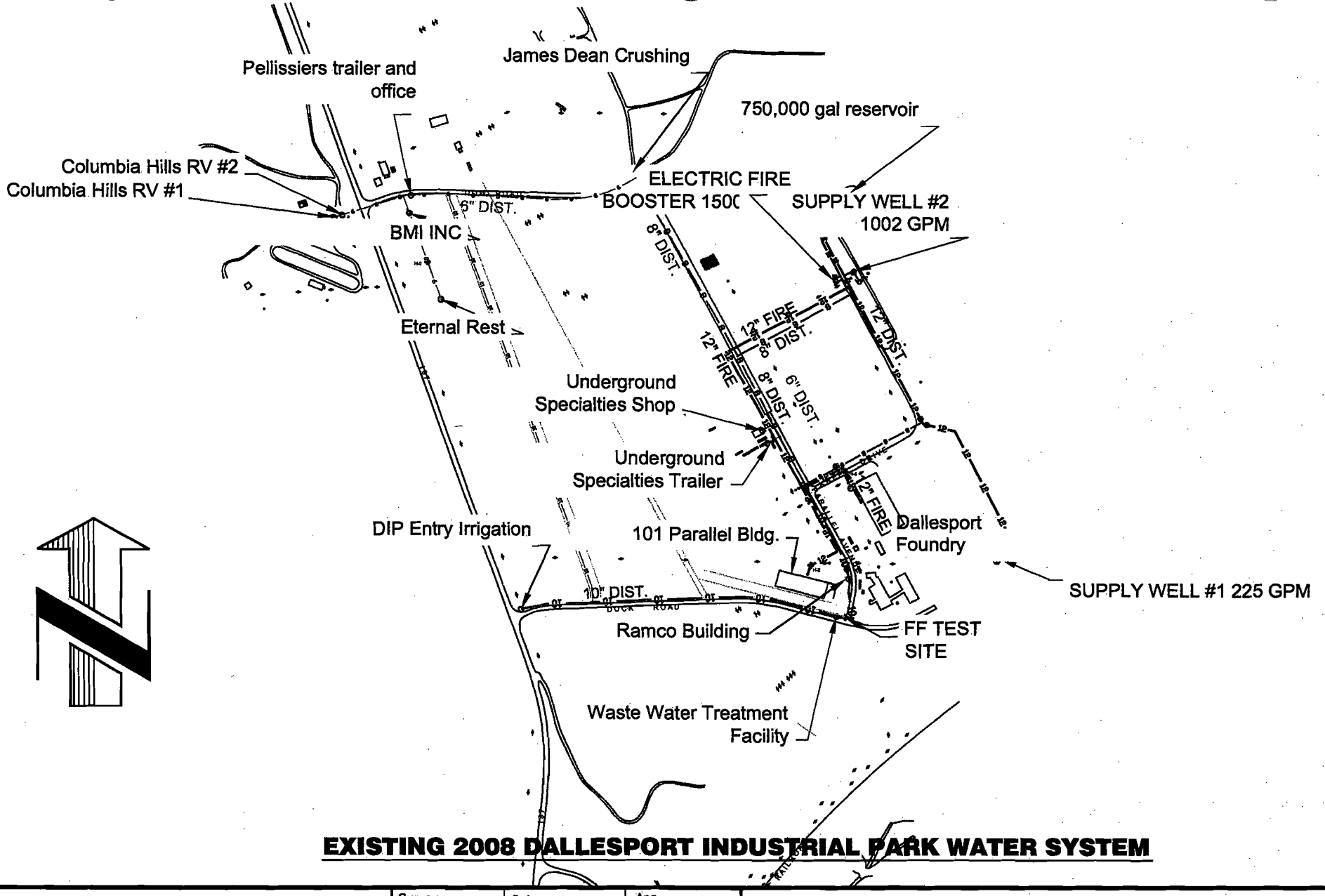
Location/Address for Routine Sample Site(s) Unsatisfactory the Previous Month	Location/Address for the five Routine Sample Sites
X1. 101 Parallel Building Bathroom Sink (See Map For Location)	1-1. 101 Parallel Building Bathroom Sink (See Map For Location)
	1-2. Dallesport Foundry Bathroom Sink (See Map For Location)
	1-3. Cam Thomas Property Hosebib (See Map For Location)
	1-4. Pellissier Trucking Bathroom Sink (See Map For Location)
	1-5. Dallesport Waste Water Treatment Plant Lab Sink (See Map For Location)
X2. Columbia Hills RV Park Bathroom Sink (See Map For Location)	2-1. Columbia Hills RV Park Bathroom Sink (See Map For Location)
	2-2. Dallesport Foundry Bathroom Sink (See Map For Location)
	2-3. Cam Thomas Property Hosebib (See Map For Location)
	2-4. Pellissier Trucking Bathroom Sink (See Map For Location)
	2-5. Dallesport Waste Water Treatment Plant Lab Sink (See Map For Location)
X3. James Dean Construction Process Area Hosebib (See Map For Location)	3-1. James Dean Construction Process Area Hosebib (See Map For Location)
	3-2. Dallesport Foundry Bathroom Sink (See Map For Location)
	3-3. Cam Thomas Property Hosebib (See Map For Location)
	3-4. Pellissier Trucking Bathroom Sink (See Map For Location)
	3-5. Dallesport Waste Water Treatment Plant Lab Sink (See Map For Location)

X4. Dallesport Specialty Lumber Bathroom Sink (See Map For Location)	4-1. Dallesport Specialty Lumber Bathroom Sink (See Map For Location)
	4-2. Cam Thomas Property Hosebib (See Map For Location)
	4-3. Oregon Cherry Growers Bathroom Sink (See Map For Location)
	4-4. Dallesport Foundry Bathroom Sink (See Map For Location)
	4-5. Pellissier Trucking Bathroom Sink (See Map For Location)
X5. Pellissier Trucking Bathroom Sink (See Map For Location)	5-1. Pellissier Trucking Bathroom Sink (See Map For Location)
	5-2. James Dean Construction Process Area Hosebib (See Map For Location)
	5-3. Cam Thomas Property Hosebib (See Map For Location)
	5-4. Dallesport Waste Water Treatment Plant Lab Sink (See Map For Location)
	5-5. Columbia Hills RV Park Bathroom Sink (See Map For Location)

E. Preparation Information

System Name Dallesport Industral Park Water System	Date Plan Completed January 2008	Dates Modified
Name of Plan Preparer: Tenneson Engineering	Position: Consultant	Daytime Phone # (541) 296-9177
State Reviewer	Date Last Review	

F. System Map (See Attached)



EXISTING 2008 DALLESPORT INDUSTRIAL PARK WATER SYSTEM

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
409 LINCOLN STREET
THE DALLES, OREGON 97058
541-296-9177 FAX 541-296-6657

Survey	Calc.	App.
T.E.C.	D.O.E.	
Drawn	Date	Scale
K.C.T.	1/16/2008	N.T.S.
Dwg. No.	Work Order No.	Sheet
	12726	1 of 1

COLIFORM MONITORING SITE MAP FOR KLICKITAT COUNTY DALLESPORT INDUSTRIAL PARK

DALLESPORT, WASHINGTON

PLOT DATE: 1/29/2008 K:\ACAD\12700\12726\2008 DIP Water Improvements.dwg

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

WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter 3
Updated: 02/19/2009
Printed: 06/16/2009
WFI Printed For: On-demand
Submission Reason: Contact Update

RETURN TO: Eastern Regional Office, 16201 E Indiana, Suite 1500, Spokane Valley, WA, 99216

1. SYSTEM ID NO	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
00238 5	DALLESPORT INDUSTRIAL PARK	KLICKITAT	A	NTNC

6. PRIMARY CONTACT NAME & MAILING ADDRESS	7. OWNER NAME & MAILING ADDRESS	8. Owner Number 007884
TIMOTHY T. FURLONG [MANAGER] KLICKITAT CO PUD #1 1313 S COLUMBUS AVE GOLDENDALE, WA 98620	KLICKITAT COUNTY PORT DISTRICT MARC THORNSBURY TITLE: EXEC DIRECTOR 154 E BINGEN PT WY, STE A BINGEN, WA 98605	
STREET ADDRESS IF DIFFERENT FROM ABOVE ATTN ADDRESS CITY STATE ZIP	STREET ADDRESS IF DIFFERENT FROM ABOVE ATTN ADDRESS CITY STATE ZIP	

