DEPARTMENT OF ECOLOGY
State of Washington

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
REPORT OF EXAMINATION
To Appropriate Public Waters of the State of Washington

APPLICATION DATE	APPLICATION NO.
November 19, 2007	G2-30442

NAME
Olympic Water and Sewer, Inc.

ADDRESS/STREET	CITY/STATE	ZIP CODE
70 Breaker Lane	Port Ludlow, Washington	98365

PUBLIC WATERS TO BE APPROPRIATED

SOURCE

Wells 13, 14 and 16

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	100*	90*

QUANTITY, TYPE OF USE, PERIOD OF USE

Municipal Supply
* Additive quantities in addition to the total water rights owned by Olympic Water and Sewer, Inc.

LOCATION OF WITHDRAWAL

APPROXIMATE LOCATION OF WITHDRAWAL
Well 13: 125 feet North and 1,025 feet West from the Southeast Corner of Section 21, T. 28 N., R. 01 E. W.M.
Well 14: 370 feet North and 375 feet West from the Southeast Corner of Section 21, T. 28 N., R. 01 E. W.M.
Well 16: 90 feet North and 1,120 feet West from the Southeast Corner of Section 21, T. 28 N., R. 01 E. W.M.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP	RANGE	WRIA	COUNTY
SE ¼ of the SE ¼ (Well 13, AAB868)	21	28 N.	01 E. W.M.	17	Jefferson
SE ¼ of the SE ¼ (Well 14, AAB867)	21	28 N.	01 E. W.M.	17	Jefferson
SE ¼ of the SE ¼ (Well 16, ALN492)	21	28 N.	01 E. W.M.	17	Jefferson

PARCEL NUMBER	LATITUDE	LONGITUDE	DATUM
821214005	47° 53' 48.03"	122° 40' 34.40"	WGS84
821214005	47° 53' 50.73"	122° 40' 23.45"	WGS84
821214005	47° 53' 48.46"	122° 40' 33.04"	WGS84

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED
[Attachment 1 shows location of the authorized place of use and point(s) of diversion or withdrawal.]

The place of use of this water right is the service area described in the most recent Olympic Water and Sewer Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as Olympic Water and Sewer is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

If the criteria in RCW 90.03.386(2) are not met, the place of use of this water right reverts to the last place of use described by Ecology in a water right authorization.

DESCRIPTION OF PROPOSED WORKS

The OWSI water system is comprised of two service zones, Service Zones A and B. Service Zone B receives its water supply from three wells subject to this water right, Wells 13, 14 and 16. The combined rated capacity of the three wells is approximately (150 + 300 + 320 =) 770 gpm. Two additional wells, Wells 4A and 9 are not used. Storage is provided by two ground-level steel reservoirs, with a combined capacity of approximately 445,000 gallons. Water is conveyed to eight pressure zones within Service Zone B.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	WATER PUT TO FULL USE BY THIS DATE
Begun	October 31, 2017	October 31, 2022

PROVISIONS

The total instantaneous quantity withdrawn by Olympic Water and Sewer, Inc. from Wells 13, 14 and 16 under G2-30442, G2-25816 and G2-27492 shall not exceed 575 gallons per minute.

The total annual quantity withdrawn by Olympic Water and Sewer, Inc. under G2-00193, G2-00194, G2-21542, G2-21543, G2-25627, G2-25816 and G2-27492 shall not exceed 555 acre-feet per year. The total annual quantity withdrawn from Wells 13, 14 and 16 shall not exceed 331 acre-feet per year.

An approved flow measuring device shall be installed and maintained for each of the sources authorized by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173. http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html

Water use data shall be recorded monthly. The maximum monthly rate of withdrawal and the monthly total volume shall be submitted to the Department of Ecology by January 31st of each calendar year. Water use data may be submitted via the Internet. To set up an Internet reporting account, access: https://fortress.wa.gov/ecy/wrx/wrx/Meteringx/.Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law

Water use data shall be recorded monthly and maintained by the property owner for a minimum of five years, and shall be promptly submitted to the Department of Ecology upon request.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

The water right holder shall file the notice of Proof of Appropriation of water (under which the certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The certificate will reflect the extent of the project perfected within the limitations of the water right. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

FINDINGS OF FACT AND ORDER

Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find the appropriation of water as recommended will not be detrimental to existing rights or to the public interest.

Therefore, I ORDER the approval of Application No. G2-30442 subject to existing rights and the provisions specified above.

