File NR CG2-GWC6848
WR Doc ID 45640

DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
REPORT OF EXAMINATION
FOR WATER RIGHT CHANGE

Added or Changed Point of Withdrawal/Diversion

PRIORITY DATE
December 11, 1969

WATER RIGHT NUMBER
CG2-GWC6848

MAILING ADDRESS
MASON COUNTY PUD 1
N 21971 HIGHWAY 101
SHELTON WA 98584

SITE ADDRESS (IF DIFFERENT)
130 N VI-KEN LANE
HOODSPORT WA

Total Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
150	GPM	40

Purpose

	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		
PURPOSE	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	PERIOD OF USE (mm/dd)
Municipal Supply	150		GPM	40		01/01 - 12/31

REMARKS

The primary/additive designation of the annual quantity under this change authorization is conditional on voluntary relinquishment of Surface Water Right Certificate 11028.

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM ID	CONNECTIONS
		10999	

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Mason	Groundwater	Hood Canal	16-Skokomish-Dosewallips

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
WELL 4	323312200570	BAC353	23N	03W	31	NWNW	47.445647	-123.11929
							Datum: NAD83/WGS84	

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use (POU) of this water right is the service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as the water system 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.

Proposed Works

A 6-inch well drilled to a depth of 420 feet, fitted with a 5 HP pump, and 8-inch main lines for municipal supply.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Started	Completed	June 1, 2017

Measurement of Water Use

How often must water use be measured?	Monthly
How often must water use data be reported to Ecology?	By January 31st of each calendar year
What volume should be reported?	Total Annual Volume
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm or cfs)

Provisions

Combined withdrawals under this water right and Certificate No. G2-27230 must not exceed 40 acre-feet per year.

The additive/primary designation of the annual quantity of this water right is conditional on relinquishment of Surface Water Right Certificate No. 11028. Certificate 11028 must be voluntarily relinquished prior to filing Proof of Appropriation under this change authorization.

Wells, Well Logs and Well Construction Standards

All wells constructed in the state must meet the construction requirements of WAC 173-160 titled "Minimum Standards for the Construction and Maintenance of Wells" and RCW 18.104 titled "Water Well Construction". Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard must be decommissioned.

All wells must be tagged with a Department of Ecology unique well identification number. If you have an existing well and it does not have a tag, please contact the well-drilling coordinator at the regional Department of Ecology office issuing this decision. This tag must remain attached to the well. If you are required to submit water measuring reports, reference this tag number.

Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

Wells 1 and 2 must be properly decommissioned in accordance with WAC 173-160 when no longer needed for groundwater monitoring purposes.

Measurements, Monitoring, Metering and Reporting
An approved measuring device must be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173, which 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.

Water use data shall be recorded monthly and maintained by the water right holder for a minimum of five years. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to the Department of Ecology by January 31st of each calendar year.

Chloride Monitoring
The following information must be submitted in writing to the Department of Ecology by January 31st of each year.

The following is required of the subject well and any wells added to this water right in the future:

- April and September chloride and conductivity measurements (the chemical analysis must be performed by a state-accredited laboratory).

- Depth to static water level (with pump off long enough to allow for stabilization).

The chloride/conductivity sampling and the static water level measurement must be conducted concurrently.

This data collection will assist the applicant and Ecology in determining if actions are necessary to prevent an increasing trend in chloride concentrations (an indicator of seawater intrusion). Preventative actions may include – reducing the instantaneous pumping rate, reducing the annual volume pumped, scheduling pumping to coincide with low tides, raising the pump intake, and/or limiting the number of service connections.

Department of Health Requirements
Prior to any new construction or alterations of a public water supply system, the State Board of Health rules require public water supply owners to obtain written approval from the Office of Drinking Water of the Washington State Department of Health. Please contact the Office of Drinking Water at Southwest Drinking Water Operations, 243 Israel Road S.E., PO Box 47823, Tumwater, WA 98504-7823, (360) 236-3030.

Water Use Efficiency
Use of water under this authorization will be contingent upon the water right holder's maintenance of efficient water delivery systems and use of up-to-date water conservation practices consistent with established regulation requirements and facility capabilities.

Proof of Appropriation
The water right holder must 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 superseding permit. 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.

Schedule and Inspections
Department of Ecology personnel, upon presentation of proper credentials, will 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.

Real Estate Excise Tax
This decision may indicate a Real Estate Excise Tax liability for the seller of water rights. The Department of Revenue has requested notification of potentially taxable water right related actions, and therefore will be given notice of this decision, including document copies. Please contact the state Department of Revenue to obtain specific requirements for your project. Phone: (360) 570-3265. The mailing address is: Department of Revenue, Real Estate Excise Tax, PO Box 47477, Olympia WA 98504-7477 Internet: http://dor.wa.gov/. E-mail: REETSP@DOR.WA.GOV.

