Surprise Valley Electrification Corp G-17890
Attn: Lynn Culp
516 US Hwy 395E
Alturas, CA 96101

Name
By
Address

C20

Priority SEPTEMBER 9, 2014

County LAKE WM# 12

Application No. G17890
Permit No. G-17434
Certificate No.

	Date	Volume	Page
DENIED			
MISFILED			
WITHDRAWN			
CANCELLED			

FEES PAID

Date	Amount	Receipt
9/9/14	1900.00	11339
	Cert. Fee	

FEES REFUNDED

Date	Amount	Receipt

RELATED FILES

DEVELOPMENT Date
Completion 6/30/2020
Extended to
Final Proof received
Proposed Cert. Mailed

ASSIGNMENTS

Date	To Whom	Address

REMARKS

MAP LOCATION

HS 9/11/2014

Oregon Water Resources Department
PERMIT CONDITION WATER-LEVEL REPORTING FORM

Well owner:

Name	Suprise Valley Electric Corp. Attn: Lynn Culp				Application:	G-17890
Address	516 US Highway 395E				Permit:	G-17434
City/State/Zip	Alturas	CA	96101		Certificate:	NA
Phone/Fax/Cell	(530) 233-3511				Userid:	
Email	lynnsvec@frontier.com				Transfer	NA

Your water right requires periodic static water-level measurements in your wells. **Consult your permit or certificate to determine when measurements should be made, when reports are due, and who is allowed to make the measurements.** Keep a copy of all measurement reports for your records. **All wells that have been constructed must be measured regardless of whether they are being used.** Please contact the Department if you are no longer the holder of this right or no longer have an interest in it.

Complete one form for each well.

Other water rights that list this well:

Application number(s):	NA				
Permit number(s):	NA				
Certificate number(s):	NA				

Identification of measured well (Provide as much information as possible.)

Water Resources Well Log ID:	LAKE 52683	Owner's well name:	SVE 5
Well ID (Well Tag) on Well: L-	120633		
Well ID (Well Tag) on Well Log:L-	120633	Well drilled by:	Robert Buckner
Start Card # on Well Log:	1028671	Total depth	380 Feet; Casing diameter (inches): 6 inches
Date drilled:	11/18/2015	Owner on well log:	Surprise Valley Electric

Water-Level Measurement

Date of measurement: 12/12/2015

Measurements should be made to at least the nearest tenth of a foot (10.2'), the nearest inch (10' 3") or the nearest pound, if using a gage.

Depth to water below measuring point:	81.75 Feet	Airline length or transducer depth:		NA	feet
Measuring point height above/below land surface:	1.45 Feet	Airline pressure:	NA psi x 2.31=	NA	feet
Depth to water below land surface:	80.30 Feet	Shut-in pressure:	NA psi x 2.31=	NA	feet

Measurement Status: Static ■ Pumping ☐ Rising ☐ Flowing ☐ Other
Measurement Method: E-tape ■ Airline ☐ Other

Length of time well was idle prior to measurement: Monitoring Well No Pump Installed
Measuring point description: Top Center of Well Casing

The measuring point is the reference point from which the measurement is made. Examples are: 1/2" access port in well cap; 1-1/2" port pipe on N side; pressure gage.

Comments:

When did water use begin for this well under this permit? Month _____ Year _____

I hereby certify that the information on this report is accurate and represents the static water level in the well at the time of measurement.

Person making measurement (print): Darryl Anderson
Signature of measurer:
Company: Anderson Engineering & Surveying Inc.
Licensed number (circle license type: CWRE, RG, PE, WWC, Pump Installer): CWRE #005, PE #12359
Daytime phone number: 541-947-4407
Email address: darryla@andersonengineering.com

If you have any questions about this notice, please call the Measurement & Reporting Section of the Department at 503-986-0822.
Return this Form to: OWRD, Meas & Rept Section, 725 Summer St. NE, Suite. A, Salem, OR 97301-1266 or email as an attachment to reportingmmts@wrd.state.or.us. Additional forms can be obtained from our web site at: http://www.wrd.state.or.us

GRONDIN Jerry H

From: GRONDIN Jerry H
Sent: Tuesday, October 20, 2015 2:32 PM
To: Bruce Brody-Heine
Cc: GRONDIN Jerry H; GALL Ivan K; BOSCHMANN Darrick E; WALLIN E Timothy; WOODCOCK Doug E; STARNES Kelly; MAYER Brian M; WOZNIAK Karl C
Subject: Surprise Valley Electric (files G-17890 & G-17985) & Colahan (T-11894)

Hi Bruce,

Thank you for your multiple e-mail inquiries.

Again, my apologies for my tardy reply given I was out doing field work the week of 12 to 16 October 2015.

I send this e-mail to facilitate a subsequent telephone discussion.

I am addressing the inquires for files G-17890 and G-17985 (Surprise valley Electric) and T-11894 (Colahan Enterprises) in a single e-mail given they relate to the same well field north of Paisley, Oregon, north of the Chewaucan River. Multiple rights and subsequent multiple transfers for various wells in that well field allows groundwater use for geothermal power and/or irrigation. The allowed uses and changes are an accounting challenge.

1. In regards to Transfer T-11894:

   You submitted the following request to the Lake County watermaster (Brian Mayer) in a 13 October 2015 e-mail:

   *"**REQUEST:** On behalf of Colahan, this letter requests approval from the Department to use an hour-clock in lieu of a totalizing flowmeter for Well 1 also referred to as Hot Well (LAKE 1627, 4448). The Hot Well will be used very infrequently due to the use of the newer production well SVE-1 that is located immediately adjacent to the Hot Well. Therefore, this email requests that the hour clock be used at this location. The hour clock time of operation measurement method is approved for measuring and computing water use under OAR 690-085-0015 (5)(c)."*

   This morning, I discussed this request with the watermaster given we both requested the totalizing flow meter.

   I noted that I requested the totalizing flow meter to improve the accounting of water use from each POA well in the well field to ensure the use at each POA well is within compliance of the existing water rights. Direct flow meter readings are more direct and efficient for determining water use.

   I further noted that there are flow meters capable of measuring flowing hot water. An example is well KLAM 55747 which has reported water temperatures of 199 degrees F. It has a GE Aqua Trans flow meter. I looked it up on-line. It is a clamp-on ultrasonic transducer rated up to 302 degrees F with an accuracy rating of 1 to 5 percent of the flow depending upon the pipe diameter.

   Lastly, I noted that if the hour clock method outlined in OAR 690-085-0015 (5)(c) is to be finally approved and used:

   a. The request and approval should formally follow a Department approved process;
   b. The approval should be properly documented and filed in the appropriate water right file(s) to answer any potential future questions about potential non-compliance with the water use measurement and reporting condition.

c. The accuracy of the timer and accuracy of the time to volume conversion needs to be documented, approved, and accessible to Department staff for independent readings and calculation;

2. In regards to file G-17890:

   Your 13 October 2015 e-mail to me noted there is a retired USGS geologist and adjunct professor (Silvio Pezzopane) located in Paisley who has been working with Surprise Valley Electric collecting water levels and other water quality parameters as part of the project's overall monitoring program. You then asked:

   ***"Request:** SVEC requests an exemption from OWRD to allow Mr. Pezzopane to collect the required monthly water level measurement to satisfy the permit condition. Another option is can Mr. Pezzopane work under a registered geologist who would supervise his work and sign off on the monthly water level forms (with Mr. Pezzopane collecting the actual measurements)."*

   I discussed the request with the Water Rights Section.

   As you noted, the permit condition says the water level measurements *"shall be made monthly by a certified water rights examiner, registered professional geologist, registered professional, engineer, licensed well constructor or pump installer licensed by the Construction Contractors Board."*

   The condition does not include an exemption or exception possibility. The Water Rights Section noted the exemption or exception needed to occur before the final order was issued.

   The permit condition specifying who can make the groundwater level measurement is limited for a reason. The list is limited to registered and/or licensed persons who are answerable to their respective boards and who are responsible and answerable for following their code of professional conduct. The purpose is to minimize the risk of poor quality data. That has been a past issue and ongoing concern.

3. In regards to file G-17985:

   Your 19 October 2015 e-mail to me noted a desire to possibly conduct an aquifer test with an observation well to obtain more site specific transmissivity and storage coefficient data that may benefit Surprise Valley Electric in regards to calculating groundwater pumping interference to surface water. My review of application G-17985 stated an openness to such a consideration.

   Your e-mail floated the possibility of using the "Little Hot Well" (LAKE 1628/LAKE 1626/LAKE 52582) as the pumping well and well SVE-4 (LAKE 52506) as the observation well.

