

State of Washington
**REPORT OF EXAMINATION
 FOR WATER RIGHT APPLICATION**

File No. G1-28396
 WAC Doc ID: 4256467

PRIORITY DATE November 14, 2005	APPLICATION NUMBER G1-28396
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MAILING ADDRESS Mary & Larry Leonard PO Box 791 Coupeville, WA 98239-9641	SITE ADDRESS (IF DIFFERENT) 1542 Grateful Acre Place
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Quantity Authorized for Withdrawal or Diversion

DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
25	GPM	19.3

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Multiple Domestic (DM) Irrigation (IR)	25 gpm			0.9 DM 18.4 IR		DM: Year-round, as needed IR: In-season

Source Location

WATERBODY	TRIBUTARY TO	COUNTY	WATER RESOURCE INVENTORY AREA
		Island	6

SOURCE FACILITY/DEVICE	PARCEL	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Well, ECY ID:AEE092	029-R23120-166-1000	31N	2E	20	NW SW	48.1563	-122.5886

Place of Use (See Map, Attachment 1)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

S600' E/2 NW SW FR 199 100 OPEN

Proposed Works

Well is 318 feet deep. Withdrawal is metered.

Development Schedule

BEGIN PROJECT

COMPLETE PROJECT

PUT WATER TO FULL USE

Started

December 31, 2022

December 31, 2025

Measurement of Water Use

How often must water use be measured?

Monthly

How often must water use data be reported to Ecology?

Annually (Jan 31)

What volume should be reported?

Total Annual Volume

What rate should be reported?

Annual Peak Rate of Withdrawal (gpm)

Provisions

Measurements, Monitoring, Metering and Reporting

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", 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.

Recorded water use data shall be submitted via the Internet. To set up an Internet reporting account, contact the Northwest Regional Office. If you do not have Internet access, you can still submit hard copies by contacting the Northwest Regional Office for forms to submit your water use data.

Water samples representative of the formation shall be analyzed by a state-accredited laboratory for Chloride (mg CL⁻), Conductivity (mhos), and Hardness (mg CaCO₃). An increasing trend in the concentrations of these groundwater constituents shall trigger review by the department to evaluate whether an increasing trend is due to seawater intrusion or very hard, naturally occurring, groundwater. If Ecology determines this withdrawal degrades the resource due to saltwater intrusion, withdrawal shall be altered to arrest the trend toward seawater intrusion.

Chloride Monitoring

In November of each year, the following information shall be submitted in writing to the Department of Ecology, Northwest Region Office, Bellevue, Washington.

April and September measurements from the subject well(s) of:

- Chloride and conductivity (the chemical analysis shall 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 shall 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.

Water Use Efficiency

Use of water under this authorization shall 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 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 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, 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.

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 No. G1-28039, subject to existing rights and the provisions specified above.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. 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).

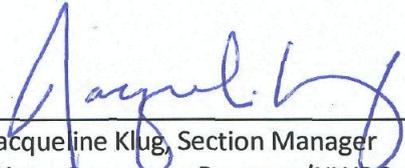
To appeal you must do the following within 30 days of the date of receipt of the Order.

- File your appeal and a copy of this Order 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 Order 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.

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 111 Israel RD SW STE 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

Signed at Bellevue, Washington, this 10th day of July 2012.



Jacqueline Klug, Section Manager
Water Resources Program/NWRO
Department of Ecology

BACKGROUND

Ecology issued a preliminary permit for the Leonard's to test the capacity of their well February 21, 2007. The results are discussed, below, but show adequate supply for the applicant's needs. The Leonards wish to serve two homes and three outbuildings under the domestic portion of the permit. They wish to irrigate: pumpkins (3 acres), fruit tree orchard (drip irrigation), a greenhouse, and timothy hay or equivalent (5 acres). They also wish to use water to establish trees (non-fruit).

One home has yet to be constructed in the place of use that covers the entire Leonard property. The Leonard's installed a meter on the well since the time of Ecology personnel visiting the site. The estimated time for development of the entire project is 10 years.

The project site is located in the Island Water Resource Inventory Area (WRIA) 6 in Island County which includes Whidbey and Camano Islands. The area has a low-moderate risk of saltwater intrusion.

Table 1
Summary of Application No. G1-28396

<i>Attributes</i>	<i>Proposed</i>
Applicant	Mary & Larry Leonard
Application Received	November 14, 2005
Instantaneous Quantity	25 gpm
Annual Quantity	15.2 acre-feet per year (requested)
Point of Diversion	1 well in NW1/4 SW1/4 Sec. 20 Twn 31N Rng 02E W.M.
Purpose of Use	Irrigation, Multiple Domestic Supply Purposes
Period of Use	Seasonal, Year-round as needed
Place of Use	Parcel: 029-R23120-166-1000 Legal Desc.: S600' E/2 NW SW FR 199 100 OPEN

Legal Requirements for Application Processing

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

- **Public Notice**

A notice of publication was published in the Whidbey News-Times on February 18 and February 25th, 2006. No protests were received as a result.