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone:	(509) 773-7639	**Owner Daytime Phone:**	(509) 493-1655
Primary Contact Mobile/Cell Phone:	(509) 250-0454	**Owner Mobile/Cell Phone:**	(503) 201-1193
Primary Contact Evening Phone:	(xxx)-xxx-xxxx	**Owner Evening Phone:**	(xxx)-xxx-xxxx
Fax: (509) 773-3227	**E-mail:** tfurlong@klickpud.com	**Fax:** (509) 493-4257	**E-mail:** mthornsbury@portofklickitat.com

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

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

- [x] Not applicable (Skip to #12)
- [ ] Owned and Managed — SMA NAME: _____ SMA Number: _____
- [ ] Managed Only
- [ ] Owned Only

12. WATER SYSTEM CHARACTERISTICS (mark ALL that apply)

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

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

750,000

15 Source Number	16 SOURCE NAME LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	17 INTERTIE INTERTIE SYSTEM ID NUMBER	18 SOURCE CATEGORY									19 USE			20 SOURCE METERED	21 TREATMENT						22 DEPTH TO FIRST OPEN INTERVAL IN FEET	23 CAPACITY (GALLONS PER MINUTE)	24 SOURCE LOCATION			
			WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRING FIELD	SEA WATER	SURFACE WATER	RANNEY INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY		NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER			1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	Well #1 - AFL872		X										X					X					210	160		26	02N	13E
2	Well #2 - AFL871		X										X				X						292	1000	NE SE	26	02N	13E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
00238 5	DALLESPORT INDUSTRIAL PARK	KLICKITAT	A	NTNC

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)	0	0	0
A. Full Time Single Family Residences (Occupied 180 days or *more* per year)	0		
B. Part Time Single Family Residences (Occupied *less than* 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied *more than* 180	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied *less than* 180	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	42	42	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	14	14	108
28. TOTAL SERVICE CONNECTIONS		56	108

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or *more* days p: 0

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

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	930	840	930	900	930	1350	1395	1395	900	930	900	930
B. How many days per month is water accessible to the public?	31	28	31	30	31	30	31	31	30	31	30	31

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students daycare children and/or employees are present each month?	50	50	50	50	50	50	50	50	50	50	50	50
B. How many days per month are they present?	31	28	31	30	31	30	31	31	30	31	30	31

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	1	1	1	1	1	1	1	1	1	1	1	1

35. Reason for Submitting WFI:

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

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

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____ **TITLE:** _____

Appendix K

Operation and Maintenance Manual

The incandescent light bulbs on the South side of the building burn out much faster than the florescent lights, so they should be checked more frequently.

Irrigation for Bldg. 1B is provided from the Bingen Point Business Park irrigation system and controlled by the Rain Bird controller mounted on the West side of the building.

Building 1B should also be washed down on the East side (same as Bldg. 1A).

BUILDING 1C

Building 1C was built in 1997-1998 and is the smallest of the buildings. The power disconnect is mounted on the exterior wall of Bldg. 1A on the North side.

BUILDING 1D

Building 1D was built in 2003-2004. This building is located in the SW corner of the Business Park. On the East side of the building, the door furthest north is a mechanical room. In this room you will find the controls for the exterior lights, irrigation system, and the fire sprinkler system. The manual for the exterior lights is located in the shop. The lights need to be set to turn on just before dark and just after dawn. Every week or two the times need to be adjusted, depending on the season. The irrigation system controller is also located in this room on the west wall. It is a Rain Bird controller. Water for this irrigation system is pumped by the Bingen Point Business Park irrigation system. The fire sprinkler control system is also in this room. This system should be tested annually (We currently use ABC Fire Control).

BUILDING 1E

Building 1E is almost complete 2006-2007. Building 1E is located on the NW corner of the Business Park. 1E has mechanical room on the East end. In this room you will find a Simplex Fire Sprinkler system, exterior light controls, and an irrigation controller. The fire sprinkler system needs to be tested annually (ABC Fire Control). The lights can run automatically with a photo cell or on a timer setup - whichever you prefer. As of January 2007 the landscaping and irrigation system are not complete.

DALLESPORT INDUSTRIAL PARK

The Dallesport Industrial Park (DIP) is located on the East side of US 197 South of SR14. The industrial park includes 660 acres, a public water system (two wells and a reservoir), railroad spurs for loading, a barge dock, and, at the entryway, there is an irrigation system to keep up the landscaping. Currently, I got to DIP twice a week.

DIP WATER SYSTEM

The DIP water system includes a 750,000 gallon reservoir, Well #1 (which is chlorinated), Well #2 (which is not chlorinated and mainly used for putting out potential fires) and two fire booster pumps. Any questions about the water system can be answered by Jerry

Branton, the Klickitat PUD or Darren at Tenneson Engineering (541) 296-9177. Any questions regarding laws or regulations can be answered by the Department of Health at (509) 456-3115.

RESERVOIR

- Holds 750,000 gallons of water
- Receives water from Well #1 and Well #2
- Has a control panel on the North side, where the depth of the water can be read, the mercoid switches for the wells can be adjusted, and has a ¼ inch black water line where water can be tested. The water level should be recorded in the blue water level notebook (located in the truck) twice a wee when working at DIP.
- On the NE side of the tank there is a drain line for the reservoir controlled by a valve 2 feet away. The line is used to drain the tank or purge it, when needed.
- Feeds water to then tenets and feeds water to the fire lines using pressure from the fire auxiliary pumps.
- The reservoir should be purged for 10-15 minutes once every six months to keep it cleaned out.

WELL #1

Well #1 is located on Dock Rd. ¼ mile after it turns to gravel. It is on the left hand side of the road and is in the concrete block house. The pump on this well only pumps 150-175gpm of water. In additions to the pump you will also find a chlorinator and a chlorine tank in the block house.

CHLORINATION

Manuals for the chlorinator and pump are on the desk. There are two blue notebooks on the desk. One labeled "Chlorine Mixing Log", which contains the chorine mixing log forms, and another labeled "Chlorine Testing Log" which contains the chlorine residual test forms.

- **CHLORINATOR MACHINE:** The chlorinator machine was bought new in May 2006. The brand of the pump is Pulsafeeder. Refer to manual for maintenance and operation specifications. The manual is located on the desk in the pump house.

- **CHLORINE SUPPLIER:** Mt. Hood Chemical Co. (800) 547-2594. Oder chlorine; 12.5% liquid mixture (at this time). Store cases of chlorine (4 gallons to a case) in the Well #1 well house. You should order no more than six cases at a time, unless unusual water usage is anticipated, as chlorine does not hold strength well. A six month shelf life is the norm.

MIXING CHLORINE

- The mixture level in the 45 gallon chlorine tank is usually maintained at approximately 30 gallons. If heavy water use is anticipated, maintain a higher level for the high-use period. Under normal conditions, add chlorine mix when the level is down to 15 gallons remaining in the tank.
- Always wear a mask and use gloves when mixing. Always mix with the door open ventilation. Always use the ¾" X 4' white PVC pipe to mix within the barrel. The PVC pipe is kept in a bucket next to the tank to minimize the amount of chlorine on the floor.
- Fill the 45 gallon tank with a mix ratio of 5 (five) gallons of water to one gallon to 1 (one) gallon of chlorine. Water is obtained from a water spigot located in front of the pump. Mix well. The rate of feed is adjusted to the potency of the solution mixed. See Instruction Manual, pg. 13 for explanation of feed rate.
- Log the amount of chlorine mixture added to the tank on the Chlorine Mixing Log in the blue notebook.