   I remain open to the consideration. However, I have very serious concerns about using the "Little Hot Well" given the well has collapsed and filled in up to the bottom of the well casing. At best, the well is a poor quality piezometer. It is uncertain what the test will represent if the "Little Hot Well" is used given its very poor condition.

   I recommend our discussing what could make a meaningful test: pumping and observation wells, distance between wells, pumping rate, duration of the pumping period, duration of the recovery period, water level measurement schedule and accuracy, influence of nearby pumping, possible barometric pressure influence, possible earth-tide influence, etc.

I hope this e-mail is useful to you for a subsequent discussion. I am in the office through Thursday this week and all next week, except Wednesday.

Thanks,

Jerry

****

Jerry Grondin, Hydrogeologist
Ground Water Hydrology Section
Technical Services Division
Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301

Phone: 503-986-0848
E-Mail: Gerald.H.Grondin@wrd.state.or.us

****

Please Note: under Oregon law, messages to and from this e-mail address may be available to the public

Oregon Water Resources Department
Water Right Services Division

Water Rights Application
Number G-17890

Final Order

Appeal Rights
This is a Final Order in other than contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

This statement of judicial review rights does not create a right to judicial review of this order, if judicial review is otherwise precluded by law. Where no changes have been made to a Proposed Final Order on a water right application and no protests have been filed during the protest period, the Final Order is not subject to judicial review.

Findings of Fact
1. On September 9, 2014, Surprise Valley Electrification Corp submitted an application to the Department for a water use permit.

2. The Department issued a Proposed Final Order on March 24, 2015.

3. The protest period closed May 8, 2015, and no protest was filed.

Conclusions of Law
1. The proposed use would not impair or be detrimental to the public welfare, safety and health pursuant to ORS 537.621(2).

Order

Application G-17890 therefore is approved as described in the Proposed Final Order, and Permit G-17434 is issued as limited by the conditions therein.

DATED JUNE 30, **2015**

E. Timothy Wallin

E. Timothy Wallin, Water Rights Program Manager
for Thomas M. Byler, Director

This document was prepared by Kim French. If you have any questions about any of the statements contained in this document I am most likely the best person to answer your questions. You can reach me at 503-986-0816.

If you have previously filed a protest and want to know its status, please contact Patricia McCarty at 503-986-0820.

If you have other questions about the Department or any of its programs please contact our Customer Service Group at 503-986-0801.

Address all other correspondence to: Water Rights Section, Oregon Water Resources Department, 725 Summer St NE Ste A, Salem OR 97301-1266, Fax: 503-986-0901.

STATE OF OREGON

COUNTY OF LAKE

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

SURPRISE VALLEY ELECTRIFICATION CORP
516 US HWY 395E
ALTURAS, CA 96101

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

APPLICATION FILE NUMBER: G-17890

SOURCE OF WATER: SVE-4 WELL (LAKE 52506/L111501) IN CHEWAUCAN RIVER BASIN

PURPOSE OR USE: INDUSTRIAL/MANUFACTURING USES

MAXIMUM RATE: 0.509 CUBIC FOOT PER SECOND

PERIOD OF USE: YEAR-ROUND

DATE OF PRIORITY: SEPTEMBER 9, 2014

WELL LOCATION: SW ¼ NE ¼, SECTION 23, T33S, R18E, W.M.; 60 FEET NORTH AND 1680 FEET WEST FROM E1/4 CORNER, SECTION 23

THE PLACE OF USE IS LOCATED AS FOLLOWS:

NE ¼ SE ¼
SECTION 23
TOWNSHIP 33 SOUTH, RANGE 18 EAST, W.M.

Measurement devices, and recording/reporting of annual water use conditions:

A. Before water use may begin under this permit, the permittee shall install a totalizing flow meter at each point of appropriation. The permittee shall maintain the device in good working order.

B. The permittee shall allow the watermaster access to the device; provided however, where any device is located within a private structure, the watermaster shall request access upon reasonable notice.

C. The permittee shall keep a complete record of the volume of water diverted each month, and shall submit a report which

includes water-use measurements 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.

D. The Director may provide an opportunity for the permittee to submit alternative measuring and reporting procedures for review and approval.

Static Water Level Conditions

A 380 foot deep monitoring well with a casing diameter no less than 6 inches shall be constructed within 100 feet east of the proposed well (LAKE 52506/L111501). The well seal, casing, casing perforations, and well screen intervals shall be the same as well (LAKE 52506/L111501). The monitoring well must be constructed before use of water under this permit begins.

At minimum, the static groundwater level at the monitoring well shall be measured monthly by hand to the nearest 0.10 foot and reported to the Department monthly on forms provided by or specified by the Department. The first measurement must be received by the Department before use of water under this permit begins. Any use of a non-hand measurement water-level recorder device (shaft encoder, transducer, or other device) shall be in addition to the monthly hand measurement.

The reference level shall be the March 2015 static groundwater level measurement. If that measurement is missed for any reason, the reference level shall be 83 feet below land surface.

All measurements shall be made monthly 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, a hydrogeologist in the Department's Groundwater Section located in Salem. 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 Department may require the discontinuance of groundwater use, or reduce the rate or volume of withdrawal, from the well(s) if any of the following events occur:

A. A monthly measurement is not made; or
B. The monthly measurement is not submitted to the Department monthly or received by the Department monthly; or
C. Annual water-level measurements reveal an average water-level decline of two or more feet per year for five consecutive years; or
D. Annual water-level measurements reveal a water-level decline of 10 or more feet in fewer than five consecutive years; or
E. Annual water-level measurements reveal a water-level decline of 10 or more feet; or
F. Hydraulic interference leads to a decline of 10 or more feet in any neighboring well with senior priority.

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 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.

Dedicated Measuring Tube: Wells with pumps shall be equipped with a minimum 3/4-inch diameter, unobstructed, dedicated measuring tube pursuant to figure 200-5 in OAR 690-200. If a pump has been installed prior to the issuance of this permit, and if static water levels and pumping levels can be measured using an electrical tape, then the installation of the measuring tube can be delayed until such time that water levels cannot be measured or the pump is repaired or replaced.

The maximum volume allowed per month shall be equal to or less than 228.5 gallons per minute (43,986 cubic feet per day = 1.01 acre-feet per day) times the number of days in the month.

Groundwater use under LL-1450 shall terminate when groundwater use under this permit begins.

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 and maintained in accordance with the General Standards for the Construction and Maintenance of Water Supply Wells in Oregon. The works shall be equipped with a usable access port 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 JUNE 30 2015