Findings of Facts
Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the investigator that water is available from the source in question; that there will be no impairment of existing rights; that the purpose(s) of use are beneficial; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application for Change of Water Right No. CG2-GWC6848, subject to existing rights and the provisions specified above.

YOUR RIGHT TO APPEAL

You have a right to appeal this decision to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this decision. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of this decision:

- File your appeal and a copy of this decision with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this decision on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

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 March 2012.

Michael J. Gallagher, Section Manager
Southwest Regional Office
Water Resources Program

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To find laws and agency rules visit the Washington State Legislature Website:
http://www1.leg.wa.gov/CodeReviser.

INVESTIGATOR'S REPORT
Marie Peter, Department of Ecology
Water Right Control Number CG2-GWC6848

BACKGROUND

Description and Purpose of Proposed Change

On December 31, 2008, Tracy Colard of Mason County Public Utility District No. 1 (Mason PUD) filed an *Application for Change of Water Right* to change the point of withdrawal under Ground Water Right Certificate No. G2-GWC6848 (Certificate 6848).

Certificate 6848 authorizes groundwater withdrawals from Canal Mutual Water System Wells 1 and 2. This application requests a change of point of withdrawal from the original wells to a new well, Well 4.

Attributes of the Existing Water Right and Proposed Change

Attributes	Existing	Proposed
Name	Canal Mutual Water Corporation	Mason County PUD No. 1
Priority Date	12/11/1969	Same
Change Application Date		12/31/2008
Instantaneous Quantity	150 gpm	Same
Annual Quantity	40 acre-feet/year, Non-additive to annual quantity under Surface Water Right Certificate 11028	40 acre-feet/year, additive upon relinquishment of Certificate 11028
Purpose of Use	Community domestic supply*	Municipal supply
Period of Use	Year-round, as needed	Same
Place of Use	Lands served by Canal Mutual Water Company, within Sec. 31, T. 23 N., R. 3 W.W.M.	The place of use (POU) of this water right is the service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as the water system 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.

*This right is being conformed to reflect that it is for municipal water supply purposes as defined under RCW 90.03.015

Proposed Sources of Withdrawal or Diversion

Source Name	Parcel	WellTag	Twn	Rng	Sec	QQ Q	Latitude	Longitude
WELL 4	323312200570	BAC353	23N	03W	31	Govt Lot 1 NW NW	47.445647	-123.119291

Existing Sources of Withdrawal or Diversion

Source Name	Parcel	WellTag	Twn	Rng	Sec	QQ Q
WELL 1	323312300730	AHA961	23N	03 W	31	Govt Lot 2 SW NW
WELL 2	323312390022	AHA959	23N	03 W	31	Govt Lot 2 SW NW

Legal Requirements for Proposed Change

The following is a list of requirements that must be met prior to authorizing the proposed change in point of withdrawal.

Public Notice

RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the area where the water is to be stored, diverted and used.

Notice of this application was published in the *Shelton-Mason County Journal* on January 22 and 29, 2009. No protests or letters of concern were received in response to this notice.

State Environmental Policy Act (SEPA)

A water right application is subject to a SEPA threshold determination (i.e., an evaluation whether there are likely to be significant adverse environmental impacts) if any one of the following conditions are met.

(a) It is a surface water right application for more than 1 cubic feet per second, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cubic feet per second, so long as that irrigation project will not receive public subsidies;
(b) It is a groundwater right application for more than 2,250 gallons per minute;
(c) It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
(d) It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);
(e) It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

Because this application does not meet any of these conditions, it is categorically exempt from SEPA and a threshold determination is not required.

Water Resources Statutes and Case Law

RCW 90.03.380(1) states that a beneficially used water right may be changed. The point of diversion, place of use, and purpose of use may be changed if it would not result in harm or injury to other water rights.

The Washington Supreme Court has held that Ecology, when processing an application for change to a water right, is required to make a tentative determination of extent and validity of the claim or right. This is necessary to establish whether the claim or right is eligible for change. *R.D. Merrill v. PCHB* and *Okanogan Wilderness League v. Town of Twisp.*

RCW 90.03.570(1) and (2) state, that if specific conditions are fulfilled, a municipal water supplier is eligible for a change of water right as provided by RCW 90.03.380. This is true even if the right was not put to full beneficial use.