WELL #2

To find Well #2 you turn onto Kreps Lane off of Parallel Ave. You then take the first left just after Riley's chain link fence. Follow this gravel road for a few hundred yards until you get to a block house. The block house is called the fire booster pump block house; it contains the diesel and electric booster pumps and also the electrical panel for Well #2. Well #2 is NOT chlorinated unlike Well #1. The pump on Well #2 pumps 1000gpm. The electrical panel for this pump is on the West wall inside the block pump house. On the electrical panel you will find a three position switch: manual/off/automatic. The switch is left on auto unless testing water at the reservoir, then the switch should be off. The actual well is located in a concrete vault 20 feet north of the block house. To read the water meter for the well you unlock the lid with a 2035 master lock key and climb down inside the vault. The meter reading is recorded in a binder kept on the top shelf of the shelving unit in the block house. Record the water meter reading and electrical panel reading twice a week when you are working at DIP.

FIRE BOOSETER PUMPS DIESEL AND ELECTRIC

The diesel and electric fire booster pumps are located inside Well #2's pump house. These two pumps maintain pressure in the lines in case of a fire and a large demand for water is needed. If pressure was lost and these pumps were needed the electric would turn on first. The diesel pump is the backup and would only run if the electric pump couldn't run because of a power outage or pump failure. Both pumps individually push 1500gpm from the reservoir into the water lines. There are four pressure gauges that need to be read and recorded twice a week when working at DIP. The binder for this information is located on the top shelf of the shelving unit in the block house.

DIESEL PUMP

- Oil and water should be checked twice weekly while working at DIP
- Oil should be changed every 50 hours or once per year (delo 400)

- Runs automatically every Wednesday to charge batteries
- Diesel tank should be measured once a month and filled when ¼ tank is reached. Contact Wilcox and Flegel 493-1611 to arrange refill.
- All gauges should be checked and recorded when working at DIP

ELECTRIC PUMP

- Every three months the electric pump should be run manually for 10 minutes. The pumps electrical panel has a three position switch. Turn the switch to manual to run and then back to automatic.

TESTING THE WATER

STANDARD TEST PROCEDURE:

Turn on the spigot, faucet, etc. Allow the water to run for 10 minutes before testing. Take a test tube from the kit and place it under the stream of water filling to the white line. Leave water running for a second test. Screw the lid on the test tube and place it in the tester with the vertical white line in alignment with the black arrow on the test kit. Press the read button. If the reading is 0.00, continue. If the reading is anything other than 0.00, press the zero button. The reading should come up as zero. From the test kit, add 5 (five) drops of DPD 1B. Screw the lid onto the test tube and shake gently side to side a few times. Place the test tube into the test machine so that the white line is even with the mark on the test machine. Press the READ button on the machine front. The reading is shown on the LED screen. Record the reading for logging later. Perform second test. Record this reading also. Log both test results on the "Water Testing Log" in the Well #1 pump house.

When testing at the reservoir, Well #2's pump should be shut off so un-chlorinated water isn't pumped into the tank. Unlock the Reservoir control panel with a 2035 master key. Inside is a small black tube. Move the end of the tube so it hangs outside the box. Disinfect the tube by spraying the end with a spray bottle containing chlorine or alcohol. Wait 10 seconds and wipe it with a clean paper towel. Turn on the small valve. Test using standard testing procedure. When all testing at the Reservoir is done, go to the Fire Auxiliary pump house and turn the Well #2's pump back on.

The reservoir should maintain 0.15 to 0.35 free chlorine residual. The end of the line (presently Col. Hills RV) should maintain at least a trace of chlorine.

DPD 1A and DPD 1B are purchased from Portland Engineered Products. (503) 656-4880

DAILY CHLORINATION REPORT: Currently Roy Phillips at the crematorium test the water daily and logs the results on the Daily Chlorination Report. At the end of each month, collect the original. A copy is placed in the general file and the original is mailed to the Dept. of Health by the 10th of the following month. When working at DIP (twice a week) test the water at the reservoir. Record the readings in the log book in the well house #1 and in the daily chlorination report for the date tested.

COLIFORM TESTING is done once a month. A sample is taken the first week of the month, first trip of the week. Klickitat County Department of Health 170 Lincoln St. White Salmon performs the coliform testing. They do not accept samples of Fridays. Water samples are taken from any spigot of facet in the DIP water system and the sample location should be rotated through out the entire water system. (Example: January at Dallesport Lumber, February at Dallesport Foundry, etc.) Water samples are taken in a bottle provided by the Department of Health. Perform a chlorine residual test as usual and record the results. Then, fill the coliform sample bottle and secure the lid. After the sample is taken fill out the form give by the DOH. Place form around the sample bottle and secure with a rubber band. Drop off the sample at the DOH in White Salmon for testing. They will contact you if your test fails and you will be required to take more tests.

FIRE HYDRANTS

Purge the fire hydrants every 6 months by opening and letting them run for 5-10 minutes. Fire hydrants are located at:

- Eternal Rest Pet Services
- 101 Parallel Building
- Dallesport Lumber
- Dock Road – 3 hydrants
- Parallel Ave. at Berry Dr.

DALLESPORT ENTRYWAY

The entryway landscaping is on the corner of Dock Rd. and I-97. It is watered by an irrigating system. The irrigation is controlled by a rain bird computer located on the back side of the electrical panel which is located on the north side of the landscaping along 97. There are 4 (four) different lines; each should run for 50 minutes, two out of seven days a week. The entryway landscaping should be weeded and mowed as necessary. Weed eating long Dock Rd. should also be done as necessary.

RAIL SPUR

Each of the three rail spur switches owned by the Port should be greased or oiled every six months. When lubricating the switches, check to make sure they are functioning properly. A weighted steel lever controls each switch. Rotate the lever 180 degrees, then look at the steel plates the track sits on and lubricate them where there is noticeable friction. Be sure to leave the switch in the position you found it. Switches are located on:

- The westernmost northern spur north of the Foundry and west of Dallesport Lumber
- The westernmost northern spur immediately south of Kreps Dr. (DIP)
- The easternmost northern spur north of Kreps Dr. (DIP)

BARGE DOCK

Appendix L

Emergency Response Plan

RESOLUTION NO. 02-2009

BY

KLICKITAT COUNTY PORT DISTRICT NO. 1,

A RESOLUTION ADOPTING THE DALLESPORT INDUSTRIAL PARK WATER SYSTEM EMERGENCY RESPONSE PLAN

WHEREAS, the Klickitat County Port District No. 1 ("Port") owns a public water supply system in Dallesport, Washington in order to provide water to tenants of its Dallesport Industrial Park and adjacent properties; and

WHEREAS, the Port is responsible for insuring that customers are protected in the event water quality is compromised; and

WHEREAS, the Port is responsible for protecting the health and safety of its water users;

NOW, THEREFORE BE IT RESOLVED, that the Klickitat County Port District No. 1 hereby adopts the Emergency Response Plan described in detail in the Port's Water System Master Plan dated January 2008 and subsequently revised and submitted to the Washington Dept. of Health in June 2009.

ADOPTED IN OPEN SESSION this 2nd day of June 2009.

KLICKITAT COUNTY PORT DISTRICT NO. 1
Board of Commissioners

Norman Deo, President

Rodger Ford, Vice-President

S. Wayne Vinyard, Secretary

ATTEST

Margie Ziegler
Administrative Assistant

PORT SEAL

Emergency Response Plan

Emergency Notification to Customer: In the event of an Emergency the Port of Klickitat (POK) and/or the contracted system operator, Klickitat County Public Utility District #1 (KPUD), would take steps to notify its customers via the telephone or in person.

Emergency Numbers Distribution: System users are provided the names and phone numbers of the system personnel to contact in case of emergency via this Response Plan, which will be distributed to each user annually.