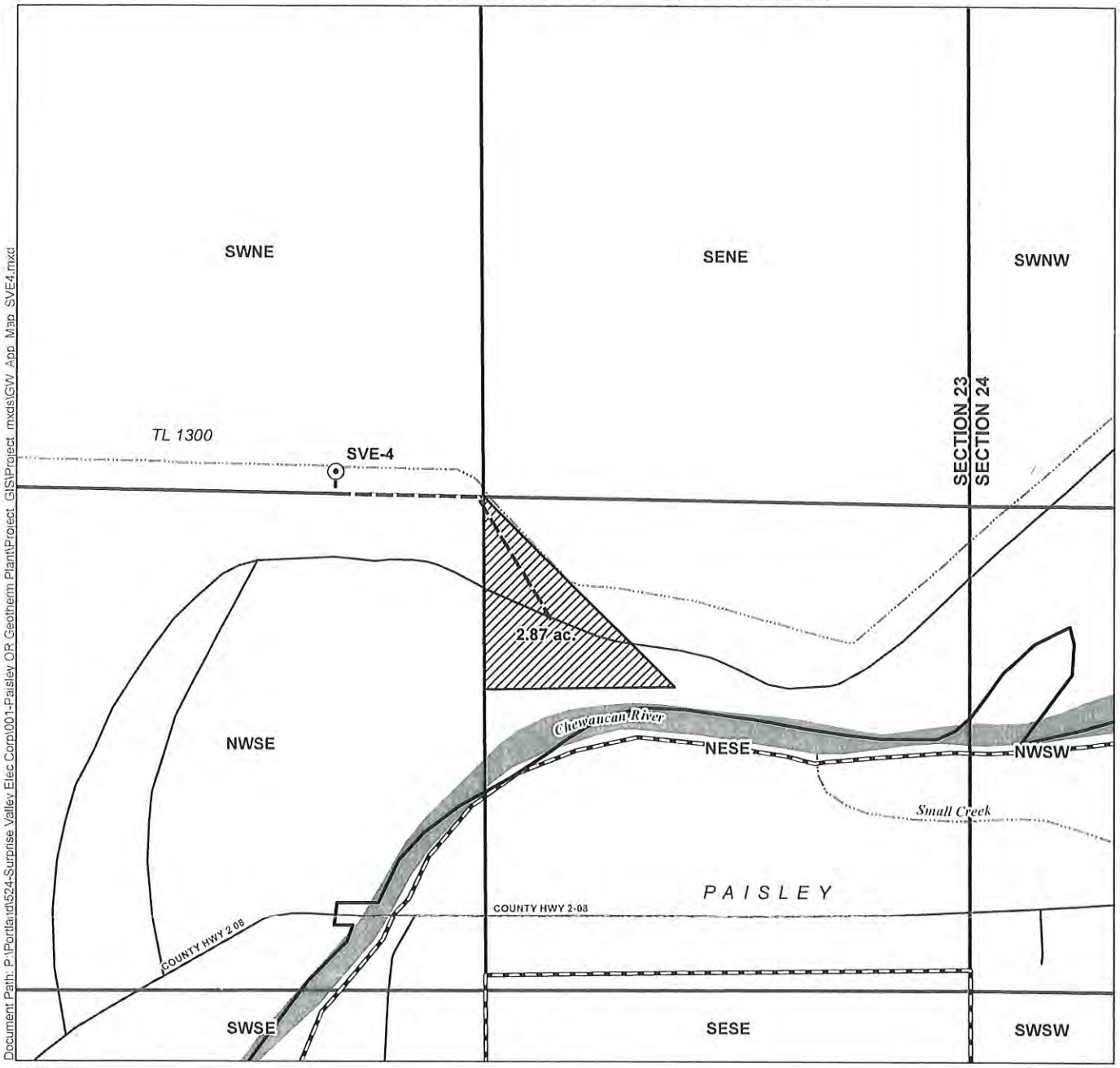
E. Timothy Wallin

E. Timothy Wallin, Water Rights Program Manager
for Thomas M. Byler, Director

Application for a Permit to Use Groundwater
Place of Use/Point of Appropriation Map

Application in the Name of Surprise Valley Electrification Corporation

Section 23, Township 33 South, Range 18 East (W.M.)



LEGEND

- Point of Appropriation (POA)
- Place of Use (POU)
- Distribution Pipeline
- Paisley City Limits
- Roads
- Watercourses
- Waterbodies

POA Location Description

SVE-4

Located 60 feet North and 1,680 feet West from the E1/4 corner of Section 23, Township 33 South, Range 18 East (W.M.)

RECEIVED

SEP 09 2014

WATER RESOURCES DEPT
SALEM, OREGON

Disclaimer

This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

Map Notes

Date: July 24, 2014
Data Sources: OWRD, USGS, US BLM, ESRI
Prepared By: GSI Water Solutions, Inc.

N

0 200 400

1 inch = 400 feet

GSI Water Solutions, Inc.

G-17880 G-17434

Mailing List for FO Copies

Application #G-17890

Original mailed to applicant with claim of beneficial use form:

SURPRISE VALLEY ELECTRIFICATION CORP
ATTN: LYNN CULP
516 US HWY 395E
ALTURAS CA 96101

Copies Mailed
By: KF
(SUPPORT STAFF)
on: 6/30/15
(DATE)

Copies sent via Email to:
1. WRD - Watermaster District #: 12

Copies sent to:
1. WRD - File # G-17890

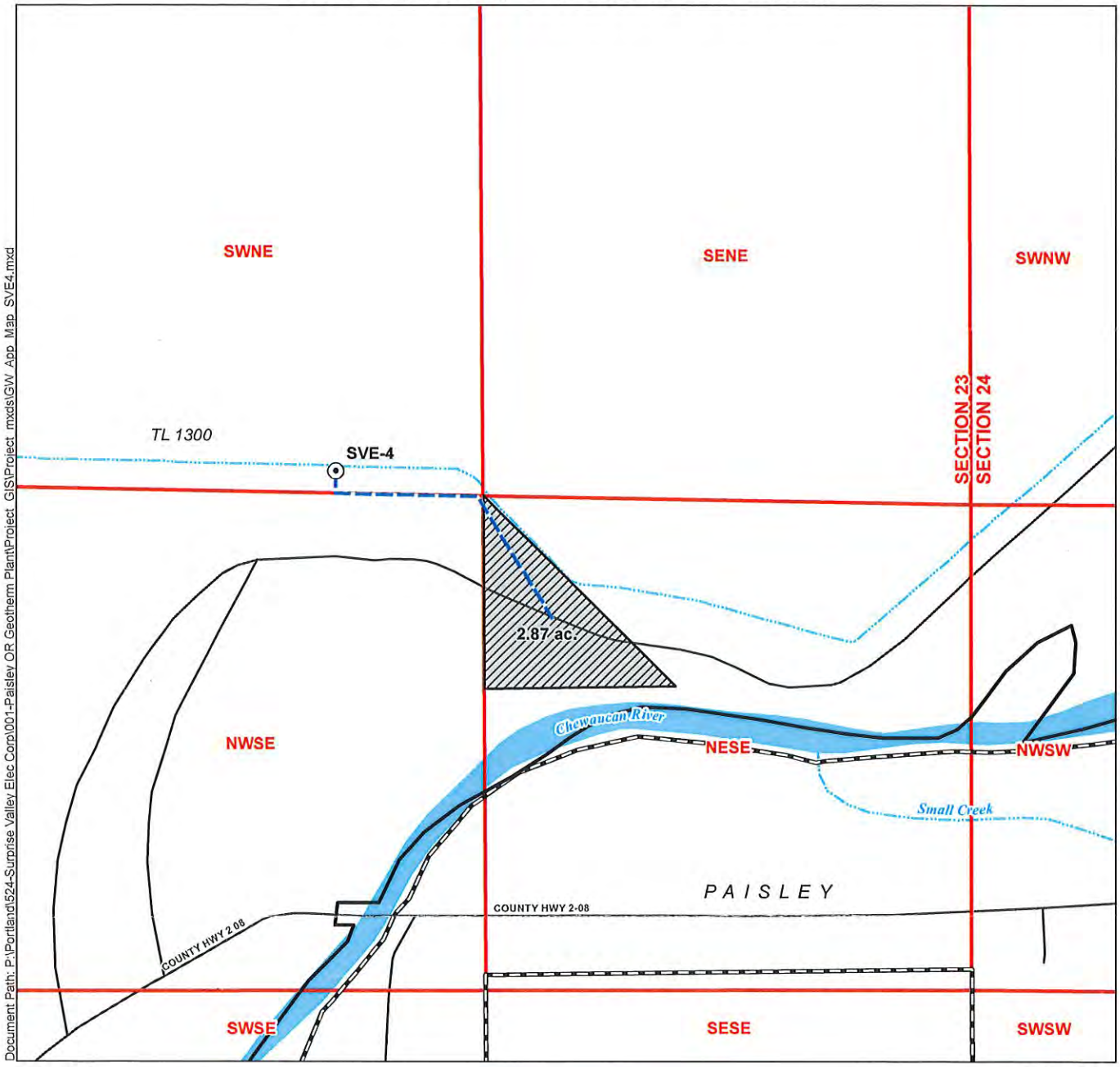
Copies sent to Other Interested Persons *(CWRE, Agent, Commenter, etc.)*
1. Bruce Brody-Heine, GSI Water Solutions, 147 SW Shevlin Hixon Dr, Ste 201, Bend, OR 97702

CASEWORKER : Kim French

Application for a Permit to Use Groundwater
Place of Use/Point of Appropriation Map

Application in the Name of Surprise Valley Electrification Corporation

Section 23, Township 33 South, Range 18 East (W.M.)



Document Path: P:\Portland\524-Surprise Valley Elec Corp\001-Paisley OR Geotherm Plant\Project GIS\Project mxds\GW App Map SVE4.mxd

LEGEND

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1 inch = 400 feet

GSI Water Solutions, Inc.

G-17880 G-17434

FO Checklist

Application #: G-17890 **Applicant:** SURPRISE VALLEY ELECTRIFICATION CORP ATTN: LYNN CULP

✓ Name and/or address has **changed or been assigned** ☐ Yes ☑ No
If new: _____

✓ Respond to **significant comments, issues, or disputes** related to the proposed use of water. ☑ N/A ☐ Yes

✓ **Affected landowner(s)** have been notified ☑ N/A ☐ Yes ☐ No, send a letter to landowners before FO issuance.