RCW 90.44.100 allows Ecology to amend a ground water permit to (1) allow the user to construct a replacement or additional well at a new location outside of the location of the original well, or to (2) change the manner or place of use of the water, if:

(a) The additional or replacement well taps the same body of public ground water as the original well. RCW 90.44.100(2)(a),
(b) Where a replacement well is approved, the user must discontinue use of the original well and properly decommission the original well. RCW 90.44.100(2)(b),
(c) Where an additional well is constructed, the user may continue to use the original well, but the combined total withdrawal from all wells will not enlarge the right conveyed by the original permit or certificate. RCW 90.44.100(2)(c),
(d) Other existing rights will not be impaired. RCW 90.44.100(2)(d).

When changing or adding points of withdrawal to groundwater rights (RCW 90.44.100), or when consolidating exempt wells with an existing permit or certificate (RCW 90.44.105), the wells must draw from the *same body of public groundwater*. Indicators that wells tap the *same body of public groundwater* include:

(a) Hydraulic connectivity.
(b) Common recharge (catchment) area.
(c) Common flow regime.
(d) Geologic materials that allow for storage and flow, with recognizable boundaries or effective barriers to flow.

INVESTIGATIONS

My review of this application included, but was not limited to, research and review of the following:

- Department of Ecology Water Rights Tracking System database and Well Log Image System.
- Department of Health Sentry database.

- Mason PUD No. 1 Canal Mutual Comprehensive Water System Plan (Part B) dated February, 2009.
- Canal Mutual Water System Well 4 aquifer test report by Robinson Noble & Saltbush.
- The Skokomish-Dosewallips (WRIA 16) Watershed Management Plan adopted May 11, 2006.
- October 24, 2011 Hydrogeologic Memorandum by John Pearch, Department of Ecology Licensed Staff Hydrogeologist.
- Notes and observations from March 11, 2009 site visit to Canal Mutual Water System by John Pearch and Marie Peter.
- Field communications with Roy Munch of Mason PUD.
- Telephone and electronic mail communications with Jocelyne Gray, P.E., Mason PUD.
- Electrical metering records for Wells 1, 2, and 3 from 1996 through October, 2008.
- 2009 and 2010 source meter records for Wells 3 and 4.
- Department of Ecology's working draft of the 2003 Municipal Water Law Interpretive and Policy Statement, dated December 22, 2006.

Location

Canal Mutual Water System is located west of US Highway 101 along the shore of Hood Canal, approximately 1.5 miles south of the town of Lilliwaup in Mason County. It is situated in the Finch-Lilliwaup Sub-basin of Water Resources Inventory Area 16 (WRIA 16). The foothills of the Olympic Mountains rise to the west. An intermittent stream, Sund Creek, discharges to Hood Canal between Canal Mutual Wells 1 and 2. Residential and commercial development is concentrated along the shore of Hood Canal.

See Attachment 1: Vicinity Map

Canal Beach Mutual Wells 1 and 2 are low elevation wells located immediately west of Highway 101 and south of Tidewater Acres RV Park. These wells are situated on either side of Sund Creek, within 300 feet of the Hood Canal shoreline.

Canal Mutual Wells 3 and 4 are located at higher elevations of approximately 249 and 211 feet above mean sea level, respectively, and approximately 1,000 feet from Hood Canal. Well 4 is about 200 feet southeast of Well 3 and more than ½ mile north of Wells 1 and 2.

See Attachment 2: Map of Canal Mutual Water System Well Locations

Well 4 is constructed in a graded area on a steep east-facing hillside overlooking Hood Canal. Homes served by Canal Mutual Water System occupy the hillside below and along the Hood Canal shoreline. The well site includes a newly constructed reservoir and booster pump station.

History of Water Use

Canal Mutual Water System originally served residences along the shore of Hood Canal. It was owned by Canal Mutual Water Company, a homeowners association. The original source was a surface-water diversion on an unnamed tributary to Hood Canal constructed in 1942. In 1954, the first well, Well 2 (AHA959), was constructed. Well 1 (AHA961) was drilled 12 years later, in 1966.

In 1984, Well 3 was drilled and the water system was split into two pressure zones. Well 3 supplied higher elevation lots to the west; Wells 1 and 2 served the lower pressure zone along Hood Canal.

In 2002, Canal Mutual Water Company transferred ownership of the water system to Mason County PUD No. 1. On August 8, 2006, a chloride level of 733 mg/L was recorded in Well 1. In response, the PUD switched pumping demand over to Well 2 to allow Well 1 to recover. Although chlorides decreased to background levels in Well 1, chloride levels in Well 2 increased to 240 mg/L. Pumping was then switched back to Well 1. By October 23, 2006, the chloride level in Well 1 had risen to 360 mg/L.

