

STATE OF OREGON

COUNTY OF LAKE

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

CRYSTAL CLEAR ENERGY LLC  
220 NORTH G ST  
LAKEVIEW, OR 97630

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-17512

SOURCE OF WATER: HAMMERSLEY WELL (LAKE 2326) IN HAMMERSLY CREEK BASIN

PURPOSE OR USE: INDUSTRIAL USE (GEOTHERMAL HEATING & COOLING) AND POWER DEVELOPMENT

MAXIMUM RATE: 3.34 CUBIC FEET PER SECOND

PERIOD OF USE: YEAR ROUND

DATE OF PRIORITY: DECEMBER 7, 2011

WELL LOCATIONS:

PRODUCTION WELL - HAMMERSLEY WELL (LAKE 2326) - SE  $\frac{1}{4}$  NW  $\frac{1}{4}$ , SECTION 3, T39S, R20E, W.M.; 1506 FEET SOUTH AND 1631 FEET EAST FROM NW CORNER, SECTION 3

INJECTION WELL - WELL 2 - SE  $\frac{1}{4}$  NE  $\frac{1}{4}$ , SECTION 4, T39S, R20E, W.M.; 1400 FEET SOUTH AND 80 FEET WEST FROM NE CORNER, SECTION 4

INJECTION WELL - WELL 3 - SW  $\frac{1}{4}$  SW  $\frac{1}{4}$ , SECTION 3, T39S, R20E, W.M.; 4545 FEET SOUTH AND 1065 FEET EAST FROM NW CORNER, SECTION 3

INJECTION WELL - WELL 4 - SE  $\frac{1}{4}$  NW  $\frac{1}{4}$ , SECTION 10, T39S, R20E, W.M.; 1390 FEET SOUTH AND 2020 FEET EAST FROM NW CORNER, SECTION 10

THE PLACE OF USE IS LOCATED AS FOLLOWS:

NW  $\frac{1}{4}$  NW  $\frac{1}{4}$   
NW  $\frac{1}{4}$  SW  $\frac{1}{4}$   
SW  $\frac{1}{4}$  SW  $\frac{1}{4}$   
SECTION 3

TOWNSHIP 39 SOUTH, RANGE 20 EAST, W.M.

THE PLACE OF USE IS LOCATED AS FOLLOWS (CONTINUED):

ALL  
SECTION 4

ALL  
SECTION 9

NE ¼ NW ¼  
NW ¼ NW ¼  
SW ¼ NW ¼  
SE ¼ NW ¼  
NE ¼ SW ¼  
NW ¼ SW ¼  
SW ¼ SW ¼  
SE ¼ SW ¼  
NE ¼ SE ¼  
NW ¼ SE ¼  
SW ¼ SE ¼  
SE ¼ SE ¼  
SECTION 10

ALL  
SECTION 15

ALL  
SECTION 16

NE ¼ NE ¼  
SE ¼ NE ¼  
SECTION 17

NE ¼ NE ¼  
SE ¼ NE ¼  
NE ¼ SE ¼  
SE ¼ SE ¼  
SECTION 21

TOWNSHIP 39 SOUTH, RANGE 20 EAST, W.M.

THE PLACE OF USE IS LOCATED AS FOLLOWS (CONTINUED) :

NW ¼ NE ¼  
SW ¼ NE ¼  
NE ¼ NW ¼  
NW ¼ NW ¼  
SW ¼ NW ¼  
SE ¼ NW ¼  
NE ¼ SW ¼  
NW ¼ SW ¼  
SW ¼ SW ¼  
SE ¼ SW ¼  
NW ¼ SE ¼  
SW ¼ SE ¼

SECTION 22

TOWNSHIP 39 SOUTH, RANGE 20 EAST, W.M.