System Emergency Reference List:

☐ Fire/Police/Medical	911
☐ Klickitat County Emergency services	911
☐ Klickitat County Health Department	509-773-4565
☐ Call Before You Dig Dial 811 or	800-424-5555 account #1617
and Port of Klickitat	509-493-1655
☐ Department of Ecology's Spill Response	360-407-6300
☐ Engineering Consultant/Tenneson Engineering	541-296-9177
☐ Electric Utility/Sewer/ KPUD	509-773-5891
☐ Pump Service/Person Pump	509-773-4085
☐ Electrician/Coburn Electric	541-386-7866
☐ DOH Regional Engineer/ Andres Cervantes	509-329-2120
☐ Eastern DOH main office	509-329-2100
☐ DOH emergency contact after hours	877-481-4901

Personnel Contact Information

Port of Klickitat Office	509-493-1655 office
Tim McMurrin, KPUD Operator	541-980-1956 cell
Greg Watson, KPUD Operator	509-250-2262 cell
Tim Furlong, KPUD Water/Wastewater Manager	509-250-0454 cell
Terry Wroe, POK Maintenance	509-637-3875 cell
Marc Thornsbury, POK Executive Director	503-201-1193 cell

In the event of the following emergencies occurring, standard procedure would be as follows:

Electrical Outage:

- Notify KPUD (800-548-8358 or 509-773-5891)
- Loss of Power will result in loss of well pumps and electrical fire booster pump functioning and no water would be lifted to Reservoir, system pressure would equal the static tank level.
- The diesel fire pump will still operate as designed based on pressure drop in the fire system.
- In the event of an anticipated long term power outage twenty-four hours or more, notify users to conserve water.

Well pump failure:

- Notify Operator for immediate investigation or contact electrician.
- Switch system to operate on remaining working well, in Northern most panel on west wall of Well #2. Conservation measures may be needed.
- Notify systems users if necessary.

Booster pump failure:

- Notify Operator or Electrician for immediate repair or replacement.
- In panel on West wall of Well #2 turn alternating relay to Well #2 only.
- In Well #2 pump room, open labeled gate valve # 3 located on inlet to pressure tank.
- Close labeled gate valve #5 located by meter.
- On panel located on west wall change setting from Automatic to Pressure System.

Distribution System Break

- In the event of a break in the distribution lines, isolate the break using mapping and available valves. Do not shut the main completely down unless authorized by the system Manager, or significant property damage is occurring. Throttle the last valve to eliminate property damage, until break is exposed.
- Notify KPUD Water/Wastewater (W/WW) Department.
- Notify affected connections by telephone or door and request that they turn off their water heaters and other appliances that may be damaged by prolonged outages.
- Call for Emergency Locate of other utilities provided in reference list.
- KPUD or W/WW Manager will determine if a contractor needs to be hired or repairs can be accomplished in house.
- Flush lines until water flows clean and system residual is acquired.
- Notify affected connections of repair completion and that they should flush their service through a hose bib or the cold water supply of a sink for 30 minutes.
- Allow KPUD Water/WW Manager to determine if a possible cross connection has occurred, or if Coliform samples should be taken.

Coliform MCL Violation (e-coli and Fecal Coliform absent)

- Investigate possible problems.
- Within 24 hours take repeat samples at same collection point, source and first service connection above and below original sampling point.
- If any repeat samples are unsatisfactory, notify County Health Department and Regional Engineer and take action as instructed.
- The month following a Coliform MCL violation five samples are required

Acute Coliform MCL Violation E-COLI or FECAL COLIFORM <u>PRESENT</u>

- Notify System users to stop Drinking Water and Boil Water
- Notify Klickitat County Health Department and DOH Regional Engineer immediately and take action as instructed.
- Check Chlorine Pumps and residual at all sources. Increase Chlorine dosage if necessary up to 2.0 ppm, or as advised by DOH.
- Within 24 hours take repeat samples at sources, original sampling point, and

services above and below original sampled service.

- If any repeat samples are unsatisfactory, notify Klickitat County Health Supervisor and take action as instructed.
- Begin flushing of system.

Natural Disaster or Terrorism

This type of incident could result in a total loss of major system components. Coordination with the Washington State Department of Health and Klickitat County Emergency Services is essential in this type of incident. The Port of Klickitat and KPUD Water/WW Department shall make Emergency decisions as to how to proceed to restore safe water to customers and for fire suppression. Notification would be supplied to customers on how to acquire bottled water and how to view system supplied water.

Procedures for responding to backflow incidents.

The Port of Klickitat has adopted the AWWA Pacific Northwest Section -- *Standards for Cross Connection Control.* A copy of this Manual is located in the Port of Klickitat office and at the Dallesport Wastewater Treatment Plant at all times.

In the event of a suspected cross connection, immediate termination of water service is recommended, until a properly installed and approved Backflow device is installed.

In conducting an initial assessment of problem, screen complaint to determine its type and severity asking the following questions:

- ❑ Name and phone number of person making complaint
- ❑ Is the person making the complaint the person that experienced the water quality problem? If not who are the people and what are their names and telephone numbers?
- ❑ Inspect specific fixture where problem was noticed.
- ❑ Ask for a description of the problem.
- ❑ Ask when the problem first occurred
- ❑ After the customer describes these questions ask specific questions about color taste, odor, suspended matter, bugs or other organisms, and oily appearance.
- ❑ Ask if the problem is in the hot or cold tap or both
- ❑ Ask if anyone consumed the water from the source in question and what time the consumption took place.
- ❑ Advise the customer to use only bottled water until the complaint has been investigated and they have received a report back.
- ❑ Take initial water sample at fixture labeled with time and fixture.
- ❑ Make initial decision as to the severity of problem.
- ❑ Isolate the service or area.
- ❑ Notify all affected system users

Notify the following people within 24 hours.

Klickitat County Health Dept.	509-773-4565
Department of Health employees	
DOH Regional Engineer/ Andres Cervantes	509-329-2120
Water quality specialist Mark Steward	509-329-2134
CCC Liaison Simon Tung	360-236-3132

At this time KPUD Water/WW Manager will conduct an investigation in accordance with procedures outlined in Chapters 3 and 4 of PNWS-AWWA Backflow Incident Investigation Procedures.

After a determination has been made as to the nature and location of problem.
Isolate the cause of the problem before proceeding with disinfection and flushing of system.

In the event that contaminate turns out to be chemical in nature all water outlets are to be turned on and flushed for a minimum period of 15 minutes.

To remove a chemical of physical contaminant, it may be necessary to provide a physical cleaning, using foam swabs or to alter the form of the chemical contaminant through use of chlorination or addition of detergents. If the former is chosen, strict care is to be taken that the use of such chemicals would not increase the toxicity of the contaminate.

In the event that the contaminate turns out to biological in nature liquid sodium hypochlorite will be added temporarily to the system at the wellhead, retained in the pipe for an appropriate amount of time and flushed for a minimum of 15 minutes through all water outlets.

Finally, plumbing is to be reevaluated and protection installed appropriate to the degree of hazard, to prevent incident from reoccurring.

Appendix M

Cross-Connection Control Policy

RESOLUTION NO. 14-2008

BY

KLICKITAT COUNTY PORT DISTRICT NO. 1,
DALLESPORT INDUSTRIAL PARK WATER SYSTEM
CROSS-CONNECTION CONTROL POLICY

A RESOLUTION AUTHORIZING DALLESPORT INDUSTRIAL PARK WATER SYSTEM CROSS-SECTION CONTROL POLICY

WHEREAS, the Klickitat County Port District No. 1 ("Port") owns a public water supply system in Dallesport, Washington in order to provide water to tenants of its Dallesport Industrial Park and adjacent properties; and

WHEREAS, the Port is responsible for insuring that water delivered to customers meets state water quality standards; and

WHEREAS, the Port is responsible for preventing the contamination of the public water supply system; and

WHEREAS, cross connections within a customer's plumbing system pose a potential source for the contamination of the public water supply system;

NOW, THEREFORE BE IT RESOLVED, that the Klickitat County Port District No. 1, to protect public health and safety, establishes the following service policy to protect the Dallesport Industrial Park public water supply system from the risk of contamination and that this policy shall apply equally to all new and existing customers.

Cross-Connection Control Policy

Upon assessing the risk of contamination posed by a customer's plumbing system and use of water, the Klickitat County Port District No. 1 ("Port") may allow the customer to connect directly to the water service without a State approved air gap. Permission for a direct connection to the water service will be at the sole discretion of the Port and will be 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 their premise and the Port's distribution system that may occur due to backflow through a cross connection. These measures shall include the prevention of backflow under any backpressure or backsiphonage condition including the disruption of supply from the Port's system that may occur by reason of routine system maintenance or during emergency conditions.