You have a right to appeal this decision. To appeal this you must:

- File your appeal with the Pollution Control Hearings Board within 30 days of the "**date of receipt**" of this document. Filing means actual receipt by the Board during regular office hours.
- Serve your appeal on the Department of Ecology within 30 days of the "**date of receipt**" of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). "Date of receipt" is defined at RCW 43.21B.001(2).

Be sure to do the following:

- Include a copy of this document that you are appealing with your *Notice of Appeal*.

- Serve and file your appeal in paper form; electronic copies are not accepted.

1. To file your appeal with the Pollution Control Hearings Board

Mail appeal to:
The Pollution Control Hearings Board
PO Box 40903
Olympia WA 98504-0903

OR

Deliver your appeal in person to:
The Pollution Control Hearings Board
1111 Israel Road SW Suite 301
Tumwater WA 98501

2. To serve your appeal on the Department of Ecology

Mail appeal to:
The Department of Ecology
Appeals Coordinator
P.O. Box 47608
Olympia WA 98504-7608

OR

Deliver your appeal in person to:
The Department of Ecology
Appeals Coordinator
300 Desmond Dr SE
Lacey WA 98503

3. And send a copy of your appeal to:

Thomas Loranger
Department of Ecology
Southwest Regional Office
PO Box 47775
Olympia WA 98504-7775

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov . To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

Signed at Olympia, Washington, this 22nd day of April 2011.

Thomas Loranger

Thomas Loranger, Section Manager
Water Resources Program
Southwest Regional Office

BACKGROUND

The Olympic Water and Sewer, Inc. (OWSI) water supply system (Department of Health water system ID # 68700) served approximately 1,642 Equivalent Residential Units (ERUs) in the year 2004. OWSI anticipates the demand to increase to 2,503 ERUs by 2025 based on 185 gallons per day (gpd) per ERU supported by existing or planned facilities (OWSI Water System Plan Update, HDR 2007). To serve the projected demand, OWSI submitted the subject Ground Water Application in 2007. The subject application was assigned an application number G2-30442 and priority date of November 19, 2007. The applicant requests an Instantaneous Quantity (Qi) of an additional 100 gpm from three wells (Wells 13, 14 and 16) for municipal supply. The current Qi allocated for Wells 13, 14 and 16 is a combined total of 475 gpm under G2-25816C and G2-27492P. The applicant also requests an Annual Quantity (Qa) of an additional 90 acre-feet per year (afy) from the three wells, the existing Qa totaling 241 afy, of which 206 afy is supplemental to other existing water rights. The application is to allow the periodic pumping of Wells 14 and 16 at the same time and to address a Qa deficiency predicted by demand forecast for the year 2025. Wells 14 and 16 have the combined rated pumping capacity of 620 gpm, with existing pumps having a current combined capacity of 545 gpm.

Project Description

For the subject Application, OWSI proposes to withdraw ground water from the existing Well 16 to provide water to their service area. A summary of the Ground Water Right Application G2-30442 is presented in Table 1.

Table 1 Summary of Application No. G2-30442

Attributes	*Proposed*
Applicant	Olympic Water and Sewer, Inc.
Date of Application	November 19, 2007
Instantaneous Quantity	100 gallons per minute
Annual Quantity	90 acre-feet
Sources	Wells 13, 14 and 16
Points of Withdrawal	SE ¼ of SE ¼ of Sec. 21, T. 28 N., R. 01 E. W.M.
Purpose of Use	Municipal Supply
Period of Use	Year Round
Place of Use	Service Area of Olympic Water and Sewer Water System Within Sections 8, 9, 16, 17, 20 and 21, T. 28 N., R. 01 W. W.M

A map of the location of the existing wells, Service Zones, and nearby well locations is provided as Attachment 1.

Legal Requirements for Application Processing

The following requirements must be met prior to processing a water right application:

- **Public Notice (RCW 90.03.280)**
  A public notice of the application must be published in a local newspaper once a week for two consecutive weeks (RCW 90.03.280). The public notice of application G2-30442 was published in Port Townsend Leader on August 25 and September 1, 2010.
- **State Environmental Policy Act (SEPA)**
  The subject water right is not subject to SEPA [WAC 197-11-305 and WAC 197-11-800(4)] because the instantaneous quantity is less than the threshold of 2,250 gallons per minute.
- **Water Resources Statutes and Case Law**
  Chapters 90.03 and 90.44 RCW authorize the appropriation of public water for beneficial use and describe the process for obtaining water rights. Laws governing the water right permitting process are contained in RCW 90.02.250 through 90.03.050. In accordance with RCW 90.02.290, determinations must be made on the following four criteria in order for an application for water rights to be approved:
  - Water must be available;
  - There must be no impairment of existing rights;

- The water use must be beneficial; and
- The water use must not be detrimental to the public interest.