- **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.

INVESTIGATION

The investigation included, but was not limited to, the review of:

- The State Water Code, specifically WAC 173 and RCW 90. 03 and 90.44
- Washington State Department of Ecology, 2011, Washington State Well Log Viewer website, <<http://apps.ecy.wa.gov/welllog/index.asp>> .
- Washington State Department of Ecology, 2011, Water Rights Tracking System (WRTS)-website <<http://www.ecy.wa.gov/programs/wr/rights/tracking-apps.html>> .
- Driscoll, Fletcher G. Groundwater and Wells, 2nd Edition. Johnson Division, St. Paul, Minnesota, 1986.
- Easterbrook, Don J., Henry W. Anderson, and A.S. Van Denburgh. Pleistocene Stratigraphy of Island County (Part I), Ground-Water Resources of Island County (Part II). United States Geological Survey, Water Resources Division, 1968.
- Economic and Engineering Services. Island County Groundwater Management Plan Part A Technical Memorandum. Olympia: Economic and Engineering Services, Inc., 1989.
- Economic and Engineering Services. Island County Coordinated Water System Plan Regional Supplement. Olympia: Economic and Engineering Services, Inc. in association with Hart-Crowser & Associates, 1990.
- Fetter, C.W. Applied Hydrogeology, fourth edition. Prentice Hall, Upper Saddle River, New Jersey, 2001.
- Kelly, Doug. Island County Water Resources Management Plan: Saltwater Intrusion Topic Paper. Coupeville: Island County Department of Health, Environmental Health Division, 2005.
- National Resource Conservation Service. Washington Irrigation Guide. United States Department of Agriculture, National Resource Conservation Service, 2007. Available for download as of May 22, 2008 at: http://www.wa.nrcs.usda.gov/technical/ENG/irrigation_guide/index.html.

The intent of this application is to secure a permit to appropriate water to irrigate varied crops and supply two homes, a green house and outbuildings on the Leonards' property.

Noel S. Philip and Jerry L. Liszak conducted a field exam of the property September 28, 2011. The tour included the inspection of the production well and the service area. The groundwater level was 290.98 feet below the top of the casing at 10:21 am. Ecology personnel observed the drip irrigation system deployed in the orchard (with grasses growing between and among the rows). During the walk of the property, they also observed the future location of hay, the pumpkin patch, and area where trees (non-harvested landscape ornamentals) would be planted. The greenhouse was not constructed at the time of the visit. One home and two outbuildings were completed.

The project is currently supplied by one well, labeled with unique Ecology well tag AEE 092. The withdrawal is metered, however, the meter was installed after the field exam, so no reading was obtained at that time.

Site Description

General Hydrogeology

The hydrogeology of Central Whidbey Island has been shaped by at least three periods of glaciation, within intervening non-glacial periods between them. All of the aquifers tapped in this portion of the island are completed in unconsolidated sediments. The *Island County Ground Water Management Plan, Part A, Technical Memorandum* (GWMP, 2005) describes the groundwater-flow system as a series of discontinuous, permeable, water-bearing sediments (sand and gravel aquifers) surrounded by zones of lower-permeability sediments (silt, clay, and glacial-till aquitards).

The Leonard well is approximately 2,500 feet from Holmes Harbor of Puget Sound, on central Whidbey Island (Attachment 1). Well Done Drillers (Jock Harris, #1304) performed the well construction in 2005, according to the well report on file. It appears to fully penetrate the Whidbey Formation at this location, from approximately 308 to 319 feet below ground surface. Easterbrook describes the Whidbey Formation as glacial deposits consisting of horizontally and cross-bedded layers of sand, silt, and clay with two distinct organic (peat) layers. The aquifer is termed Aquifer C, the hydrogeologic unit associated with the Whidbey Formation. The entire unit is not described as one single water-bearing zone; but rather a zone containing many small, separate aquifer zones.