✓ **Verify names/addresses** of affected landowners, and those who commented and/or paid $25 fee. ☑ N/A ☐ Yes

✓ PFO conclusions **require modification** due to typos, errors or omission of conditions ☐ Yes ☑ No

If so: _____

_____

✓ If PFO requires modification, use **FO MOD appeal rights** ☑ N/A ☐ Yes
S:\groups\wr\Resource Center\language\fo\appeal rights - fo mod

✓ Within North Umpqua settlement reach and issuing permit, **spreadsheet has been updated** ☐ N/A ☐ Yes

✓ **SWW** If GW and interference, cc: Shawn Ortiz-Turner. ☑ N/A

✓ **WMCP** required, cc: Lisa Jaramillo. ☐ N/A

✓ **Fees**

EXAM FEE REQUIRED	1450	RECORDING FEE REQUIRED	$400 / $450
EXAM FEE PAID	-1450	RECORDING FEE PAID	-450
STILL OWED	0	STILL OWED	0

___ FO w/ draft permit; still needed:
- ___ fees
- ___ easement
- ___ st water contract
- ___ approved dam plans & specs
- ___ land use approval
- ___ well construction approval

✓ FO w/ permit # G-17434

___ FO to deny
refund $_____

Name: Kim French **Date:** 5/18/2015 **Peer Reviewer:** KMC 5/19/15

The purpose of this checklist is to be used as a working document by Department staff to aid in the production of the related Initial Review, Proposed Final Order, or Final Order. It is not intended to be a complete record of all factors which were considered to produce the document, nor is it intended to serve any purpose other than that stated above. The related Initial Review, Proposed Final Order, or Final Order is intended to stand alone as the record of factors considered in its production.

PFO Checklist

Application #: G-17890 **Applicant:** SURPRISE VALLEY ELECTRIFICATION CORP ATTN: LYNN CULP

✓ IR requested **add'l info** ☑ No ☐ Yes _____

✓ Have **conflicts** been addressed? ☑ NA ☐ No ☐ Yes _____

✓ **IR date** 12/5/14 **Noticed on** 12/9/14 **Comment Deadline** 1/8/15

✓ **Electronic/written comments?** ☑ No ☐ Yes _____ **Comment eval?** ☐ No ☐ Yes

✓ **SW availability** ☑ NA ☐ 80% ☐ 50% _____

✓ Is **second gw review** necessary? ☑ NA ☐ No ☐ Yes Complete? ☐ No ☐ Yes Add'l fees ☐ necessary ☐ collected ☐ needed

✓ **DIV 9** ☐ NA ☐ will likely be available... ☐ will **not** likely be available... ☑ will, if properly conditioned...

well _____ has PSI with _____

GW conditions 7B, 7N(MOD), 7P, 7T, LG TFM, MAX MNTHLY VOL, TERM OF LL-1450

✓ **Conditions** _____

☐ **Small** ≤ 0.1 CFS, ≤ 9.2 AF ☐ **Medium** > 0.1 CFS but < 0.5 CFS, > 9.2 AF but < 100 AF ✓ ☑ **Large** ≥ 0.5 CFS, ≥ 100 AF 7FM

✓ Allowed **Use/Rate/Season** IM; 0.5 CFS; 4/R **Limit** _____ **Duty** _____

Make specific finding in PFO if ☐ Rate/Limit higher-than-standard ☐ Duty higher-than-standard

✓ Confirm POD/POU are correct per the map

✓ **SWW** ☑ NA ☐ above ☐ within _____ If GW and interference, copy form for Stahr.

✓ Application was **filed *prior to* 10/23/99** ☑ No ☐ Yes (If Yes, add A date requirement)

✓ **Land Use** ☑ allowed outright ☐ decision obtained ☐ being pursued ☐ not being pursued (add text box - deny)

✓ **Needed before permit** ☑ NA ☐ fees ☐ evidence of well repair ☐ LU ☐ easement ☐ plans/specs ☐ storage contract

✓ **Changes** from IR determinations

_____

_____

_____

__ **Notes**

_____

_____

_____

✓ **Copy** to Reg Manager _____ WM 12 CWRE _____ Agent BRUCE BRODY-HEINE

✓ **Fees** _____ CFS Base _____

_____ AF Up to 1 CFS _____

_____ Add'l CFS _____

Up to 20 AF _____

_____ Add'l AF @ $1 _____

Add'l ___POD/POA ____ use + _____

Exam Fee Required = _____ Rec Fee Req'd _____

Exam Fee Paid _____ Red Fee Paid _____

Still Owed _____ Owed before permit _____

EXAM FEE REQUIRED	1450	RECORDING FEE REQUIRED	$400 / $450
EXAM FEE PAID	-1450	RECORDING FEE PAID	-450
STILL OWED	Ø	STILL OWED	Ø

Name: Kim French **Date:** 2/24/2015 **Peer Reviewer:** _____

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IR CHECKLIST

Application #: G-17890 **Applicant:** BRUCE BRODY-HEINE GSI WATER SOLUTIONS INC

Use(s): INDUSTRIAL/MANUFACTURING USES **Priority Date:** September 09, 2014

__ Requested **Use/Rate/Season** 1M ; 0.509 CFS ; YR **Limit** _____ **Duty** _____

Allowed **Use/Rate/Season** 1M ; 0.509 CFS ; YR **Limit** _____ **Duty** _____

✓ **DIV 9** ☐ NA ☐ will likely be available... ☐ will **not** likely be available... ☑ will, if properly conditioned...

☐ classify as surface water well _____ has PSI with _____

GW conditions 7B, 7N(MUD)7P, 7T, LARGE TFM, MAX MONTHLY VOLUME, TERM OF 4-14JO

✓ **Conditions** _____

☐ **Small** ≤ 0.1 CFS, ≤ 9.2 AF ☐ **Medium** > 0.1 CFS but < 0.5 CFS, > 9.2 AF but < 100 AF ☑ **Large** ≥ 0.5 CFS, ≥ 100 AF TFM

use **at least** Medium for: Siltcoos Lake, stored water contract, and Sandy Basin ground water
use Large for: Tenmile Lake, NU or other temp control, and gov. entities; Large-7g, Large-7i for 7g/7i
use Large-TFM: HC exceptions; and if GW in South Salem Hills, or 10+ acres in Stage Gulch CGWA

✓ **ORS 538 prohibits use** ☑ No ☐ Yes (stop processing and return app and fees)

✓ **Use** is ☑ allowed ☐ not allowed ☐ limited ☑ OAR ☐ Compact 690-513-0030

✓ Stream is **withdrawn** ☑ NA ☐ No ☐ Yes, allows use/season _____

✓ **SW availability** ☑ NA ☐ 80% ☐ 50% _____ WID: _____

☐ Use DWF's 6/21/05 non-standard W/A memo if the source is: trib to Drews Res, Snake R, Columbia R, North Umpqua R below Rock Cr, or within drainages of Lost R, Chehalem Cr, or Champoeg Cr (including Mission Cr and Case Cr)

✓ **DIVISION 33** ☑ NA ☐ No ☐ above Bonneville, and ☐ not allowed 4/15 - 9/30
☐ below Bonneville
☐ statewide

✓ **SWW** ☑ NA ☐ above ☐ within _____ (If GW and interference, copy form for Stahr.)

✓ Use is within a **high priority area for streamflow restoration** ☑ NA ☐ No ☐ Yes

✓ POU **conflict** ☐ NA ☑ No ☐ No, different sources ☐ No, make up a deficiency in rate ☐ No, existing not at max. rate

☐ Yes _____

✓ **Use is supplemental,** checked for primary rights w/ diff source ☑ NA ☐ Yes limits _____

✓ **App w/in a District boundary** per **http://apps.wrd.state.or.us/apps/gis/wr_irrigation/** ☑ No ☐ Yes, cc: _____

✓ **Land use** ☑ approved ☐ **not** approved ☐ being pursued ☐ **not** being pursued ☐ county notified ☐ NA

✓ **MU or QM** ☑ NA ☐ will complete construction within 20 years
☐ Lisa reviewed recommendations _____

✓ **Storage contract** ☑ NA ☐ BOR ☐ Doug Co ☐ Corp of Eng ☐ needed ☐ obtained _____

✓ POD is within **North Umpqua settlement reach** and the spreadsheet was updated ☑ NA ☐ Yes

✓ **Forms** ☑ NA ☐ HC except ☐ spring description other _____

Application #: G-17890 **Applicant:** BRUCE BRODY-HEINE GSI WATER SOLUTIONS INC

✓ **Authorized agent** specified ☐ NA ☐ needed ☐ Yes BRUCE BRODY-HEINE (GSI)