2. The Port's Executive Director or his/her designee shall establish the priority for the survey and repeat survey of new and existing premises for cross connections, based on the risk management policies established by the Port and the minimum requirements imposed by the State Department of Health. The Port's Executive Director or his/her designee shall establish standards and procedures governing the application, installation, approval, and testing of assemblies and other related tasks in accordance with the State Department of Health's regulations and the Pacific Northwest section of the American Water Works Association's "Manual of Cross Connection Control," Sixth Edition, or latest edition thereof. The Port may establish such other more stringent requirements as deemed necessary to reduce the risk of contamination of the public water supply system.

3. A survey of a customer's premise shall be for the sole purpose of establishing the Port's minimum

requirements for the protection of the public water supply system, commensurate with the Port's assessment as to the degree of hazard. It shall not be assumed by any customer or other regulatory agency that Port surveys, backflow prevention assembly installation requirements or the lack thereof, or other actions by the Port, its agents, and its employees, constitutes an approval of the customer's plumbing system or an assurance to the customer of the absence of cross connections therein.

4. The customer's plumbing system, starting from the Port's service meter, may be considered a potential high health hazard requiring the isolation of the customer's premise by a State approved, Port reviewed, and customer installed and maintained air gap or backflow prevention assembly. Backflow prevention assemblies shall be located at the end of the Port's service pipe. Water shall only be supplied to the customer through such an approved assembly or air gap.

ADOPTED IN OPEN SESSION this 18th day of October 2008.

KLICKITAT COUNTY PORT DISTRICT NO. 1
Board of Commissioners

S. Wayne Vinyard, President

Norman Deo, Commission Vice-President

ATTEST

Rodger Ford, Commission Secretary

Margie Ziegler
Administrative Assistant

PORT SEAL

Appendix N

Construction Cost Estimates

PORT OF KLICKITAT
DALLESPORT INDUSTRIAL PARK WATER SYSTEM
CONSTRUCTION COST ESTIMATES
FOR
EXISTING SYSTEM CAPITAL IMPROVEMENTS

2009

- Chlorinator at Well #2, including insertion type, electromagnetic flow meter, 16' x 20' building extension, connection to existing waterline, electrical, heat, etc. (Contractor personnel). **$45,000**

- Replace source meter at Well #1 with 4" propeller type meter (Contractor personnel). **$2,500**

- Replace source meter at Well #2 with 6" propeller type meter (Port personnel). **$3,000**

- Install 1" double check-valve assembly at Underground Specialties (Port personnel). **$500**

- Install 1" meter and 2" double check-valve assembly at 101 Parallel building (Port personnel). **$1,000**

2009 Total Estimated Construction Cost - $52,000

2010

- Install electronic flow meter on existing 12" fire line, downstream of the fire booster pump and convert fire booster pump systems to be flow control switched instead of pressure switched (Contractor personnel). **$15,000**

- Install a 6" compound meter and 6" double check-valve assembly at the Dean Construction parcel (Port personnel). **$12,000**

- Replace existing meter to the Pellisier office with a 1" meter and 2" double check-valve assembly (Port personnel). **$1,500**

- Replace existing meter to the Pellisier trailer with a 1" meter and 2" double check-valve assembly (Port personnel). **$1,500**

- Disconnect and cap 8" potable water at the intersection of Berry and James (contractor personnel). **$5,000**

- Connect 8" potable line into the 12" fire line at Berry and Parallel (contractor personnel). **$7,500**

2010 Total Estimated Construction Cost - $42,500

2011

- Replace existing meter to Dallesport Foundry with 1" meter and 2" double check-valve assembly (Port personnel). **$1,500**

- Replace existing meter to Dallesport Lumber with 1" meter and 2" double check-valve assembly (Port personnel). **$1,500**

- Change over potable service to fire line at Parcels 5, 39, 40, the Dallesport Foundry and the Dallesport Lumber (Contractor personnel). **$10,000**

2011 Total Estimated Construction Cost - $13,000

2012

- Disconnect 8" potable line from well transmission line at Kreps and James (Contractor personnel). **$5,000**

- Connect the existing potable line, lying to the south, to the fire line at Lot 42 and Parallel Avenue (Contractor personnel). **$7,500**

2012 Total Estimated Construction Cost - $12,500

All of these costs involved are estimates only based upon assumed construction conditions and material. The Port should budget a minimum 10% for engineering, contract administration and inspection services, and a 10% contingency to allow for unanticipated construction conditions or material cost escalations.

Appendix O

Port Water Rate Schedule

RESOLUTION 6-2007

BY

PORT OF KLICKITAT
KLICKITAT COUNTY, WASHINGTON

A RESOLUTION OF THE PORT OF KLICKITAT COMMISSION APPOINTING RATES FOR THE SALE OF WATER AT DALLESPORT INDUSTRIAL PARK

Whereas, the Port staff has conducted a rate study, and as a result thereof has recommended the revision of water rates as follows:

Monthly Fees and Hook Up Charges

Meter Size	*Monthly Fee*	*Hook Up Fee*
¾"	$22	$2,559
1"	$30	$3,614
1 ¼"	$38	$4,298
1 ½"	$51	$4,915
2"	$82	$14,121
3"	$108	$29,916
4"	$122	$54,955
6"	$151	$94,441
8"	$178	166,112
Larger	Determined on a case by case basis.	

For large meters serving multiple customers charges are levied for each individual connection.

Usage Rates

Gallons	*Charge per 1000 Gallons*
0 – 7,000	$.98
7,000 – 20,000	$1.41
20,000 – 100,000	$1.54
100,000 – 250,000	$1.68
250,000 – 500,000	$1.75
500 or more	$1.96

Hydrant Use

Hydrant Use must have prior approval of the Port Director
Connection Fee: $82.00 per 2" meter per month
Per Gallon rate: Regular Rate plus $.05

Billing

Monthly fees and usage rates are assessed monthly and billed quarterly.

Months	*Billed In*
Jan., Feb., March	April
April, May, June	July
July, Aug., Sept.	Oct.
Oct., Nov., Dec.	Jan.

Late Fee
A late fee of $25 will be charged for all accounts past due 30 days, accounts 60 days past due will be disconnected.

Automatic Rate Increases
All rates will automatically increase by three percent on Jan. 1 of each year.

Whereas, the Port Commission has considered, and wishes to approve the recommendation of its staff;

Now, Therefore, the Port Commission hereby amends the water rates set forth in Appendix A of Resolution 9-2006, as set forth hereinabove. The remainder of said Resolution shall remain in full force and effect.

ADOPTED by the Port of Klickitat Commission, at a regular meeting thereof held this 4th day of September, 2007.

PORT OF KLICKITAT COMMISSION

Rodger Ford, President

S. Wayne Vinyard, Vice-President

Norman Deo, Secretary

ATTEST:

Margie Ziegler
Administrative Asst/Bookkeeper

PORT SEAL

2008 Port of Klickitat Water Rates

Monthly Fees and Hook Up Charges

Meter Size	*Monthly Fee*	*Hook Up Fee*
¾"	$23	$2,636
1"	$31	$3,722
1 ¼"	$39	$4,427
1 ½"	$53	$5,062
2"	$84	$14,545
3"	$111	$30,813
4"	$126	$56,604
6"	$156	$97,274
8"	$183	$171,095

Larger: Determined on a case by case basis.

For large meters serving multiple customers charges are levied for each individual connection.

Usage Rates

Gallons	*Charge per 1000 Gallons*
0 – 7,000	$1.01
7,000 – 20,000	$1.45
20,000 – 100,000	$1.59
100,000 – 250,000	$1.73
250,000 – 500,000	$1.80
500 or more	$2.02

Hydrant Use

Hydrant Use must have prior approval of the Port Director

Connection Fee: $84.00 per 2" meter per month

Per Gallon rate: Regular Rate plus $.0515

Billing

Monthly fees and usage rates are assessed monthly and billed quarterly.

Months	*Billed In*
Jan., Feb., March	April
April, May, June	July
July, Aug., Sept.	Oct.
Oct., Nov., Dec.	Jan.

Late Fee

A late fee of $26 will be charged for all accounts past due 30 days, accounts 60 days past due will be disconnected.

Automatic Rate Increases

All rates will automatically increase by three percent on Jan. 1 of each year.