- **Administrative Status of Surface Water Bodies**
  Surface water bodies in the region are subject to administrative regulations governing the right to withdraw water for beneficial use. Minimum instream flow regulations for the Quilcene-Snow watershed (WRIA 17) have recently been adopted. Washington Administrative Code (WAC) Chapter 173-517 establishes instream flows in several streams and closures to further water right allocations in other stream basins. WAC 173-517-090 lists instream flows. None of the streams with established minimum instream flow requirements are in the vicinity of the subject water right application. Ludlow Creek, located to the northwest of the proposed OWSI point of withdrawal, is listed as a closed stream in WAC 173-517-100.

  WAC 173-517 includes two types of management areas for administering future water appropriation and use: reserve management areas (stream management units) and coastal management areas. The OWSI application is located within the Squamish Harbor coastal management area. There are no instream flows or closures proposed for the Squamish Harbor coastal management area, but the drainage for Ludlow Creek, located to the northwest, has been designated as a stream management unit with minimum instream flows.

INVESTIGATION

The examination of Ground Water Right Application G2-30442 was led by consultants from GeoEngineers, Inc. under contract to the Washington State Department of Ecology (Ecology) as part of its cost reimbursement program to facilitate the phased processing of the application. Phil Crane of the Water Resources Program, Southwest Region, Ecology oversaw the examination and provided review.
The investigation included, but was not limited to, the review of:

- The State Water Code, specifically WAC 173 and RCW 90.
- Washington State Department of Ecology, 2010, Washington State Well Log Viewer website, <http://apps.ecy.wa.gov/welllog/index.asp> (Accessed July 2010).
- Washington State Department of Ecology, 2010, Water Rights Tracking System (WRTS) website <http://www.ecy.wa.gov/programs/wr/rights/tracking-apps.html> (Accessed July 2010).
- Washington State Department of Natural Resources, Washington Interactive Geologic Map, http://wigm.dnr.wa.gov/, (Accessed July 2010).
- Tabor, R.W. and Cady, W.M., 1978, Geologic map of the Olympic Peninsula, U.S. Geological Survey Miscellaneous Investigations Map 994, scale 1:125,000.
- Grimstad, P. and Carson, R.J., 1981, Geology and ground-water resources of eastern Jefferson County, Washington: Water Supply Bulletin 54, 125 p., 2 plates. Available online at <http://www.ecy.wa.gov/programs/eap/wsb/wsb_Geology-and-Groundwater.html>.
- Cascadia Consulting Group, 2003, Watershed Management Plan for the Quilcene-Snow Water Resource Inventory Area (WRIA 17), Adopted by the WRIA 17 Planning Unit, 195 pp. Available online at: <http://www.ecy.wa.gov/pubs/0306029.pdf>.
- HDR, 2007, Olympic Water and Sewer, Inc. Water System Plan Update.
- Parametrix, Inc., Pacific Groundwater Group, Inc., Montgomery Water Group, Inc. and Caldwell and Associates, 2000, Stage 1 Technical Assessment as of February 2000 Water Resource Inventory Area 17, prepared for Water Resource Inventory Area 17 Planning Unit, 414 pp. Available online at:http://www.ecy.wa.gov/apps/watersheds/planning/docs/STAGE%201%20ASSESSMENT.PDF.
- Robinson & Noble, Inc., 1989, Water resource evaluation for Ludlow Utilities and construction of Well 14.
- Robinson & Noble, Inc., 1992, South Aquifer Study Port Ludlow/Shine Area, prepared for Pope Resources.
- Robinson & Noble, Inc., 2005, Olympic Water and Sewer, Inc. Construction and testing of Production Well 16.
- Robinson & Noble, Inc., 2010, 2009 Annual report on the Port Ludlow area groundwater monitoring program for Port Ludlow Associates, LLC.
- United States Geological Survey (USGS) topographic maps.
- Information submitted by and conversations and/or meetings with Larry Smith of OWSI.
- A site visit on August 4, 2010.

The first portion of the examination included the determination of the ground water source area of the OWSI points of withdrawal (POWs), summarized in the Phase 1 Review report (GeoEngineers, March 31, 2010). The ground water source area was estimated using available information regarding the aquifer properties, projected pumping rates and aquifer boundaries. One other application was found within the ground water source area. This application, G2-30363 by Olympic Property Group LLC, is senior to the OWSI application and was also processed by GeoEngineers under the same cost reimbursement program.