✓ **Copy** to ☐ SWR ☐ NCR ☐ WM # 12 ☐ agent ☐ CWRE ☐ a.l.o. ☐ DOA (div 33) ☐ CTUIR ☐ CRIFC ☐ USFWS ☐ NOAA & USFWS (4d) ☐ DOA Food Safety Div (bottled h2o) ☐ NW Planning Council

☐ city _____ (w/in 5-mile muni wells) ☐ DEQ, greg geist (POA in 1N, 3E, S 20, 21, 28, 29) ☐ DOGAMI & DSL (mining)

COLAHAN ENTERPRISES, PO BOX 800, PAISLEY OR 97636

✓ **Fees** 0.51 CFS Base 1150

_____ AF Up to 1 CFS 300

_____ Add'l CFS _____

Up to 20 AF _____

1 WELL
1 USE

_____ Add'l AF @ $1 _____

Add'l ___POD/POA ____ use + _____

Exam Fee Required = 1450 Rec Fee Req'd 450

Exam Fee Paid 1450 Red Fee Paid 450

Still Owed Ø Owed before permit Ø

✓ App/map meet **min. req** ☐ Yes ☐ No ☐ ALO info ☐ map ☐ legal _____
(If not, send IR certified)

✓ **Req'd before PFO** ☐ NA ☐ LU approve/pursue ☐ ALO info ☐ exam fees

✓ **Req'd before permit** ☐ NA ☐ recording fees ☐ well repair ☐ LU ☐ easement ☐ plans/specs ☐ storage contract

✓ **Letter format** ☐ good ☐ limited ☐ bad ☐ bad w/ rate reduction opportunity ☐ bad w/ HC opportunity

✓ **Scanned images exist for application form and map**

Name: Kim French **Date:** 11/26/2014 **Peer Reviewer:** _____

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Point of Diversion Characteristics

Right:	App: G 17890 *
Name:	GSI WATER SOLUTIONS INC. BRUCE BRODY-HEINE

TRSQQ: 33.00S-18.00E-23-SWNE

County: Lake
Basin: Goose & Summer Lakes
WM District: 12
WM Region: SC
Withdrawn Area:
WAB: CHEWAUCAN R > L ABERT - AT MOUTH (31300602)
Priority WAB: CHEWAUCAN R > L ABERT - AT MOUTH (OWRD: Very good, ODFW: High) (31300602)
Rule 4D:
Groundwater Restricted Area:
Scenic Water Way:
Division 33: STATEWIDE
Water Quality Limited:

Place of Use Conflict Report

The following rights have acreage in the same quarter-quarter as App: G 17890 *

Right	Name	Decree	App	Permit	Cert	Priority	Status	Use	T-R-S-QQ	DLC	Gov't Lot	Acres
INCHOATE: T 9733 CF (REG) *	BAGLEY DITCH CORP.	CHEWAUCAN RIVER				12/31/1881	NC	DO	33.00S-18.00E-23-NESE			
CERT:81719 RR *	NORTHWEST TOWNSITE CO.	CHEWAUCAN RIVER			81719	12/31/1881	NC	DO	33.00S-18.00E-23-NESE			
CERT:3680 OR *	GEORGE S PARK	CHEWAUCAN RIVER			3680	12/31/1908	NC	IR	33.00S-18.00E-23-			1.0000
INCHOATE: T 9733 CF (REG) *	BAGLEY DITCH CORP.	CHEWAUCAN RIVER				12/31/1881	NC	IR	33.00S-18.00E-23-NESE			9.8500
CERT:81719 RR *	NORTHWEST TOWNSITE CO.	CHEWAUCAN RIVER			81719	12/31/1881	NC	IR	33.00S-18.00E-23-NESE			1.3500
CERT:89546 CF *	DORIS COLAHAN		G-10683	G-9765	89546	4/9/1982	NC	IS	33.00S-18.00E-23-NESE			8.7000
APP: LL 1450 *	LYNN CULP		LL-1450			2/13/2013	NC	GE	33.00S-18.00E-23-NESE			
APP: LL 1508 *	LYNN CULP		LL-1508			3/14/2014	NC	GE	33.00S-18.00E-23-NESE			
CERT:73746 CR *	COLAHAN ENTERPRISES INC.		R-76083		73746	1/1/1993	NC	LV	33.00S-18.00E-23-NESE			
CERT:64777 CF *	ROSS H COLAHAN		S-39810	S-29891	64777	4/30/1964	NC	IR	33.00S-18.00E-23-NESE			8.7000
CERT:81170 CR *	COLAHAN ENTERPRISES		S-42939	S-31344	81170	10/17/1966	NC	IR	33.00S-18.00E-23-NESE			8.7000
CERT:64776 OR *	ROSS COLAHAN		S-60308	S-45125	64776	7/1/1980	NC	IR	33.00S-18.00E-23-NESE			0.5000

WATER RESOURCES DEPARTMENT

DIVISION 513

GOOSE AND SUMMER LAKES BASIN PROGRAM

690-513-0030

Goose Lake Subbasin

(2) Classifications. Except as otherwise provided in this subsection, the surface and ground waters of the Goose Lake Subbasin are classified for agriculture, domestic, fish life, ground water recharge**, industrial**, instream, irrigation, mining, municipal, pollution abatement, power, recreation and stockwater uses.

WATER RESOURCES DEPARTMENT MEMO **20 November 2014**

TO: **Application G- 17890**

FROM: **Gerald H. Grondin - Groundwater Section**

SUBJECT: **Scenic Waterway Interference Evaluation**

☐ YES

☒ NO

The source of appropriation is within or above a Scenic Waterway

☐ YES

☒ NO

Use the Scenic Waterway condition (condition 7J)

☐ Per ORS 390.835, the Groundwater Section is able to calculate groundwater interference with surface water that contributes to a Scenic Waterway. The calculated interference distribution is provided below.

☒ Per ORS 390.835, the Groundwater Section is unable to calculate groundwater interference with surface water that contributes to a scenic waterway; therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface flows necessary to maintain the free-flowing character of a scenic waterway.

DISTRIBUTION OF INTERFERENCE

Calculate interference as the monthly fraction of the annual consumptive use and fill in the table below. If interference cannot be calculated, per criteria in 390.839, do not fill in the table but check the "unable" option above, thus informing the Water Rights Section that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in the _____ Scenic Waterway by the following amounts, expressed as a proportion of the annual consumptive use pumped from the well.

Monthly Fraction of Annual Consumptive Use

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section **Date** 20 November 2014

FROM: Ground Water/Hydrology Section **Gerald H. Grondin** (Reviewer's Name)

SUBJECT: Application **G-17890** Supersedes review of **LL-1450** (Date of Review(s))

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525.* Department staff review ground water applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. **This review is based upon available information and agency policies in place at the time of evaluation.**

A. GENERAL INFORMATION:

Applicant's Name: **Surprise Valley Electrification Corp** County: **Lake**

A1. Applicant(s) seek(s) **0.509 (228.5 gpm)** cfs from **1** well(s) in the **Goose and Summer Lakes** Basin, **Chewaucan River** sub basin Quad Map: **Paisley**

A2. Proposed use: **General industrial including cooling water for geothermal electricity production**
Seasonality: **Year round**

A3. Well and aquifer data **(attach and number logs for existing wells; mark proposed wells as such under logid)**:

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	**LAKE 52506**	**1**	**Basin Fill**	**0.509**	**33S/18E-sec 23 ACD**	**60' N, 1680' W fr E qtr cor S 23**

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	**4470**	**83**	**94**	**02/27/14**	**378**	**0-20**	**+2-315**	**None**	**Perf 40-315 Scr 315-375**	**<100**	**?**	**A**

Use data from application for proposed wells.

A4. **Comments:**

This application (G-17890) is a follow-up to limited License LL-1450.

The application proposes to use water for general industrial use, which includes cooling water for geothermal electrical production.

The proposed maximum pumping rate is 228.5 gpm (0.509 cfs). This maximum pumping rate limit is needed to avoid triggering a potential for substantial interference (PSI) finding.

The proposed total annual volume is 368.5 acre-feet per year. This total annual volume equals continuous pumping at 228.5 gpm (0.509 cfs) for 365 days each year.