Measurement, recording and reporting conditions:

- A. Before water use may begin under this permit, the permittee shall install a totalizing flow meter at each production well and at each injection well, which shall be located within 50 feet of the wellhead.
- B. Adjacent to each totalizing flow meter shall be a clearly visible monument with a sign noting the flow meter.
- C. The permittee shall maintain the meter(s) in good working order.
- D. The permittee shall record monthly readings at each totalizing flow meter, and shall submit a report which includes the recorded amounts to the Department annually or more frequently as may be required by the Director. Further, the Director may require the permittee to report general water-use information, including the place and nature of use of water under the permit.
- E. The permittee shall allow the watermaster access to the totalizing flow meter(s); provided however, where any meter is located within a private structure, the watermaster shall request access upon reasonable notice.
- F. The Director may provide an opportunity for the permittee to submit alternative measuring and reporting procedures for review and approval.

Prior to the use of water under this permit, the permittee shall install equipment at a nearby domestic well (LAKE 2368) for the purpose of continuously recording both downhole temperature and water level. The equipment shall be approved by the Department and provided by the permittee. The Department may provide assistance to the permittee, as resources allow, by authorizing the use of appropriate Departmental equipment and staff to install and maintain the equipment, including regular downloading of recorded data. If the downhole temperature of LAKE 2368 is altered by greater than ten (10) degrees Fahrenheit as a result of the production or injection of low-temperature fluid under the terms of this permit, the water user shall discontinue use of, or reduce the rate and volume of withdrawal from the authorized well. The period of non-use or restricted use shall continue until the downhole temperature rises above the temperature which triggered the action or until the Department determines, based on the permittee's and/or the Department's data and analysis, that no action is necessary because the aquifer in question can sustain the observed thermal alteration without adversely impacting the resource or senior water rights.

Prior to use of water under this permit, the permit holder must register the injection activity with the Oregon Department of Environmental Quality's Underground Injection Control Program, which can be contacted at 2020 SW 4th Ave, Ste 400, Portland OR 97201, or 503-229-5263.

The Department requires the water user to obtain, from a qualified individual (see below), and report annual static water levels for each well on the permit. The static water level shall be measured in the month of March. Reports shall be submitted to the Department within 30 days of measurement.

The permittee shall report an initial March static water-level measurement once well construction is complete and annual measurements thereafter. Annual measurements are required whether or not the well is used. The first annual measurement will establish a reference level against which future measurements will be compared. However, the Director may establish the reference level based on an analysis of other water-level data. The Director may require the user to obtain and report additional water levels each year if more data are needed to evaluate the aquifer system.

All measurements shall be made by a certified water rights examiner, registered professional geologist, registered professional engineer, licensed well constructor or pump installer licensed by the Construction Contractors Board. Measurements shall be submitted on forms provided by, or specified by, the Department. Measurements shall be made with equipment that is accurate to at least the standards specified in OAR 690-217-0045. The Department requires the individual performing the measurement to:

- A. Associate each measurement with an owner's well name or number and a Department well log ID; and
- B. Report water levels to at least the nearest tenth of a foot as depth-to-water below ground surface; and
- C. Specify the method of measurement; and
- D. Certify the accuracy of all measurements and calculations reported to the Department.

The water user shall discontinue use of, or reduce the rate or volume of withdrawal from, the well(s) if any of the following events occur:

- A. Annual water-level measurements reveal an average water-level decline of one or more feet per year for five consecutive years; or
- B. Annual water-level measurements reveal a water-level decline of 5 or more feet in fewer than five consecutive years; or
- C. Hydraulic interference leads to a decline of 10 or more feet in any neighboring well with senior priority.
- D. The Department Ground Water Section Staff approved static ground water level measurements at well LAKE 2424 (state observation well 381) is below 30 feet below land surface.