To resolve the saltwater intrusion problem, the PUD connected Well 3 to the lower pressure zone in 2007 to enable it to serve the entire service area. Along with storage reservoirs and booster pumps, Well 3 functioned as the sole primary source for the water system. However, because Well 3 was located on a temporary easement, Well 4 was drilled on nearby PUD-owned property. Well 4 came on line in April, 2009 and became the primary source for Canal Mutual Water System. It is equipped with a 5 hp submersible pump capable of 60 gpm.

Although Well 4 is the system's main well, it has tested positive for coliform bacteria, requiring the use of Well 3 as a back-up source. The well seal in Well 4 was extended in March, 2008, to seal off the upper 60 feet of the formation. However, the extended well seal did not resolve the issue and Well 4 remains at risk of contamination despite proper well construction. Due to similarities in construction and siting, Well 3 is also at risk and both sources require water treatment to the Department of Health's CT6 standard.

Canal Mutual Water System currently serves 55 Equivalent Residential Units. These consist of 50 single-family residences, one recreational connection, and three commercial connections (a small restaurant, a small hair salon, and a 3-unit motel). Under this water right, the water system serves a residential population of 96 for at least 180 days per year and qualifies under RCW 90.03.015 as a right issued for municipal water supply purposes.

Proposed Use

Well 4 will continue to operate as the primary well for the Canal Mutual Water System. Well 3 will serve as an emergency back-up source. The PUD operates Wells 3 and 4 alternately.

Wells 1 and 2 are no longer equipped with pumps. The PUD is temporarily maintaining these wells for monitoring purposes. However, the monitoring program is expected to end within a year or two and the wells will then be decommissioned.

Table 1: Proposed Use of Canal Mutual Water System Wells

Source	*Date drilled*	*Proposed Use*	*Pumping capacity*
Well 1 (AHA961)	11-10-1966	Monitoring/decommission	No pump
Well 2 (AHA959)	05-20-1954	Monitoring/decommission	No pump
Well 3 (AGA960)	1984	Emergency supply	18 gpm
Well 4 (BAC353)	04-28-2008	Primary supply	60 gpm

The service area for Canal Mutual Water System covers approximately 41 acres. Mason PUD No. 1 does not currently plan to expand service area boundaries. However, a number of undeveloped lots still remain within the existing service area. These are expected to be developed with single-family residences.

Neighboring public water systems include the Tahja II, Rebecca Lane, Holiday View and Rest-A-While Water Systems. The PUD does not anticipate inter-ties with any of these systems.

Water Use

Mason County PUD 1 submitted electrical meter records for Wells 1, 2, and 3 showing continuous use since the PUD acquired the Canal Mutual Water System in 1996. Source meters are now installed on Wells 3 and 4 and the PUD has submitted meter data for 2009 and 2010.

Metering data indicates that this system used 60 gpm and 10.2 AFY in 2009. Less water was used in 2010. This decrease is likely due to recent replacement of the system's aging 2-inch water mains with new 8-inch mains and leakage repairs. Increased efficiency will likely delay the development of inchoate water remaining under this right.

Tentative Determination of Extent and Validity of Certificate 6848

When processing a change application, Ecology is required to tentatively determine the extent and validity of the underlying right or claim. This requires an estimation of the amount of water that has been applied to beneficial use. In the case of an unperfected right, Ecology must determine how much of the inchoate quantity is valid and eligible for change.

Except for sufficient cause pursuant to RCW 90.14.140, water rights or portions thereof not beneficial used for five consecutive years since 1967 may be relinquished under Chapter 90.14.130 through 90.14.180 RCW. Water rights may also be lost through abandonment. Only a superior court has the authority to determine the actual extent and validity of a water right or claim.

RCW 90.03.330(3) provides that water rights for municipal water supply purposes documented by certificates issued prior to September 9, 2003 with maximum quantities based on system capacity (known as "pumps and pipes" certificates) are rights "in good standing". Certificate 6848 is a "pumps and pipes" certificate issued prior to full beneficial use of permitted quantities. Ninety gallons per minute and approximately 15.2 acre-feet per year of inchoate water remains undeveloped under this water right.

The history of Canal Mutual Water System indicates that water has been in continuous beneficial use for municipal supply purposes since the first well was drilled under this right in 1954. Since then, the system has shown consistent growth and due diligence in development.

Jocelyne Gray, P.E., of PUD No. 1 of Mason County indicates that Canal Mutual Water System will require an instantaneous capacity of 168 gpm within the next 20 years. Because Wells 3 and 4 combined are only capable of producing 79 gpm, additional sources and/or storage capacity will need to be developed to meet future demand.