The proposed aquifer is identified as "basin fill sediments." The water well report (well log) for the 378 feet deep proposed POA well (LAKE 52506) indicates predominantly basin fill materials from land surface to the well bottom. The water is semi-hot (118 degrees F). The water well report for the 432 feet deep nearby well LAKE 1628 (original well and LAKE 1626 = deepening) located 500 feet northeast of the proposed POA well indicates predominantly basin fill materials with 62 feet of basalt from 298 to 360 feet depth. Hot water was encountered. The temperature was reported as 104 degrees when the well was originally constructed and 175 degrees after the well was deepened. The water well report for the 1260 feet deep nearby well LAKE 52529 located 50 feet NW of the proposed POA well indicates "basin-fill" sediments of volcanic origin with some basalt and rhyolite to possibly 410 feet depth and predominantly basalt-volcanic rocks below the "basin-fill" to the well bottom at 1260 feet.

Walker (1963) shows the site in an area mapped as sedimentary deposits (QTs) that are bounded by volcanic and sedimentary rocks (Tvb) to the west and alluvium (Qal) to the east. QTs is described as lacustrine, fluviatile, and Aeolian sedimentary rocks, interstratified tuff, ashy diatomite, and unconsolidated clay, sand, silt, and gravel, mostly in pluvial basins that correlates to water laid volcanic deposits of Wells and Peck (1961). Tvb is described as basalt flows. Qal is described as unconsolidated fluviatile gravel, sand, and silt. In places, it can include talus, fanglomerate, lakebed deposits, and windblown sand.

A5. ☐ **Provisions of the** Goose & Summer Lakes Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments:

OAR 690-513-0050 (Chewaucan Subbasin) does not apply. The proposed well and use appear to be within the allowable ground water classifications for the subbasin OAR 690-513-0050 (2).

A6. ☐ **Well(s) #** N.A. , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area:
Comments: **Currently, no administrative area.**

B. GROUND WATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that ground water* for the proposed use:

a. ☐ **is** over appropriated, ☐ **is not** over appropriated, *or* ☒ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the ground water portion of the over-appropriation determination as prescribed in OAR 690-310-130;

b. ☐ **will not** *or* ☐ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the ground water portion of the injury determination as prescribed in OAR 690-310-130;

c. ☐ **will not** *or* ☐ **will** likely to be available within the capacity of the ground water resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ The permit should contain condition #(s) **7B, 7N, 7P, 7T modified, and additional conditions noted**
   ii. ☐ The permit should be conditioned as indicated in item 2 below.
   iii. ☒ The permit should contain special condition(s) as indicated in item 3 below;

B2. a. ☐ **Condition** to allow ground water production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow ground water production from no shallower than _____ ft. below land surface;

c. ☐ **Condition** to allow ground water production only from the _____ ground water reservoir between approximately _____ ft. and _____ ft. below land surface;

d. ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Ground Water Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Ground water availability remarks:** _____

Reports for the Goose and Summer Lakes Basin indicate ground water occurs in alluvium, basin fill sediments, and different basalt units.

The proposed aquifer is identified as "basin fill sediments." The water well report (well log) for the 378 feet deep proposed POA well (LAKE 52506) indicates predominantly basin fill materials from land surface to the well bottom. The water is semi-hot (118 degrees F). The water well report for the 432 feet deep nearby well LAKE 1628 (original well and LAKE 1626 = deepening) located 500 feet northeast of the proposed POA well indicates predominantly basin fill materials with 62 feet of basalt from 298 to 360 feet depth. Hot water was encountered. The temperature was reported as 104 degrees when the well was originally constructed and 175 degrees after the well was deepened. The water well report for the 1260 feet deep nearby well LAKE 52529 located 50 feet NW of the proposed POA well indicates "basin-fill" sediments of volcanic origin with some basalt and rhyolite to possibly 410 feet depth and predominantly basalt-volcanic rocks below the "basin-fill" to the well bottom at 1260 feet.

Walker (1963) shows the site in an area mapped as sedimentary deposits (QTs) that are bounded by volcanic and sedimentary rocks (Tvb) to the west and alluvium (Qal) to the east. QTs is described as lacustrine, fluviatile, and Aeolian sedimentary rocks, interstratified tuff, ashy diatomite, and unconsolidated clay, sand, silt, and gravel, mostly in pluvial basins that correlates to water laid volcanic deposits of Wells and Peck (1961). Tvb is described as basalt flows. Qal is described as unconsolidated fluviatile gravel, sand, and silt. In places, it can include talus, fanglomerate, lakebed deposits, and windblown sand.

The nearest state observation well with long term data is state observation well 374 (well LAKE 1633) completed in basin-fill. It is located about 1.85 miles northeast of the proposed POA well LAKE 52506. The ground water level data is from 1963 to March 2014. The annual groundwater level trend shows rising water level s from the mid-1960s to the early 1970s, stable levels from 1970 to 1980, and an ongoing decline from the early 1980s to present. The decline from March 1980 to March 2014 is about 15.5 feet total. The decline rate varies. From 1980 to 1990, the decline was nearly 7 feet, about 0.7 feet annually. From 1990 to 2014, the decline was nearly 9 feet, about 0.35 feet annually.

If a permit is issued, recommend conditions 7B, 7N (modified), 7P, 7T, and the following additional conditions.

7B: Interference Condition

7N (modified): Annual Measurement and Decline Condition (see following)

"A 380 foot deep monitoring well with a casing diameter no less than 6 inches shall be constructed within 100 feet east of the proposed POA well (LAKE 52506). The well seal, casing, casing perforations, and well screen intervals shall be the same as the proposed POA well (LAKE 52506). The well must be constructed before the use of water under this permit is exercised.

At minimum, the static groundwater level at the monitoring well shall be measured monthly by hand to the nearest 0.10 foot and reported to the Department monthly on forms provided by or specified by the Department. The first measurement must be received by the Department before the use of water under this limited license is exercised. Any use of a non-hand measurement water level recorder device (shaft encoder, transducer, or other device) shall be in addition to the monthly hand measurement.

The reference level shall be the March 2015 static groundwater level measurement. If that measurement is missed for whatever reason, the reference level shall be 83 feet below land surface.

All measurements shall be made monthly 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, or approved by a hydrogeologist in the Department's Groundwater Section located in Salem. 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. A monthly measurement is not made; or
B. The monthly measurement is not submitted to the Department monthly or received by the Department monthly; or
C. Annual water-level measurements reveal an average water-level decline of two or more feet per year for five consecutive years; or
D. Annual water-level measurements reveal a water-level decline of 10 or more feet in fewer than five consecutive years; or
E. Annual water-level measurements reveal a water-level decline of 10 or more feet; or
F. Hydraulic interference leads to a decline of 10 or more feet in any neighboring well with senior priority.

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 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."

7P: Well Tag Condition

7T: Dedicated Measuring Tube Condition for the proposed POA well (LAKE 52506)

Flow meter condition: Use the water rights "large" permit condition requiring a totalizing flow meter and reporting

Maximum monthly volume condition: "The maximum total volume allowed per month shall be equal to or less than 228.5 gallons per minute (43,986 cubic feet per day = 1.01 acre-feet per day) times the number of days in the month."

Termination of groundwater use under LL-1450 condition: "Groundwater use under LL-1450 shall terminate when groundwater use under this permit begins."

C. GROUND WATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**Basin Fill**	☐	☒
2		☐	☐
3		☐	☐
4		☐	☐

Basis for aquifer confinement evaluation:

The system is identified as generally unconfined with discontinuous low permeability layers causing local (discontinuous, limited) confinement. This appears consistent with observations Miller (1984 and 1986) made for the Fort Rock Basin and with observations Morgan (1988) made for the Goose Lake subbasin.

The proposed aquifer is identified as "basin fill sediments." The water well report (well log) for the 378 feet deep proposed POA well (LAKE 52506) indicates predominantly basin fill materials from land surface to the well bottom. The water is semi-hot (118 degrees F). The water well report for the 432 feet deep nearby well LAKE 1628 (original well and LAKE 1626 = deepening) located 500 feet northeast of the proposed POA well indicates predominantly basin fill materials with 62 feet of basalt from 298 to 360 feet depth. Hot water was encountered. The temperature was reported as 104 degrees when the well was originally constructed and 175 degrees after the well was deepened. The water well report for the 1260 feet deep nearby well LAKE 52529 located 50 feet NW of the proposed POA well indicates "basin-fill" sediments of volcanic origin with some basalt and rhyolite to possibly 410 feet depth and predominantly basalt-volcanic rocks below the "basin-fill" to the well bottom at 1260 feet.