The period of restricted use shall continue until the water level rises above the decline level which triggered the action or the Department determines, based on the permittee's and/or the Department's data and analysis, that no action is necessary because the use is not contributing to the decline or contributing to the groundwater level being below 30 feet below land surface at well LAKE 2424 (state observation well 381) or because the aquifer in question can sustain the observed declines without adversely impacting the resource or causing substantial interference with senior water rights. The water user shall not allow excessive decline, as defined in Commission rules, to occur within the aquifer as a result of use under this permit. If more than one well is involved, the water user may submit an alternative measurement and reporting plan for review and approval by the Department.

Dedicated Measuring Tube: Wells with pumps shall be equipped with an unobstructed, dedicated measuring tube pursuant to figure 200-5 in OAR 690-200. For existing wells with a pump installed, installation of the measuring tube shall occur when the pump is removed or replaced and/or when the well is deepened or reconstructed or altered.

All wells shall be constructed to extract or inject groundwater from and to the same or adjoining water-bearing zone within the basalt unit (this includes tuff breccia) below the basin sediments. To meet this criterion, each well shall have at minimum continuous casing and continuous seal from land surface, through the sediment to the productive portion of the basalt unit.

The location of all injection wells shall be at a distance from a point near the mouth of Hammersley Canyon that is equal to or less than the distance of the production well from the same point near the mouth of Hammersley Canyon. Otherwise, the use is subject to regulation, including possible immediate cancellation of the permit. The point location is 400 feet east of the west quarter corner of Section 3 in Township 39 South, Range 20 East, W.M.

The use described in this permit is authorized if and only if 100 percent of the groundwater extracted from the production well(s) is injected in the authorized injection well(s), which can be confirmed by flow-meter data. Otherwise, the use is subject to regulation, including possible immediate cancellation of the permit.

All water produced under this permit shall be injected into the authorized well(s). Prior to receiving a certificate of water right, the permit holder shall submit documentation affirming that any applicable additional requirements of the Department's Division 230 rules have been met.

Groundwater production shall occur from the predominantly basalt unit (this includes tuff breccia) below the predominantly basin-fill unit by casing and sealing through the basin-fill unit into the basalt unit.

Prior to using water from any well listed on this permit, the permittee shall ensure that the well has been assigned an OWRD Well Identification Number (Well ID tag), which shall be permanently attached to the well. The Well ID shall be used as a reference in any correspondence regarding the well, including any reports of water use, water level, or pump test data.

#### **STANDARD CONDITIONS**

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

If the number, location, source, or construction of any well deviates from that proposed in the permit application or required by permit conditions, this permit may be subject to cancellation, unless the Department authorizes the change in writing.

If substantial interference with surface water or a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The well(s) shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

If the riparian area is disturbed in the process of developing a point of appropriation, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with ODFW's Fish and Wildlife Habitat Mitigation Policy OAR 635-415. For purposes of mitigation, the ODFW Fish and Wildlife Habitat Mitigation Goals and Standards, OAR 635-415, shall be followed.

The use may be restricted if the quality of downstream waters decreases to the point that those waters no longer meet state or federal water quality standards due to reduced flows.

Where two or more water users agree among themselves as to the manner of rotation in the use of water and such agreement is placed in writing and filed by such water users with the watermaster, and such rotation system does not infringe upon such prior rights of any water user not a party to such rotation plan, the watermaster shall distribute the water according to such agreement.

Prior to receiving a certificate of water right, the permit holder shall submit to the Water Resources Department the results of a pump test meeting the Department's standards for each point of appropriation (well), unless an exemption has been obtained in writing under OAR 690-217. The Director may require water-level or pump-test data every ten years thereafter.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

Completion of construction and application of the water shall be made within five years of the date of permit issuance. If beneficial use of permitted water has not been made before this date, the permittee may submit an application for extension of time, which may be approved based upon the merit of the application.

Within one year after making beneficial use of water, the permittee shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner.

Issued November 12 , 2013

A handwritten signature in black ink that reads "E. Timothy Wallin". The signature is written in a cursive style with a horizontal line at the end.

E. Timothy Wallin, Water Rights Program Manager  
for Phillip C. Ward, Director