Well Done Drillers conducted a pump test at the well March 9, 2007, from 7:00 am to 11:15 am at which time the pump was turned off and recovery data collected until 3:30 pm. The pump test data are summarized below:

Date	March 9, 2007
Duration	4.25 hours
Pump Rate	>25 gpm
Top of casing elevation	302 feet MSL

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Static Water Level	290.5 feet below top of casing
Pumping Water Level	291.75 feet below top of casing
Drawdown	1.25 feet
Stabilization Time	5-10 minutes
Available Head During Pumping	18.3 feet
Recovery Level	290.5 feet below top of casing
Recovery Time	4.25 hours

The static water level elevation of the Leonard well is about 10.5 feet MSL (the top of the casing sticks up above land surface approximately two feet). Drawdown fluctuated and stabilized 10 minutes into the test at about 1.25 feet. The well recovered to pre-pumping levels within three hours. During the test, 18.3 feet of working head remained above the top of the screened interval. The screened interval spans nine feet from -7 to -16 feet MSL. The available head shows the remote likelihood pumping the well at the tested rate will draw the water level down to the top of the screen. These data show the well produced 20 gpm/ft. The results of the pump test confirm the aquifer is capable of supplying water at the rate of 25 gpm from the Leonard well, for a time in exceedance of their likely use.

Annual water allocation, for multiple domestic use, required by the applicant is calculated using the number of anticipated connections and water use per connection. Residential water use is based on historical and current data from similar water systems on Whidbey Island. Presently, these systems indicate average use per connection is approximately one-third (0.3) acre-foot per year (afy). At this rate, the annual water quantity required by the applicant to serve 2 residential connections is 0.6 afy. Another 0.3 afy is warranted for the combined uses by the outbuildings and greenhouse.

Irrigation requirements are determined by the Washington Irrigation Guide, published by the National Resource Conservation Service and United States Department of Agriculture. Crop requirements for the various uses projected by the Leonards show 13.8 afy needed, collectively, by the hay (10.6 afy), pumpkins (1.2 afy), orchard (1 afy) and ornamental landscape trees (1 afy). Factoring 75% irrigation efficiency results in a calculated need of 18.4 afy.

The total permitted annual groundwater withdrawal should be 19.3 afy.

Potential for Seawater Intrusion

The greatest threat to groundwater in Island County is seawater intrusion. The potential for seawater intrusion relates to the elevation of the groundwater (or potentiometric surface) relative to sea level. Aquifers having little or no groundwater head above sea level are susceptible to intrusion. Other factors such as recharge rate, pumping rate, aquifer transmissivity, hydraulic gradient, seasonal variation, and the geometry of the aquifer can influence the distribution and magnitude of seawater intrusion resulting from any particular withdrawal. Increasing concentrations of chloride in groundwater can be an indication of seawater intrusion. Unaffected groundwater in Island County generally contains a chloride concentration between 10-20 mg/L. Concentrations of 100 mg/L or greater provide evidence of seawater intrusion unless other sources of chloride are present such as naturally occurring hard groundwater.

Maps used by Island County to aid policy decisions show a lack of data in the area of the withdrawal, putting the well in a low risk category, however the Island County Health Department ranking system classifies the area of withdrawal as low for seawater intrusion based on the elevation of groundwater (12.6 feet MSL), combined with the chloride concentration in the well. The most recent data from samples collected in 2005 had hardness of 160 mg/L, 39 mg/L chloride and 473 mhos conductivity. Regular, diligent monitoring and reporting will describe the current aquifer chemistry and help administrators prevent degradation of the aquifer. While the subject well shows no sign of seawater intrusion, long term pumping may encourage the advancement of the saltwater-freshwater interface throughout the lifetime of the permit, to say nothing of water use in perpetuity. Such an event would impair the use of wells along the coast.

Four Statutory Tests

This Report of Examination (ROE) evaluates the application based on the information presented above. To approve the application, Ecology must issue written findings of fact and determine that each of the following four requirements of RCW 90.03.290 has been satisfied:

1. The proposed appropriation would be put to a beneficial use;
2. Water is available for appropriation;
3. The proposed appropriation would not impair existing water rights; and
4. The proposed appropriation would not be detrimental to the public welfare.

Beneficial Use

Domestic water supply and irrigation are considered beneficial uses of water.

Availability

Water is physically available for appropriation. The well is capable of sustaining withdrawal at its published pumping rate and the increased annual water use in the area is not anticipated to impact other water users.

Potential for Impairment

Other Groundwater Users

Groundwater wells at greatest risk of potential impairment are those which are completed in the same aquifer zone as the subject well, located in close proximity to the subject well, and also located hydrogeologically down-gradient from the subject well. As water in the aquifer travels toward wells located down-gradient from the subject well, the subject well may potentially capture this water and impair the production of down-gradient wells. Also, surface water diversions located within a close proximity of the subject well may be impacted by the groundwater withdrawal, depending upon physical aquifer characteristics. An arbitrarily, yet conservatively chosen radius of one-half mile (1/2-mile) is used to define "close proximity." This value is justified experimentally based on current and historical pump test data showing negligible drawdown at distances of 1000 feet, less than half the distance defined as close

proximity. Using this standard, impairment to wells or surface water diversions induced by groundwater withdrawal outside the area in most cases is unlikely. Furthermore, it is widely understood the aquifer systems in Island County are not laterally continuous, suggesting further barriers to impairment. One of these physical barriers is a groundwater divide, assumed to exist at the sub-basin boundary a short distance (<1000 feet) west of the applicant's well.