The PUD does not anticipate an expansion of Canal Mutual Water System service area boundaries over the next 20 years. However, the existing service area is expected to fill in with additional homes and there is potential for future expansion of this community.

I tentatively determine that the entire inchoate quantity under Certificate 6848 is valid and eligible for change for future municipal supply of the Canal Mutual community. Development of this inchoate quantity will be subject to a development schedule under this change authorization.

Other Rights Appurtenant to the Place of Use

Table 2: Water Rights appurtenant to the Canal Mutual Water System service area

Water Right Number	*Source*	*Instantaneous Quantity*	*Annual Quantity*
Certificate 11028 (S2-*21931CWRIS)	Unnamed Stream, tributary to Hood Canal	0.33 cfs	40 acre-feet/year (primary/additive)
Certificate 6848	Wells 1 and 2	150 gpm	40 acre-feet per year (non-additive)
Certificate G2-27230	Wells 3 and 4[1]	50 gpm (non-additive)	40 acre-feet per year (non-additive)

Surface Water Right Certificate 11028 (S2-*21931WRIS), with a priority date of December 11, 1969, is appurtenant to lands served by Canal Mutual Water System. It authorizes diversion of 0.33 cubic feet per second (cfs) and 40 acre-feet per year for community domestic supply, from an "unnamed stream", tributary to Hood Canal. The point of diversion was located within Government Lot 1, Section 31, T. 23 N., R. 3 W.W.M. The permit indicates that the original diversion works consisted of a 10-foot high dam, 12 feet across, a small storage reservoir and a gravity supply line.

Department of Health's Sentry database lists an "unnamed stream" as an emergency source for the Canal Mutual system. However, Roy Munch of Mason PUD No. 1 indicates that diversion structure is no longer maintained and that the surface-water source has been abandoned. The PUD's intent to abandon the surface-water source is further confirmed in the 2009 Water System Plan.

The annual quantity under Ground Water Right Certificate 6848 was issued entirely "supplemental" or non-additive to the annual quantity on Surface Water Right Certificate 11028. Both water rights have the same priority date of December 11, 1969. Thus, I recommend that Certificate 11028 be voluntarily relinquished and that the annual quantity under Ground Water Right Certificate 6848 be re-issued as a primary or additive quantity.

Hydrologic/Hydrogeologic Evaluation

Geology of the Sund Creek Area

Mason PUD #1 Canal Mutual Water System is situated at the confluence of Sund Creek, a small intermittent stream that drains from the foothills of the Olympic Mountains, and Hood Canal. Contreras (2010) describes the geology in the Canal Mutual Water System area as consisting of glacial deposits of Vashon age and alluvial fan deposits associated with Sund Creek. Glacial deposits are primarily lodgement till (compacted sand, pebbles, cobbles, silt, and clay) and ice-contact deposits (Vashon kame). Underlying the glacial deposits are massive marine tuffaceous siltstone and sandstone, likely part of the Lincoln Creek Formation. Basalt sills and submarine flows of the Crescent Formation form the bedrock in much of the project area (Contreras, 2010).

[1] Well 4 was added to Certificate G2-27230 on April 24, 2009 through a Showing of Compliance affidavit.

Site Conditions

Wells 1 (AHA960) and 2 (AHA959) are 70 and 76 feet deep respectively. They are hydraulically connected with the surface waters of Sund Creek and tidally influenced from Hood Canal. Both draw water from glacial and recent alluvial deposits that are hydraulically connected with the underlying bedrock (Lincoln Creek Formation). These wells intercept groundwater derived from regional recharge areas west of the site that would otherwise discharge to the Hood Canal (Molenaar and Noble, 1970).

Well 4 draws water from the Lincoln Creek Formation and also intercepts groundwater originating from regional recharge areas located west of Well 4 that would otherwise discharge to Hood Canal. It is also tidally influenced but to a lesser extent than Wells 1 and 2.

Artesian conditions observed at the surface of Well 4 indicate groundwater is under extreme pressure beneath extensive glacial till deposits and the Lincoln Creek formation. According to Contreras et al. (2010) the glacial till, ice-contact deposits and Lincoln Creek Formation extend to the west and are exposed along the Hood Canal near Sund Creek. There are no faults or other geologic structures that would create hydraulic barriers between Wells 1 and 2 and Well 4. Contreras et al. (2010) also show the Lincoln Creek formation is dipping southeast towards the Hood Canal. Thus, groundwater within the Lincoln Creek formation and glacial deposits are derived from the same regional recharge area located west of Well 4.