Site Visit

Joel Purdy, a Senior Hydrogeologist with GeoEngineers, conducted a site visit on August 4, 2010. Larry Smith of OWSI gave a tour of the facilities and property. The tour included the inspection of the wells and well houses and general facilities.

Existing OWSI Water Rights

Between 1967 and 1989, OWSI and its predecessors (Pope and Talbot Development, Inc. and Pope Resources) have been allocated seven ground water rights associated with the two Service Zones of the Olympic Water and Sewer water system. The seven rights total 954 gpm and 465 afy of primary rights. Wells 4A and 9 are inactive. These rights are summarized in Table 2.

Table 2. Summary of Existing OWSI Water Rights.

Place of Use	Status	Control Number	Priority Date	Qi (gpm)	Qa (afy)	Source
Service Zone A	Certificate	G2-00194C	7/19/1967	150	120	Well 2
	Certificate	G2-00193C	10/6/1969	110	88	Well 3
	Certificate	G2-25627C	6/27/1980	150	122	Well 4N
Service Zone B	Certificate	G2-25816C	2/24/1981	175	80[1]	Wells 13 and 16
	Permit	G2-27492P	2/13/1989	300	161[2]	Wells 14 and 16
Inactive Wells	Certificate	G2-21542C	10/3/1973	23	30	Well 4A
	Certificate	G2-21543C	10/3/1973	46	70	Well 9
Totals				954	465	

[1] 45 afy is supplemental to existing rights
[2] 161 afy is supplemental to existing rights

The water system plan (HDR, 2007) states that by the year 2025 OWSI will have a deficiency of 70 gpm and 89.5 afy in Service Zone B and 63.3 afy for the total system. Currently, the total Qi for Service Zone B (Wells 13, 14 and 16) is 475 gpm. The combined rated capacity of Wells 14 and 16 is 620 gpm, with existing pumping capacity of 545 gpm. The current rights do not allow for the pumping of Wells 14 and 16 at the same time without restricting the flow. The application was submitted to allow for pumping Wells 14 and 16 at their pumping capacity (an additional 100 gpm in Service Zone B) and to address deficiencies between permitted annual quantities and project demand for the system by 2025 (deficiency of 89.5 acre-feet in Service Zone B and 63.3 acre-feet in the total system). Below in Table 3 is a summary of the well construction details for Wells 13, 14 and 16.

Table 3. Summary of Well Construction Details for Wells 13, 14 and 16.

	Well 13	Well 14	Well 16
Date Drilled	10/14/1975	10/29/1988	7/28/2005
Diameter (inches)	8	8	12
Approximate Site Elevation (feet MSL)	420	440	430
Depth Drilled (feet bgs)	468	527	543
Screened Interval (depth bgs)	432 to 454	502.5 to 524	499 to 535
Pumping Test Rate (gpm)	200	303	291
Pumping Capacity Rating (gpm)	175	300	320

Hydrogeologic Evaluation

The project site lies south of Port Ludlow and north of Shine on the west shore of the inlet to Hood Canal, herein referred to as the Port Ludlow/Shine peninsula. The application is located within the Jefferson County portion of the Quilcene-Snow Water Resource Inventory Area (WRIA 17).

Geology

The geology of the general project area has been reported by Tabor and Cady (1978) and Grimstad and Carson (1981). The geology of the project vicinity generally consists of Tertiary basalt bedrock underlying unconsolidated deposits formed as the result of erosional and depositional events during multiple glaciations. The last glaciation occurred during the Ice Age approximately 15,000 years ago, known locally as the Vashon Stade of the Fraser Glaciation. The geologic history of the Ludlow area results in complex layering of sedimentary deposits (stratigraphy) overlying the primarily volcanic bedrock. The typical sequence for the Port Ludlow/Shine peninsula, from youngest to oldest, is Vashon recessional outwash, Vashon glacial till and Vashon advance outwash, underlain by older glacial, non-glacial deposits and volcanic bedrock of the Crescent Formation.

Hydrology

The WRIA 17 Level 1 Technical Assessment (Parametrix and others, 2000) established 10 subbasins based generally on surface drainage topography and hydrologic characteristics. The POU and POWs are located within the Ludlow subbasin.

The Ludlow subbasin includes the drainages of Shine and Ludlow Creeks. Ludlow Creek and its small tributaries have a drainage area of 17.3 square miles located northwest of the Port Ludlow/Shine peninsula (Parametrix and others, 2000). Ludlow Creek drains into the head of Port Ludlow Bay. Shine Creek drains 5.2 square miles (Parametrix and others, 2000) into Squamish Harbor (off the Hood Canal), southwest of the OWSI source wells. There are no existing instream flow gaging stations on Ludlow or Shine Creeks.