2009 Port of Klickitat Water Rates

Monthly Fees and Hook Up Charges

Meter Size	*Monthly Fee*	*Hook Up Fee*
¾"	$23.69	$2,715
1"	$31.93	$3,834
1 ¼"	$40.17	$4,560
1 ½"	$54.59	$5,214
2"	$86.52	$14,981
3"	$114.33	$31,737
4"	$129.78	$58,302
6"	$160.68	$100,192
8"	$188.49	$176,228

Larger: Determined on a case by case basis.

For large meters serving multiple customers charges are levied for each individual connection.

Usage Rates

Gallons	*Charge per 1000 Gallons*
0 – 7,000	$1.04
7,000 – 20,000	$1.49
20,000 – 100,000	$1.64
100,000 – 250,000	$1.78
250,000 – 500,000	$1.85
500 or more	$2.08

Hydrant Use

Hydrant Use must have prior approval of the Port Director

Connection Fee: $86.52 per 2" meter per month

Per Gallon rate: Regular Rate plus $.0515

Billing

Monthly fees and usage rates are assessed monthly and billed monthly.

Late Fee

A late fee of $27 will be charged for all accounts past due 30 days, accounts 60 days past due will be disconnected.

Automatic Rate Increases

All rates will automatically increase by three percent on Jan. 1 of each year.

Port of Klickitat
Water Rates Evaluation

June 12, 2007

Outline

- Goals of Rate Structure
- Current Rates
- Regional Rates
- Operation Costs
- Operating Revenues
- Proposed Rate Structure
- Impacts

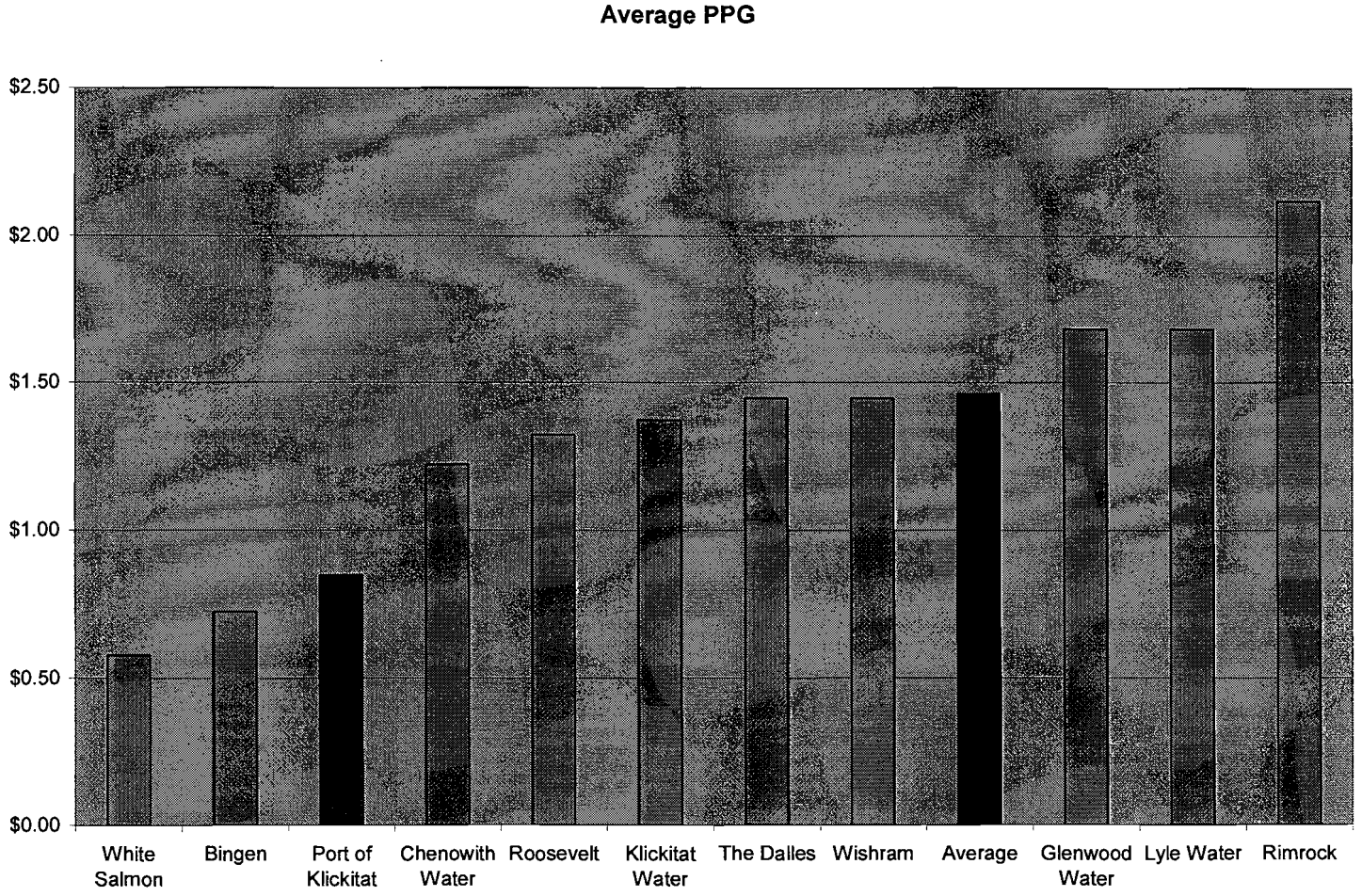
Goals of Rate Structure

- Balance
  - Support economic development in the park.
  - Recover operating costs as much as possible.
  - Charge rates that are fair to customers and the Port.
- Maintain access and availability of the Port's water supply for future park tenants.
- Meet Washington requirements for conservation, testing and reporting.