Table 3: Details of Canal Mutual Water System Well 4

Source ID	***Well 4 (BAC353)***
Date completed	September 21, 2007
Approximate wellhead elevation	211.4 feet above mean sea level (MSL)
Completion depth	420 feet below ground surface (bgs)
Completion elevation	-209 feet MSL
Well diameter	6 inches
Screen/ perforation depth	300 to 420 ft bgs
Static water level; date measured	205.5ft MSL; 3/11/09
	201.4 ft MSL; 9/21/07
Pump setting	100 feet MSL (111 ft bgs)
Available drawdown	294 feet

Robinson and Noble conducted a 24-hour aquifer test on Well 4 in November, 2007. A second 24-hour test was conducted in March, 2008 after the PUD sealed off the upper water-bearing zone in Well 4. Aquifer tests showed that Well 4 has a sustained pumping capacity of 55 gpm. However, it is capable of pumping up to 150 gpm for short periods. At 55 gpm, Well 4 would need to operate an average of about 11 hours a day in order to produce the 40 acre-feet per year authorized under this right.

Same Source Designation

When adding wells to groundwater rights, RCW 90.44.100 requires that the wells must draw from the *same body of public groundwater*. Based on Water Resources Program Policy 2010 (2007) two wells tap the *same body of public groundwater* if they:

- Are hydraulically connected.
- Share a common recharge (catchment) area.
- Share a common flow regime.
- Are isolated from other sources by the presence of effective barriers to hydraulic flow.

Well 4 is completed in groundwater zones that are hydraulically connected to the groundwater tapped by Canal Mutual Wells 1 and 2. Even though Wells 1 and 2 have a lower static water level (down-gradient of Well 4), all wells share the same recharge area and intercept the same groundwater flow regime. The Canal Mutual wells 1 and 2 are likely completed in the shallow alluvial aquifer compared to Well 4 that is completed in the deeper fractured bedrock (220 feet below MSL). These wells intercept groundwater that would otherwise discharge to the Hood Canal (Molenaar and Noble, 1970).

Water Availability
Withdrawals from Well 4 will not affect groundwater availability in the area. Additionally, the well report for Well 4 shows significant available head, greater than 400 feet between the static water level and the top of screen. The constant rate aquifer test also indicates the aquifer is highly transmissive and can easily produce the withdrawals authorized under this right.

Impairment Considerations

Potential Impairment
WAC 173-150-060 requires application of the impairment test only to "qualifying withdrawal facilities". "Qualifying groundwater withdrawal facilities" are defined as those wells that are adequately constructed and fully penetrate the saturated thickness of an aquifer. These wells can accommodate reasonable variation in seasonal pumping water levels (WAC 173-150). As such, even if any neighboring wells experience well interference, legal impairment would not occur unless those wells were drilled deep enough to fully penetrate the aquifer.

Ecology's well log data base[2] shows only five wells in about one-half mile from Well 4. All are completed between 50 to 232 feet below ground surface and have adequate available drawdown (36-84 feet) to compensate for any pumping interference if it were to occur. Well 4 is screened in a highly transmissive zone of fractured basalt and is not likely to impair any nearby wells.

Ecology's Water Rights Tracking System (WRTS) data base shows that the nearest water right is Certificate G2-23934C issued to Arnold Tahja. The Tahja wells are located immediately adjacent to Sund Creek, roughly 1,500 feet south of Well 4. They are completed in glacial and recent alluvial deposits and farther from Well 4 than Wells 1 and 2. Thus, the change of point of withdrawal to Well 4 will not impair the Tahja right.

Other nearby water rights are Certificates 7038 (Robert Sund) and 6940 (Earl Abbott and Earnest Haines). The associated well logs suggest both wells have 48 feet of available drawdown and are located in the Miller Creek drainage. Thus Well 4 is not expected to interfere with or impair the Sund and Abbott wells. In addition, because Wells 1 and 2 will be decommissioned, the change of point of withdrawal will result in less drawdown in the shallow aquifer and less impact to Sund Creek.

[2] The source of information for these wells was from the Ecology well log database. The radius of influence is determined through Ecology's Well Log database to the nearest quarter-quarter section centroid, which may be off by several hundreds of feet of the actual well location.

Seawater Intrusion
Because Well 4 is about ¼ mile from the marine water of Hood Canal, it is considered to be at risk for seawater intrusion. Currently, water quality test results for Well 4 show very low (background) chloride levels. The PUD plans to maintain the pumping elevation in Well 4 at about 100 feet above sea level during normal operation so that the well cannot cause a gradient reversal to draw salt water laterally from Hood Canal.