The peninsula includes an upland lake, Teal Lake (Attachment 1), that drains to the north. The lake is perched on glacial till at an elevation well above the water table in the South Aquifer (described below), such that appropriations from the OWSI wells should have no effect on the hydrology of the lake.

Hydrogeology

Characterization of the general hydrogeology for the Ludlow subbasin was conducted by several authors. Grimstad and Carson (1981) mapped surface geology, listed water wells in the study area, and provided a limited discussion of potential well yields. Robinson & Noble (1992) conducted a detailed hydrogeologic analysis of the Port Ludlow/Shine area and described the principal source aquifer for the subject application (the South Aquifer), which consists of pre-Vashon glacial and non-glacial deposits at and below sea level. The water-bearing portions of the aquifer generally consist of sand or sand and gravel. The boundaries of the South Aquifer were delineated by Robinson & Noble (1992).

The South Aquifer generally overlies the basalt bedrock unit mapped as the Tertiary volcanic unit named the Crescent Formation (Taber and Cady, 1978). The bedrock is the source for a few domestic wells in the vicinity. Potentially, there is ground water discharge from the bedrock to the South Aquifer. In addition to the South Aquifer, the overlying Vashon advance outwash materials may be saturated in lower elevations along Ludlow Creek or in perched aquifer occurrences and near lakes.

The South Aquifer is not in hydraulic continuity with perched surface water, such as Teal Lake, or upper reaches of the streams on the Port Ludlow/Shine peninsula (e.g., Teal Creek). Ground water withdrawal from the subject wells will not impact these surface water bodies because: 1) there are unsaturated sand and gravel zones between ground surface and the South Aquifer that creates a hydraulic disconnection; 2) a thick sequence of low-permeability deposits, which is up to 230 feet thick at Wells 13, 14 and 16, occurs between ground surface and the South Aquifer; and 3) the South Aquifer has a much lower potentiometric surface relative to the lake and stream bed elevations. Near the mouths of the streams, below the approximate elevation of 40 feet MSL, there is potential for upward leakage from the South Aquifer where the potentiometric surface of the South Aquifer is greater than the ground surface or stream bed elevation.

As part of the investigation of subsurface conditions, Ecology Water Well Reports (well logs) in the general vicinity of the OWSI application were downloaded from Ecology's Well Log Viewer website. Grimstad and Carson (1981) provide a list of older water wells and some construction and testing information. We have reviewed well logs of nearby wells and hydrogeologic information regarding the site vicinity, including the previously discussed sources. The following is a summary of the water sources and hydrogeology in the area:

- The water supply wells that are used to define the South Aquifer, including the OWSI well sources, are generally highly productive (yields >100 gpm) and located near the center of Port Ludlow/Shine peninsula. These wells are completed at or below sea level.
- Wells located peripheral to the South Aquifer are generally low-yield (<25 gpm). Most of these wells are located along the shoreline and completed in confined aquifers at or below sea level. These wells are generally screened across fine sands or sand and gravel in areas considered to be in hydraulic continuity with the South Aquifer (Robinson & Noble, 1992).
- Few wells are completed in the bedrock beneath the South Aquifer and they are generally low-yield (<5 gpm).
- Ground water flow in the South Aquifer near the center of the Port Ludlow/Shine peninsula is presumed to be generally from west to east and locally toward the nearest saltwater body.
- Neither Shine nor Ludlow Creeks are considered to be in hydraulic continuity with the South Aquifer due to hydraulic flow boundaries, intervening confining units and the occurrence of bedrock at or near surface between the aquifer and the creeks.

Impairment Considerations

The withdrawals by the applicant related to the Wells 13, 14 and 16 would be from the South Aquifer. There are several existing water rights and claims within the ground water source area and the boundaries of the South Aquifer. The potential impairment of these rights are examined below.

Hydrogeologic Characteristics

There have been aquifer tests conducted on Wells 14 and 16 as reported by Robinson & Noble (1989; 2005). Based on these tests, the aquifer transmissivity ranges from 9,600 to 110,000 gpd/ft, with a storage coefficient of 0.0007 to 0.0009 based on observation well data. These values are within the expected range for formations encountered during drilling and are characteristic of a relatively highly productive highly confined aquifer (Robinson & Noble, 2005). Water level data indicate that the aquifer is influence by barometric fluctuations with barometric efficiencies of approximately 95 to 98 percent.