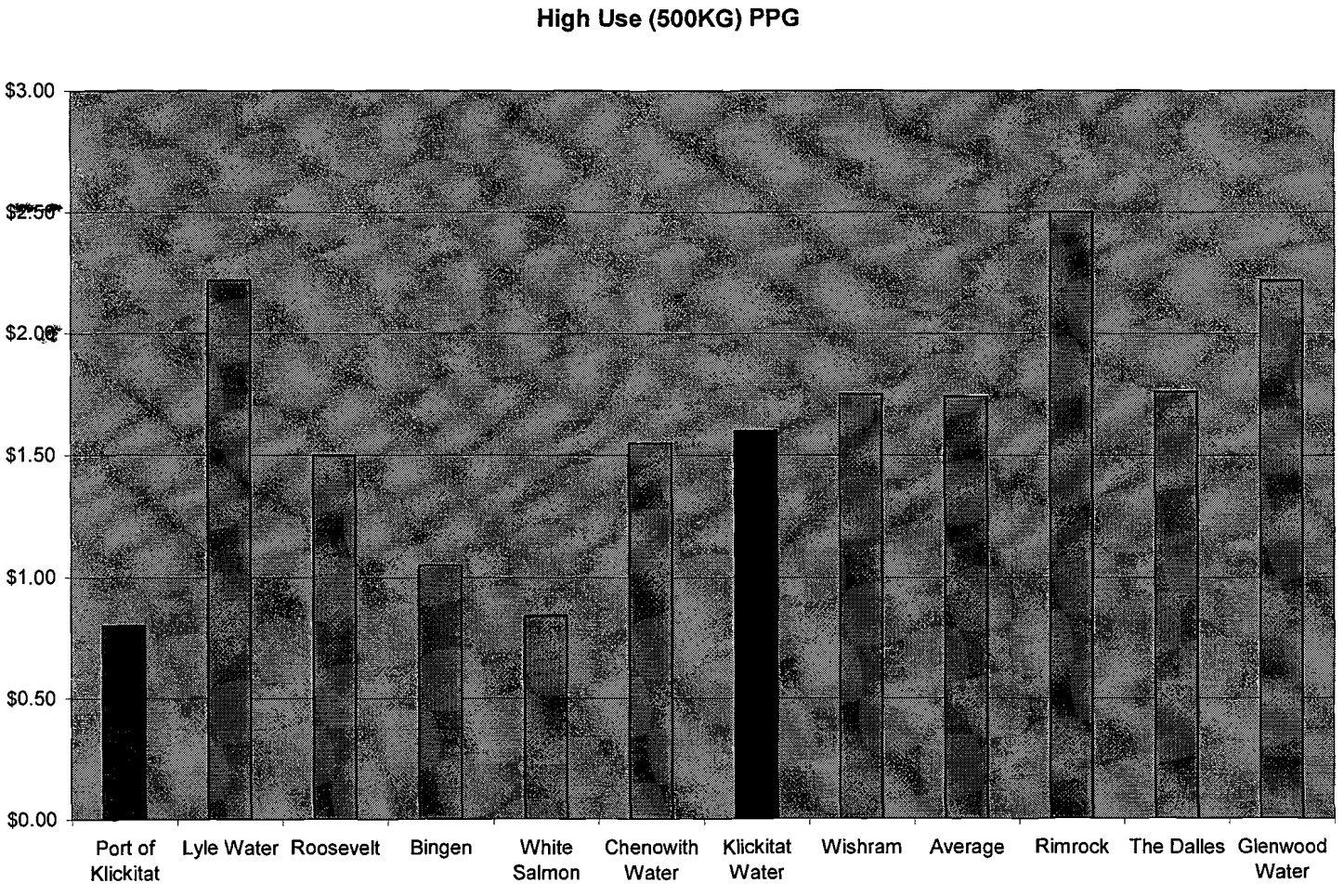
Current Rates

- Have not changed since 1999.
- Declining rate schedule for large water users.
  - No incentive to conserve.
  - Reverse of state guidelines.
- No incremental steps between 7KG and 500KG.
- No hook up or system development charges assessed.

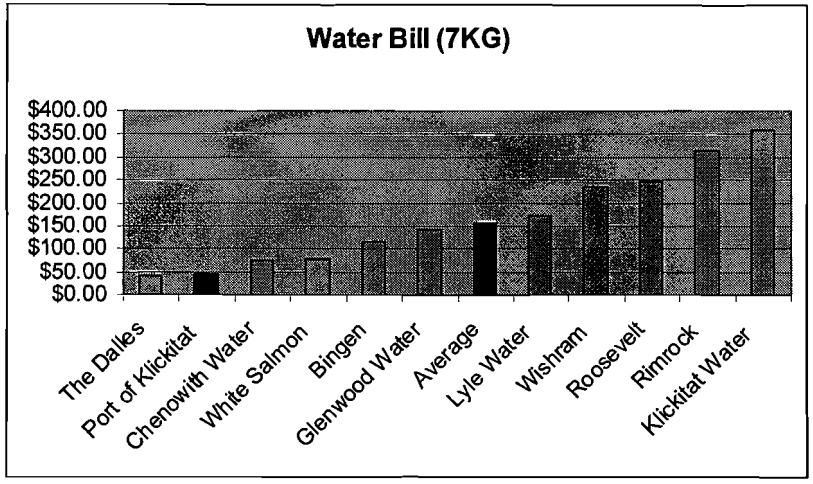
Regional Rates
(Not including Meter Charge)