Mason PUD has designated Well 4 as the primary well for this system because of sea water intrusion in at Wells 1 and 2. Chloride concentrations of 733 mg/liter was reported in Well 1 on 8/8/06 and 314 mg/liter in Well 2 on 10/23/06 (Robinson and Noble, 2008). As a condition of this change authorization, Well 4 and any future wells constructed under this water right must be tested for chlorides and static water levels twice a year, during April and August. Sampling results must be reported annually to the Department of Ecology.

Public Interest Considerations

Chapter 90.54 RCW requires Ecology to manage public waters to meet drinking water needs of the people of the state and to promote economic benefit. At the same time, in-stream resources, environmental and aesthetic values must be protected.

Potential Impacts to Surface Waters

The proposed water right change is not located within any closed stream management units, nor is Sund Creek on the Surface Water Source Limitation (SWSL) list requiring low flow restrictions on water rights. The proposed change will not affect low flows in Sund Creek any more than Wells 1 and 2 under the original authorization.

Well 4 is approximately 1,450 feet north of Sund Creek and Canal Mutual Wells 1 and 2. This application proposes to withdraw groundwater from the bedrock aquifer and is expected to have less effect on Sund Creek than the original withdrawals from Wells 1 and 2.

Consistency with Local Watershed Planning

The WRIA 16 Watershed Management Plan was adopted by the Mason and Jefferson County Boards of Commissioners in July, 2006. The Plan supports public water systems over exempt well proliferation. As a municipal water supplier, the PUD has improved water use efficiency for this system and will continue to effectively promote conservation of limited water supplies. Approval of this change application will enable Mason PUD to continue serving an existing community and supply a growing population. It will also allow the PUD to discontinue pumping seaward wells that induce saltwater intrusion, thereby protecting groundwater quality.

Approval of this change will not be detrimental to the public interest and is consistent with the WRIA 16 Watershed Management Plan.

Consideration of Protests and Comments

No protests were filed against the approval of this application.

CONCLUSIONS

In conclusion, I find that:

- Water is available for appropriation from Well 4.
- The use of water for municipal supply is a beneficial use.
- Existing rights will not be impaired as a result of this change.
- The change will not be detrimental to the public interest.

I also find that:

- Well 4 taps the same body of public ground water as Wells 1 and 2.
- Wells 1 and 2 will be decommissioned when no longer needed for groundwater monitoring.
- Approval of this change will not enlarge the right conveyed by the original authorization.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that the request for change of point of withdrawal be approved in the amounts and within the limitations listed below and subject to the provisions beginning on Page 2, et seq.

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:

- 150 gpm
- 40 acre-feet per year
- Municipal supply
- Year-round, as needed
- Point of withdrawal: Well 4 (BAC353)
- Place of Use as described on Page 1 of this Report of Examination.

Marian C Peters 3-22-2012

Report Writer *Date*

If you need this publication in an alternate format, please call Water Resources Program at (360) 407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