Ground water in the South Aquifer flows generally radially toward Hood Canal and Port Ludlow. Shallower, perched ground water discharges to lakes, streams, or springs, or infiltrates to the South Aquifer. The South Aquifer is likely hydraulically connected to the tidal and brackish waters of Hood Canal via unidentified submarine

outcroppings of the aquifer. Ground water discharge to Hood Canal via such outcrops is maintained by higher the piezometric levels for freshwater within the aquifers that are elevated above sea level, and are important to be maintained as protection against potential saltwater intrusion at shoreline.

Area of Influence

The boundaries of the area of influence for application G2-30442 were conservatively estimated based on the drawdown cone likely to develop within a confined aquifer. We conservatively used an area of at least 1-mile radius as the area of influence to reflect the likely presence of lateral boundaries that limit the extent of the South Aquifer. This area of influence extends in an arc to the aquifer boundary to the west and eastward of the well locations.

Potential for Impairment of Existing Rights

There are three certified ground water rights and eight surface water rights within the area of influence of the OWSI ground water source. The existing senior water rights are summarized in Table 4. There is one additional ground water right (G2-25914) located just to the north of the ground water source area. The Jefferson County Water District No. 1 ground water right is located approximately ½ mile southeast of the OWSI sources and is associated with a water system (Health ID 36705Y) with a single well source. Olympic Property Group has an application for 158 gpm for a proposed well and water system located approximately 1 mile north-northeast from the OWSI sources. No other water systems were found in the source area from Health's online database.

Table 4. Summary of Existing Senior Water Rights in the Source Area.

	Owner	Control Number	Priority Date	Purpose	Qi	Qa (ac-ft/yr)	Source
Ground Water	Parker, J.D.	G2-*07831CWRIS	10/20/1965	DM, IR	25 gpm	4	Well
	Lake, Norman H.	G2-24415CWRIS	2/4/1977	DS	10 gpm	1	Well
	Jefferson County Water District 1	G2-26422CWRIS	10/3/1983	MU	98 gpm	90	Well
Surface Water	Brandt, G.D.	S2-*17956CWRIS	6/6/1963	DS	0.01 cfs	--	Unnamed Stream
	Goodwin, B.S./I.J.	S2-*17983CWRIS	6/19/1963	DS	0.005 cfs	--	Unnamed Stream
	Mahon, Dwain et ux.	S2-22985CWRIS	7/19/1974	DS	0.02 cfs	0.5	Unnamed Stream
	Shepherd, L.J.	S2-*17246CWRIS	4/24/1962	DS	0.01 cfs	--	Unnamed Stream
	Snyder, G.L.	S2-*17913CWRIS	5/15/1963	DS	0.01 cfs	--	Unnamed Stream
	White, J.A.	S2-*18173CWRIS	9/23/1963	DS	0.01 cfs	--	Unnamed Stream
	Jefferson County Water District 1	S2-*17326CWRIS	6/4/1962	DM	0.16 cfs	--	Unnamed Stream
	Crittenden, Richard	S2-24252C	7/15/1976	DS	0.01 cfs	0.5	Unnamed Stream

[1] DM = domestic multiple; IR = irrigation; DS = domestic single; MU = municipal

In addition to water rights, there are 14 ground water and surface water claims that may be within the area of influence based on the WRATS database. Within the full extent of the South Aquifer, there are 10 ground water rights and 18 surface water rights totaling 515.5 acre-feet/year. There are also 78 ground water claims and 17 surface water claims.

A 24-hour pumping test of Well 16 at 291 gpm resulted in 8 feet of drawdown in Well 13, located 100 feet away. This essentially means that Well 13 cannot be pumped at the same time as Well 16 because of the well interference (Robinson & Noble, 2005).

Potential for Seawater Intrusion

For ground water wells completed in aquifers that are hydraulically connected with saltwater, pumping may induce the migration of saltwater into the freshwater aquifers. This is known as saltwater intrusion. According to records dating back to 1983, the chloride concentrations at Wells 13, 14 and 16 have been remained steady and have ranged from 0.3 to 7.9 mg/L (Robinson & Noble, 2010). Wells 13, 14 and 16 are located 1 mile from the nearest shoreline and, thus, have a low potential for saltwater intrusion.