Walker (1963) shows the site in an area mapped as sedimentary deposits (QTs) that are bounded by volcanic and sedimentary rocks (Tvb) to the west and alluvium (Qal) to the east. QTs is described as lacustrine, fluviatile, and Aeolian sedimentary rocks, interstratified tuff, ashy diatomite, and unconsolidated clay, sand, silt, and gravel, mostly in pluvial basins that correlates to water laid volcanic deposits of Wells and Peck (1961). Tvb is described as basalt flows. Qal is described as unconsolidated fluviatile gravel, sand, and silt. In places, it can include talus, fanglomerate, lakebed deposits, and windblown sand.

Morgan (1988) notes for the Goose Lake subbasin that ground water flow is generally from upland recharge areas to lowland discharge areas. However, local subsystems discharge to lakes, reservoirs, meadows, and streams. Large quantities of ground water move through complexly interbedded, discontinuous, unconsolidated sand, gravel, silt, and clay deposits. Morgan characterizes the upper portion of ground water as unconfined with confined-like conditions increasing with depth. This appears related to anisotropic hydraulic conductivities with horizontal hydraulic conductivity much greater than vertical hydraulic conductivity. For one site noted, the estimated ratios ranged from 2:1 to 179:1. There is no indication of shallower ground water being separated from deeper ground water by a confining layer.

Miller (1984 and 1986) notes the main groundwater reservoir in the Fort Rock Basin occurs as a single flow system under both unconfined and confined conditions. The unconfined-confined variability reflects the permeability variation of the overlying units.

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	1	**Chewaucan River**	4376	4390	860	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation:

The groundwater elevation is the 27 February 2014 static water level measured by the OWRD Lakeview watermaster at the proposed POA well (LAKE 52506).

The reach of the Chewaucan River closest to the proposed POA (well LAKE 1628) is about 860 feet away and about 4390 feet in elevation. At this location, the river appears to be above the nearby static groundwater level. The river elevation and the groundwater level quickly drops in elevation to the east. The river intercepts groundwater downstream at about 4345 elevation (based on previous work related to LL-1450). The 4345 feet river elevation is about 5,435 feet away from the proposed POA.

Hydraulic connection explanation:

1. The Chewaucan River is a perennial stream.

2. The river quickly drops in elevation to below the static groundwater level.

Water Availability Basin the well(s) are located within: CHEWAUCAN R > L ABERT – AT MOUTH

C3a. **690-09-040 (4):** Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments:

No analysis here. The proposed POA well LAKE 52506 is less than 1-mile from the Chewaucan River, but it is more than 1-mile from where hydraulic connection with the river begins.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	27.8 %	37.1 %	42.9 %	47.2 %	50.5 %	53.2 %	55.4 %	57.4 %	59.1 %	60.5 %	61.9 %	63.1 %
Well Q as CFS		0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509
Interference CFS		0.142	0.189	0.219	0.240	0.257	0.271	0.282	0.292	0.301	0.308	0.315	0.321
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.		0.142	0.189	0.219	0.240	0.257	0.271	0.282	0.292	0.301	0.308	0.315	0.321
(B) = 80 % Nat. Q		33.80	64.90	103.00	161.00	314.00	234.00	81.90	47.40	42.30	42.20	34.40	32.80
(C) = 1 % Nat. Q		0.338	0.649	1.030	1.610	3.140	2.340	0.819	0.474	0.423	0.422	0.344	0.328
(D) = (A) > (C)		No	No	No	No	No	No	No	No	No	No	No	No
(E) = (A / B) x 100		0.420	0.291	0.213	0.149	0.082	0.116	0.344	0.616	0.712	0.730	0.916	0.979

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation:

A calculation, analysis was conducted here. The proposed POA well LAKE 52506 is less than 1-mile from the Chewaucan River, but it is more than 1-mile from where hydraulic connection with the river begins.

Hunt (1999) was used to calculate the interference with the Chewaucan River. The parameters used were a horizontal hydraulic conductivity of 29.8 feet/day (transmissivity = 26,820 ft2/day based on specific capacity data for LAKE 4448), 0.001 intermediate value for the storage coefficient, a stream width of 50 feet average, a streambed conductivity of 0.30 feet/day (aquifer horizontal conductivity/100), a streambed thickness of 20 feet (a thicker streambed given this is a river), and the distance to the river where hydraulic connection occurs (5,435 feet) rather than the distance to the nearest river reach (860 feet). The aquifer hydraulic parameters are within the ranges found in Morgan (1988) and in Gonthier (1985).

The calculation used the proposed pumping rate of 0.509 cfs (228.5 gpm) given the proposed annual volume divided by the annual pumping period of 365 days yields this pumping rate.

C4b. **690-09-040 (5) (b) The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.**

C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or ground water use under this permit can be regulated if it is found to substantially interfere with surface water:

i. ☐ The permit should contain condition #(s)_____;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions**_____

The proposed POA well LAKE 52506 is less than 1-mile from the Chewaucan River, but it is more than 1-mile from where hydraulic connection with the river begins.

Reports for the Goose and Summer Lakes Basin indicate ground water occurs in alluvium, basin fill sediments, and different basalt units.

The system is identified as generally unconfined with discontinuous low permeability layers causing local (discontinuous, limited) confinement. This appears consistent with observations Miller (1984 and 1986) made for the Fort Rock Basin and with observations Morgan (1988) made for the Goose Lake subbasin.

The proposed aquifer is identified as "basin fill sediments." The water well report (well log) for the 378 feet deep proposed POA well (LAKE 52506) indicates predominantly basin fill materials from land surface to the well bottom. The water is semi-hot (118 degrees F). The water well report for the 432 feet deep nearby well LAKE 1628 (original well and LAKE 1626 = deepening) located 500 feet northeast of the proposed POA well indicates predominantly basin fill materials with 62 feet of basalt from 298 to 360 feet depth. Hot water was encountered. The temperature was reported as 104 degrees when the well was originally constructed and 175 degrees after the well was deepened. The water well report for the 1260 feet deep nearby well LAKE 52529 located 50 feet NW of the proposed POA well indicates "basin-fill" sediments of volcanic origin with some basalt and rhyolite to possibly 410 feet depth and predominantly basalt-volcanic rocks below the "basin-fill" to the well bottom at 1260 feet.

Walker (1963) shows the site in an area mapped as sedimentary deposits (QTs) that are bounded by volcanic and sedimentary rocks (Tvb) to the west and alluvium (Qal) to the east. QTs is described as lacustrine, fluviatile, and Aeolian sedimentary rocks, interstratified tuff, ashy diatomite, and unconsolidated clay, sand, silt, and gravel, mostly in pluvial basins that correlates to water laid volcanic deposits of Wells and Peck (1961). Tvb is described as basalt flows. Qal is described as unconsolidated fluviatile gravel, sand, and silt. In places, it can include talus, fanglomerate, lakebed deposits, and windblown sand.

Morgan (1988) notes for the Goose Lake subbasin that ground water flow is generally from upland recharge areas to lowland discharge areas. However, local subsystems discharge to lakes, reservoirs, meadows, and streams. Large quantities of ground water move through complexly interbedded, discontinuous, unconsolidated sand, gravel, silt, and clay deposits. Morgan characterizes the upper portion of ground water as unconfined with confined-like conditions increasing with depth. This appears related to anisotropic hydraulic conductivities with horizontal hydraulic conductivity much greater than vertical hydraulic conductivity. For one site noted, the estimated ratios ranged from 2:1 to 179:1. There is no indication of shallower ground water being separated from deeper ground water by a confining layer.

Miller (1984 and 1986) notes the main groundwater reservoir in the Fort Rock Basin occurs as a single flow system under both unconfined and confined conditions. The unconfined-confined variability reflects the permeability variation of the overlying units.

The nearest state observation well with long term data is state observation well 374 (well LAKE 1633) completed in basin-fill. It is located about 1.85 miles northeast of the proposed POA well LAKE 52506. The ground water level data is from 1963 to March 2014. The annual groundwater level trend shows rising water level s from the mid-1960s to the early 1970s, stable levels from 1970 to 1980, and an ongoing decline from the early 1980s to present. The decline from March 1980 to March 2014 is about 15.5 feet total. The decline rate varies. From 1980 to 1990, the decline was nearly 7 feet, about 0.7 feet annually. From 1990 to 2014, the decline was nearly 9 feet, about 0.35 feet annually.

If a permit is issued, recommend conditions 7B, 7N (modified), 7P, 7T, and the following additional conditions.

7B: Interference Condition

7N (modified): Annual Measurement and Decline Condition (see following)

"A 380 foot deep monitoring well with a casing diameter no less than 6 inches shall be constructed within 100 feet east of the proposed POA well (LAKE 52506). The well seal, casing, casing perforations, and well screen intervals shall be the same as the proposed POA well (LAKE 52506). The well must be constructed before the use of water under this permit is exercised.