References

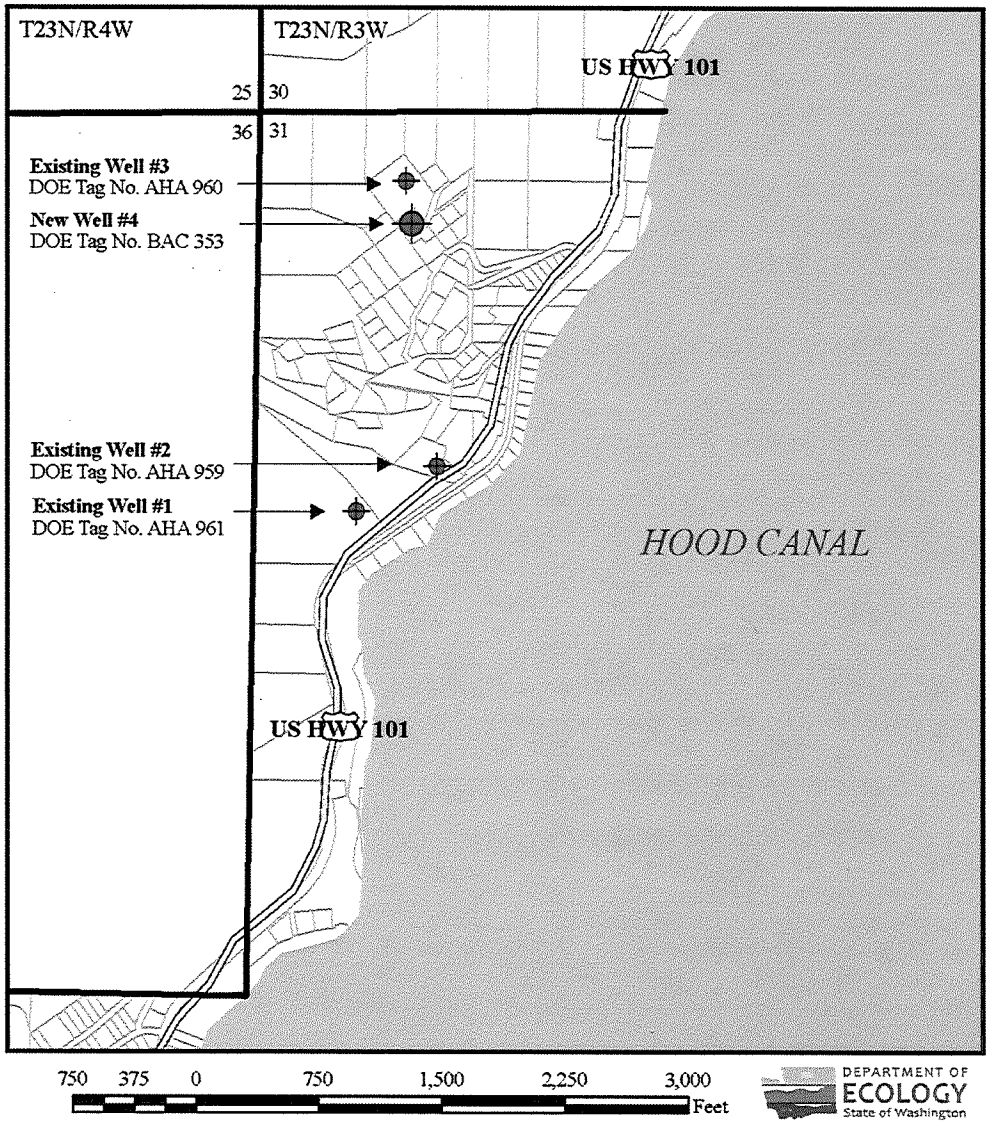
Contreras, T. A., Paulin, G. L.,. Czajkowski J. L., Polenz, M.,. Logan, R. L., Carson R. J., Mahan, S. A., Walsh, T. J., Johnson, C. N., and Skov, R. H., June 2010, Geologic Map of the Lilliwaup 7.5-minute Quadrangle, Mason County, Washington, WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, OPEN FILE REPORT 2010-4

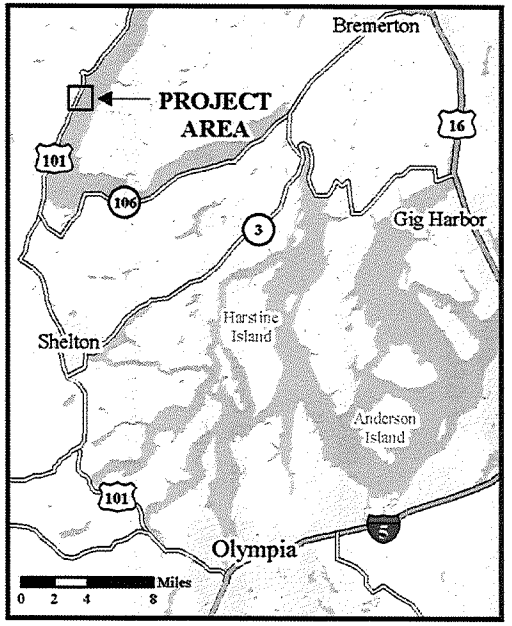
Logan, L. 2003. Geologic Map of the Shelton 1:100,00 Quadrangle, Washington; Washington Division of Geology and Earth Resources, Open File Report 2003-15.

Molenaar, D., and Noble, J., 1970. Geology and Related Ground-water Occurrence, Southeastern Mason County, Washington: U.S. Geological Survey Water Supply Bulletin No. 29, p. 145.

Robinson and Noble, 2008, Mason County PUD No.1, Canal Mutual Water System, Well 4 Testing Report, April 2008

Mason Co. PUD #1
Canal Mutual Water System
Ground Water Right Change CG2-GWC6848
Sec. 31 T 23 N, R 03 W.W.M.
WRIA 16 - Mason County





Legend

- POINT OF WITHDRAWAL (POW)
- MASON CO. PARCELS
- CITIES
- HIGHWAYS

Comments:

Place of use, points of withdrawal/diversion are as defined on the cover sheet under the heading, 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'

Map Created 7/21/2011 aln

ATTACHMENT 1