Water Availability

The anticipated drawdown in the South Aquifer from the operation of Wells 13, 14 and 16 is not expected to impact any existing water users. The amount of ground water available in the South Aquifer is limited based on amount of recharge. The recharge area for the South Aquifer is approximately 4.5 square miles (Robinson & Noble, 1992). WRIS 17 Watershed Management Plan estimates the annual ground water recharge for the Ludlow Sub-basin at 10 inches/year. That equates to 2,400 acre-feet/year of ground water recharge within the South Aquifer boundaries. The annual quantities (Qa) of the certified and permitted water rights within the South Aquifer area total 9.7 acre-feet/year for surface water and 303.5 acre-feet/year primary rights and an additional 206 acre-feet/year for ground water rights "supplemental" to sources outside of the South Aquifer. It appears that approximately 22 percent of the estimated annual ground water recharge within the boundaries of the South Aquifer is allocated. The requested amount of 90 acre-feet would increase the percentage to approximately 25 percent. This does not include the usage by exempt wells or claims in the area. The exempt wells are likely

concentrated along the shoreline east and northeast of the OWSI wells. It appears that ground water is physically available.

The OWSI application is located within the Squamish Harbor coastal management area of WRIA 17. There are no minimum instream flow requirements or basin closures proposed for the Squamish Harbor coastal management area. Ground water to be captured by the OWSI well would naturally discharge to salt water of Hood Canal and Port Ludlow. No impact to surface (fresh) water is expected to occur from the operation of the well. Therefore, ground water is legally available for appropriation.

Public Interest Considerations

RCW 90.03.290 requires that a proposed appropriation not be detrimental to the public interest.
The 1971 Water Resources Act provides the most comprehensive list of legislative policies that guide the consideration of public interest in the allocation of water. These policies generally require a balancing of the state's natural resources and values with the state's economic well-being. Specifically, the policies require allocation of water in a manner that preserves instream resources, protects the quality of the water, provides adequate and safe supplies of water to serve public need, and makes water available to support the economic well-being of the state and its citizens.

The year-round withdrawal of an additional 100 gpm and 90 acre-feet/year of water for municipal use is consistent with state policy without adversely impacting instream flows or other public needs and values. No detriment to public interest could be identified during the examination of the subject application. Use of the pumping OWSI Wells 13, 14 and 16 is not expected to impair existing senior water right holders.

Demand Projections

According to the Water System Plan Update (HDR, 2007), the current water right capacity in Service Zone B is deficient by 70 gpm and 89.5 acre-feet/year by the year 2025. The same forecast predicts a deficiency of 63.3 acre-feet per year for the entire system. Using these values, it is recommended that the requested instantaneous amount of 100 gpm be permitted and an annual amount of 90 acre-feet per year additional right be permitted for Wells 13, 14 and 16.

Well Capacities

The pumping capacities provided in the water system plan for Wells 13, 14 and 16 are 75, 225 and 320 gpm, respectively. On August 4, 2010, Well 13 was not pumping, Well 14 was pumping 155 gpm and Well 16 was pumping 320 gpm. Well 14 was valved-back to reduce its pumping rate to stay within the water right allocation of 475 gpm.

Consideration of Protests and Comments

No protests were received during the public comment period between August 25 and October 1, 2010.

CONCLUSIONS

Water must be available

The OWSI wells are located in an area that receives abundant rainfall and ground water recharge. Results of the ground water analysis indicate no significant water level drawdown from pumping of wells is expected at distance. It is concluded that sufficient water is available to provide an additional 100 gpm (Qi) and 90 afy (Qa).
No legal constraints to the use of the water by this right were identified, and the water is considered legally available.

There must be no impairment of existing rights

The requested withdrawal is not expected to interrupt or interfere with the availability of water to existing rights.

The water use must be beneficial

Municipal supply is considered a beneficial use in accordance with RCW 90.54.020.

The water use must not be detrimental to the public interest.

No considerations that are detrimental to the public interest were identified for the proposed diversion.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that the Application No. G2-30507 be authorized in the amounts and within the limitations listed below and subject to the provisions beginning on Page 2.

Purpose of Use and Authorized Quantities

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial.