The Department of Ecology Water Rights Application Tracking System (WRATS) shows 2 surface water right certificates. Ecology's Well Log database has approximately 10 wells of record within this same area. These well are either tied to water right documents – certificates or claims, or to exempt wells that are used for smaller non-permitted uses.

Washington water law does not consider drawdown to be an impairment of existing water rights, unless the affected wells fully penetrate the aquifer and can no longer produce adequate water to meet the demands for which they were intended. The aquifer shows adequate capability to produce water in the amount requested without impairment to neighboring wells.

Surface Water Bodies

Minimum instream flows have not been established for WRIA 6. There are no significant surface streams within 1 mile of the Leonard's wells.

Public Welfare

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 withdrawal of additional 19.3 acre-feet of water year-round at an instantaneous rate of up to 25 gpm for multiple domestic and irrigation supply is consistent with state policy without adversely impacting instream flows or other public needs and values.

CONCLUSIONS

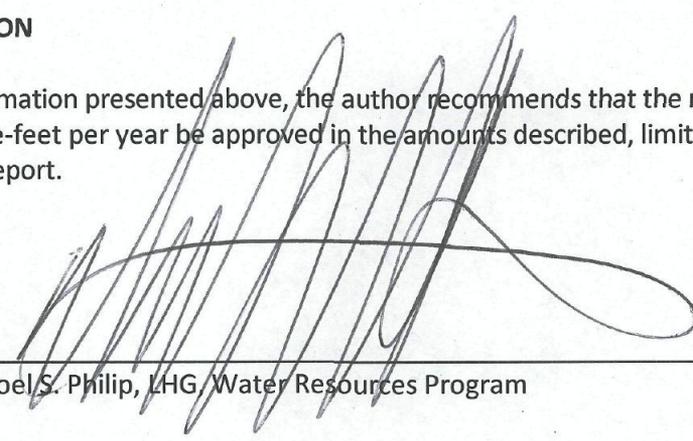
The conclusions based on the above investigation are as follows:

1. The proposed appropriation for multiple and domestic supply is a beneficial use of water;
2. The 25 gpm and 19.3 acre-feet per year is available for appropriation;
3. The new appropriation will not impair senior water rights; and
4. The new appropriation will not be detrimental to the public interest.

RECOMMENDATION

Based on the information presented above, the author recommends that the request to appropriate 25 gpm and 19.3 acre-feet per year be approved in the amounts described, limited, and provisioned on page 1 through 3 of this report.

Report by:

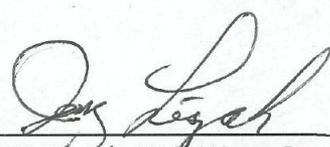


Noel S. Philip, LHG, Water Resources Program

07/10/2012

Date

Reviewed by:



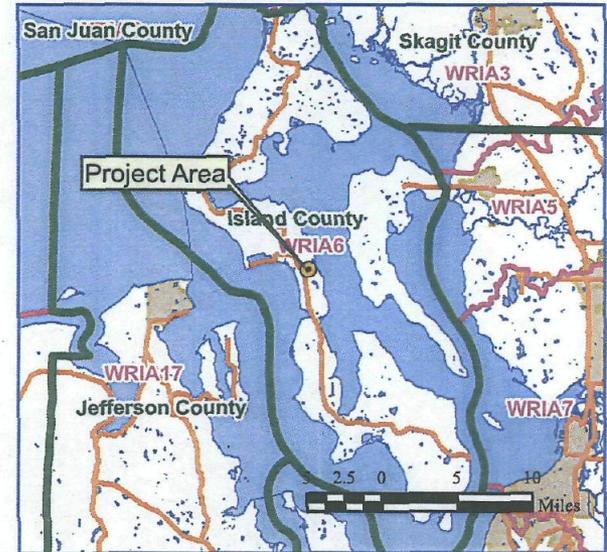
Jerry L. Lyszak, LHG, Water Resources Program

7/10/12

Date

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Mary & Larry Leonard
 Water Right Number G1-28396
 Sec 20 T 31N R 02E W.M.
 WRIA6 - Island County



Legend

- Highways
- WRIA
- cities
- Parcels 2007
- Major Water Bodies
- Marsh/wetland
- Townships
- Sections
- Authorized Point of Withdrawal
- Certificated Place of Use



Place of use and point(s) of diversion/withdrawal are as defined on the cover sheet under the headings, 'LOCATION OF DIVERSION/WITHDRAWAL' and 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'