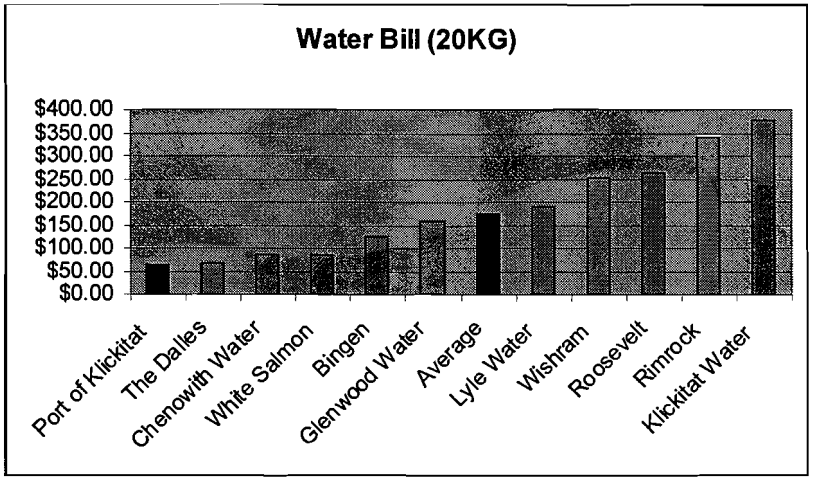


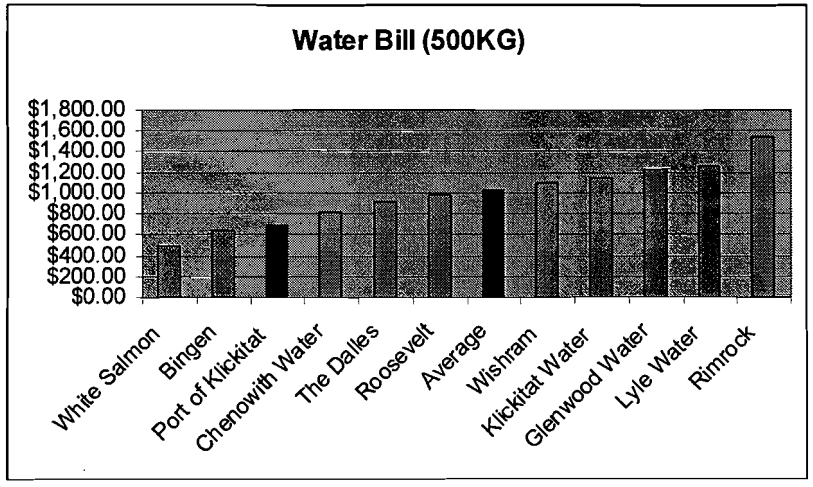
Regional rates

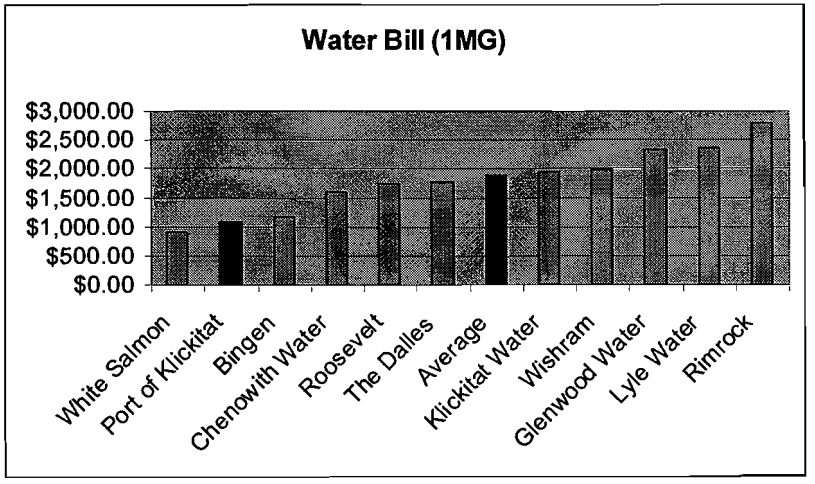


Regional rates
Water Bill fo 2" Line/Overage

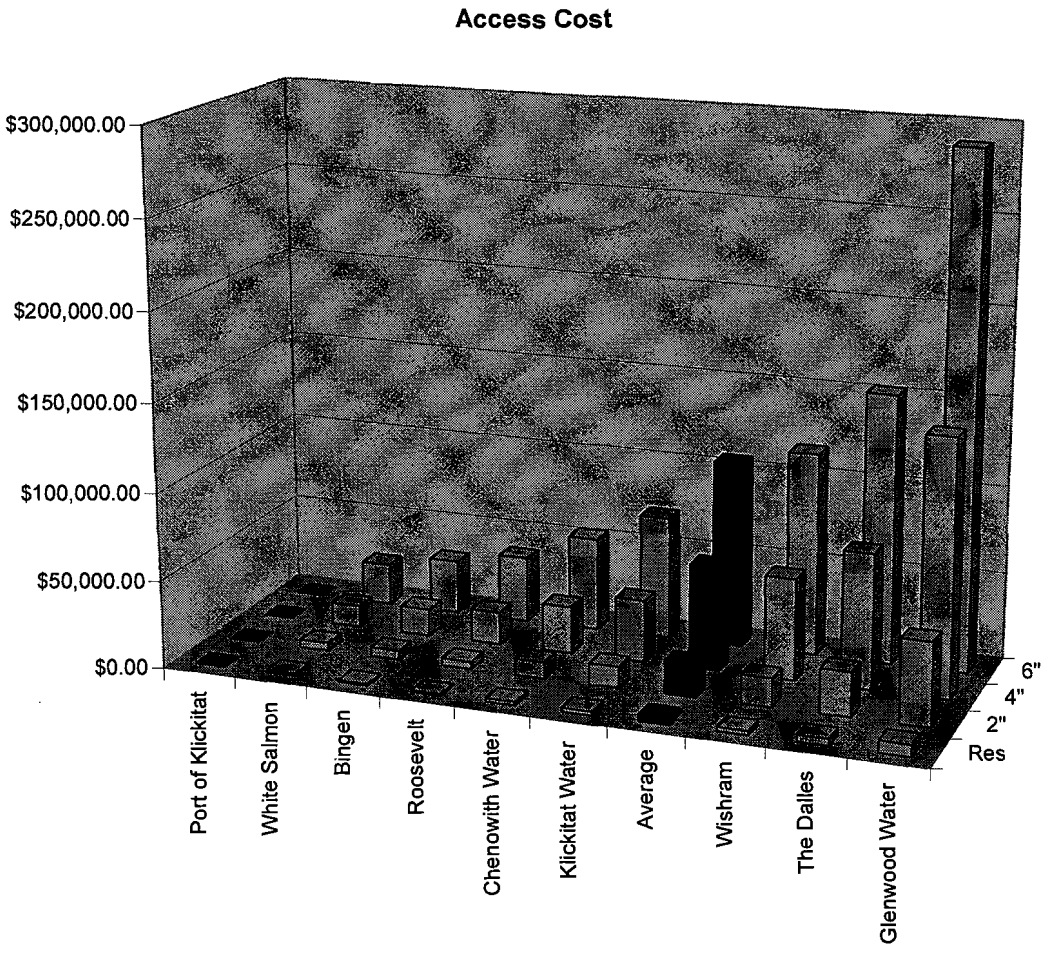








Regional Rates
(System Dev. Fee + Hook Up Fee)



Operation Costs

- Staff Time - % of FTE
  - Executive Director

Task	Hours	
Working with Maintenance resolve questions/concerns	12	
Working with Engineers	20	
Preparing Capital Improvement Cost Estimates	20	
Preparing Annual Budget	15	
Working with WA St Dept of Health	3	
Working with new tenants/EDA	12	
Attending Meetings Tessmer/Eislands/Airport/KC	4	
Annual Report Preparation	3	
Financial Oversight Water Billings/Collections	12	
Prepare Resolutions, Special Agreements, PC Meetings	12	
	113	hrs
	2080	hrs worked
	0.054327	

Operation Costs

- Staff Time - % of FTE
  - Billing

Task					Hours	
Posting Meter Reads					0.5	
Working with Maintenance for rereads/corrections					0.05	
Preparing Billings/Coping/Sorting					0.25	
Mailing/Postage				$6.56	0.25	
Receive Billings					1	
Pull invoice/verify amount/write receipt					0.25	
Post in Checkbook					0.05	
Deposit					0.25	
Take to Bank					0.5	
Reconcile end of month					1	
Follow-up on unpaid accounts					0.25	
					4.35	hrs
			15 accounts		15	accounts
					65.25	per quarter
					4	qtrs
					261	hrs per wtr
					2080	hrs worked
					0.125481	

Operation Costs

- Staff Time - % of FTE
  - Operator

Task			hrs/wk	hrs/year		
Drive 2x week			2	104		
Basic System Check Well 1			0.5	26		
Basic System Check Well 2/ Fire			0.75	39		
Resevour Check			0.25	13		
Water Testing			0.5	26		
Chlorination Mix			0.0625	3.25		
Clean Generator Engine			0.5	26		
Coloform Test			0.25	13		
General Maintainence			0.5	26		
Read Meters			0.25	13		
Classes and Training			0.25	13		
				302.25		
				2080	hrs	
				0.145313	hrs worked per year	

Operating Costs

Expenses

WAGES / SALARIES / BENEFITS	
Operator Salaries	$6,339
Benefits	$3,968
Clerical Salaries	$4,504
Benefits	$3,750
Annual Sub-Total	*$18,561*
OFFICE and GENERAL OPERATIONS	
Audit	
Postage	$24
Mailing	$20
Insurance	$1,482
Misc / NSF	$0
Water Dues	$363
Advertising	$0
Travel	$2,335
Annual Sub-Total	*$4,224*
WATER QUALITY MONITORING	
Annual Sub-Total	*$2,023*
OPERATION & MAINTENANCE	
Equipment Rental	$0
Maint/Repair Water Equipment	$580
Supplies	$751
Fuel	$1,561
Annual Sub-Total	*$2,892*
UTILITY COSTS	
Electrical	$3,256
Sewer	
Garbage	
Annual Sub-Total	*$3,256*
TOTAL	$30,956

Operating Revenue

- FY 2006 $14,819
- Less Opp. Exp. $30,956*
- Net: -$16,137

*Does not include capital investments

Reserves

- The port does not currently hold water system reserves separately.
- With no hook up or system development charges, and an operating loss reserves are negative.

Improvement Costs (Water System 6-year plan)

- System Combination and Main Construction
  - $453,248
- Storage Tank Modification
  - $61,793
- Total
  - $515,041

Proposed Rate Structure

- Goals Remain the same
- Water rates support system operating costs
  - Bring rates reasonably close to regional averages
- Hook up fees support improvement costs
  - Set hook up fees that don't discourage growth, but that are in alignment with regional averages
- Reverse declining rate structure to encourage conservation
- Incrementally introduce increases to offset impacts

Proposed Rate Structure

Meter Rate	Target	Current
¾"	$22	--
1"	$30	$30
1 5/8"	$48	$37.50
2"	$82	$45
4"	$122	$80
6"	$151	$110
8"	$178	$110
Larger	Determined case by case	$110

- For large meters serving multiple customers rate is assessed for each <u>individual</u> hook-up.

Proposed Rate Structure

- Hook Up Cost
  - 1" $3614
  - 1 5/8" $4915
  - 2" $18,526
  - 4" $59,715
  - 6" $106,110
  - 8" $169,238
  - Larger Determined on case by case basis
- For large meters serving multiple customers rate is assessed for each individual hook-up.

Proposed Rate Structure

- Target Price Per Gallon
  - First 7 KG $.98/KG
  - 7 – 20 KG $1.42/KG
  - 20-100 KG $1.55/KG
  - 100-250 $1.67/KG
  - 250-500 KG $1.78/KG
  - 500+ KG $1.98/KG

Proposed Rate Structure

- New per gallon rates implemented quarter three of 2007
- Increase in meter rate pro-rated over two years
- Hook up fees charged on new accounts only

Proposed Rate Structure

- Affect on Customer Quarterly Bill

Dallesport Water Usage Summary

Tenant	Water Line	Gallons Used	Old Bill	New Bill	Change
Cam Thomas	1"	2,630	$90.00	$92.58	2.86%
Columbia Hills RV	4"	733,150	$1,076.52	$1,474.46	36.97%
Dallesport Foundry	2"	10,600	$135.00	$257.97	91.09%
Dallesport Specialty Lumber	2"	65,000	$192.20	$341.07	77.46%
Eternal Rest Pet Service	1"	10,960	$90.00	$102.48	13.87%
Oregon Cherry Growers	2"	100	$135.00	$246.10	82.29%
Pellisier Trucking-Office	2"	6,200	$135.00	$252.08	86.72%
Pellisier Trucking-Trailer	2"	7,600	$112.50	$253.71	125.52%
Riley Bros.	6"	1,000	$330.00	$453.98	37.57%
WWTF	6"	46,625	$363.31	$519.59	43.02%
		883,865	$2,660	$3,994	59.74%