- 100 gpm
- 90 acre-feet per year
- Municipal supply

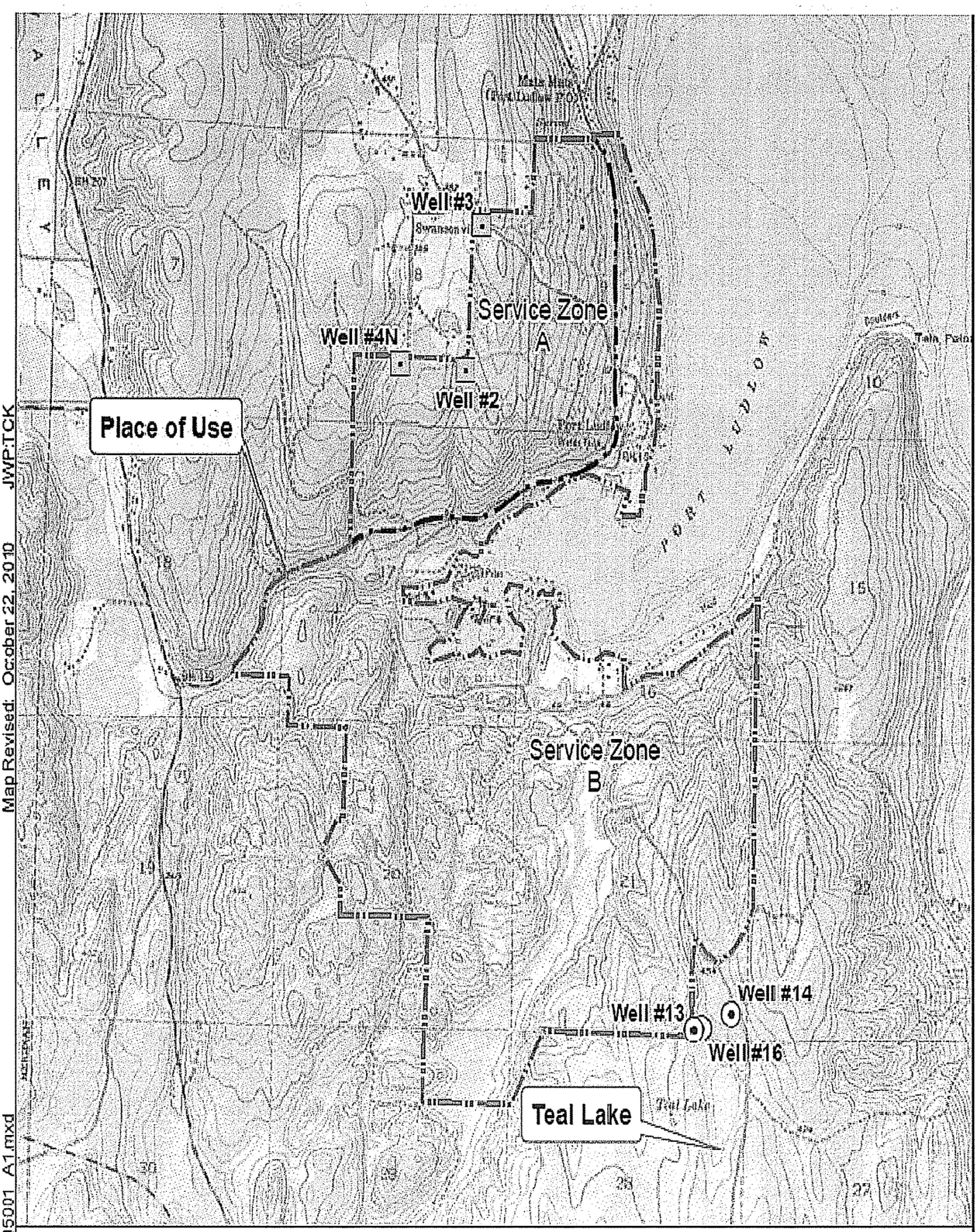
Points of Withdrawal

SE ¼ of the SE ¼ Section 21, T. 28 N., R. 01 E. W.M. (Well 13, AAB868)
SE ¼ of the SE ¼ Section 21, T. 28 N., R. 01 E. W.M. (Well 14, AAB867)
SE ¼ of the SE ¼ Section 21, T. 28 N., R. 01 E. W.M. (Well 16, ALN492)

Place of Use

As described on Page 1 of this Report of Examination.

Reviewed by: Phil Crane _____ 4/21/2011
Phil Crane Date



Points of Withdrawal

Other OWSI Wells

Place of Use

Approximate Service Zone Boundary

3,000 0 3,000

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: USGS Topographic map from NGS Topo US 2D (http://goto.arcgisonline.com/maps/NGS_Topo_US_2D).

Transverse Mercator, Washington North (ft), North American Datum 1983
North arrow oriented to grid north

Place of Use and Points of Withdrawal

Olympic Water and Sewer
Jefferson County, Washington

GeoEngineers

Attachment 1

Office: TAC Path: \\Tac\Projects\0\050405\GIS\050405001 A1.mxd Map Revised: October 22, 2010 JWP:TCK