At minimum, the static groundwater level at the monitoring well shall be measured monthly by hand to the nearest 0.10 foot and reported to the Department monthly on forms provided by or specified by the Department. The first measurement must be received by the Department before the use of water under this limited license is exercised. Any use of a non-hand measurement water level recorder device (shaft encoder, transducer, or other device) shall be in addition to the monthly hand measurement.

The reference level shall be the March 2015 static groundwater level measurement. If that measurement is missed for whatever reason, the reference level shall be 83 feet below land surface.

All measurements shall be made monthly 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, or approved by a hydrogeologist in the Department's Groundwater Section located in Salem. 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. A monthly measurement is not made; or
B. The monthly measurement is not submitted to the Department monthly or received by the Department monthly; or

C. Annual water-level measurements reveal an average water-level decline of two or more feet per year for five consecutive years; or
D. Annual water-level measurements reveal a water-level decline of 10 or more feet in fewer than five consecutive years; or
E. Annual water-level measurements reveal a water-level decline of 10 or more feet; or

F. Hydraulic interference leads to a decline of 10 or more feet in any neighboring well with senior priority.

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 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. "

7P: Well Tag Condition

7T: Dedicated Measuring Tube Condition for the proposed POA well (LAKE 52506)

Flow meter condition: Use the water rights "large" permit condition requiring a totalizing flow meter and reporting

Maximum monthly volume condition: "The maximum total volume allowed per month shall be equal to or less than 228.5 gallons per minute (43,986 cubic feet per day = 1.01 acre-feet per day) times the number of days in the month."

Termination of groundwater use under LL-1450 condition: "Groundwater use under LL-1450 shall terminate when groundwater use under this permit begins."

References Used:

Gonthier, J.B. 1985, A description of aquifer units in eastern Oregon: USGS Water Resources Investigations Report 84-4095, 39 p., 4 plates.

Miller, D.W., 1984, Appraisal of ground-water conditions in the Fort Rock Basin, Lake County, Oregon: Oregon Water Resources Department, Open File Report, 157 p.

Miller, D.W., 1986, Appraisal of ground-water conditions in the Fort Rock Basin, Lake County, Oregon: Oregon Water Resources Department, Ground Water Report No. 31, 196 p and plates.

Morgan, D.S., 1988, Geohydrology and numerical model analysis of ground-water flow in the Goose Lake Basin, Oregon and California: USGS Water Resources Investigations Report 87-4058, 92 p.

Oregon Water Resources Department, 1989, Goose and Summer Lakes Basin report: OWRD Basin Report, 112 p.

Peterson, N.V. and McIntyre, J.R., 1970, The reconnaissance geology and mineral resources of eastern Klamath County and western Lake County, Oregon: DOGAMI Bulletin 66, 70 p.

Peterson, N.V., and Brown, D.E., 1980, Preliminary geology and geothermal resource potential of the Lakeview area, Oregon: DOGAMI Open-File Report O-80-09, 57 p., 1:62,500 maps.

Phillips, K.N. and VanDenburgh, A.S., 1971, Hydrology and geochemistry of Abert, Summer, and Goose Lakes, and other closed-basin lakes in south-central Oregon: USGS Professional Paper 502-B, 86p.

Walker, G.W., 1963, Reconnaissance geologic map of the eastern half of the Klamath Falls (AMS) quadrangle, Lake and Klamath Counties, Oregon: USGS Mineral Investigations Field Studies Map MF-260.

Walker, G.W. and Reppening, C.A., 1965, Reconnaissance geologic map of the Adel quadrangle, Lake, Harney, and Malheur Counties, Oregon: USGS Miscellaneous Geologic Investigations Map I-446.

Waring, G.A., 1908, Geology and water resources of a portion of south-central Oregon: USGS Water Supply Paper 220, 85 p.

Wells, F.G., and Peck, D.L., 1961, Geologic map of Oregon west of the 121st meridian: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-325.

Goose and Summer Lakes Basin Program rules (OAR 690-513).

State Obesrvation Well SOW 374 (well LAKE 1633)

Water well reports for proposed well LAKE 52506 and for wells LAKE 1628 (well LAKE 1626, deepening) and LAKE 52529.

USGS Paisley, Oregon quadrangle map (1:24,000)

Application G-17890 continued Date 20 November 2014

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: 1 Logid: LAKE 52506

D2. **THE WELL does not appear to meet current well construction standards based upon:**

a. ☐ review of the well log;
b. ☐ field inspection by _____;
c. ☐ report of CWRE _____;
d. ☐ other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____

D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

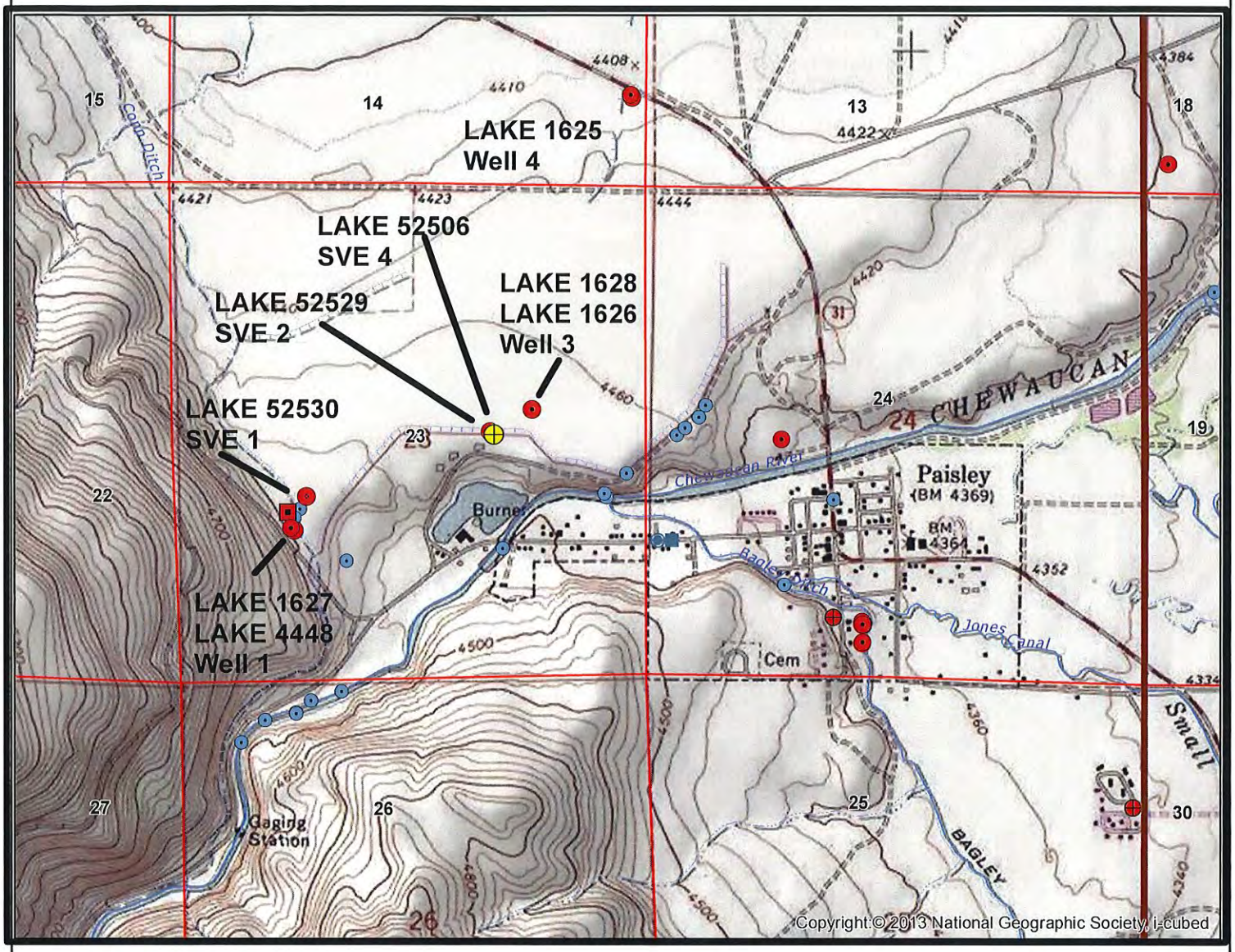
Comments:

Well construction shown to Well Enforcement Section. No deficiency noted based on their review of LAKE 52506 water well report (well log)

Water Availability Tables

See Attachments

Groundwater Permit Application G-17890
Suprise Valley Electrification Corp.



0 0.5 1 2

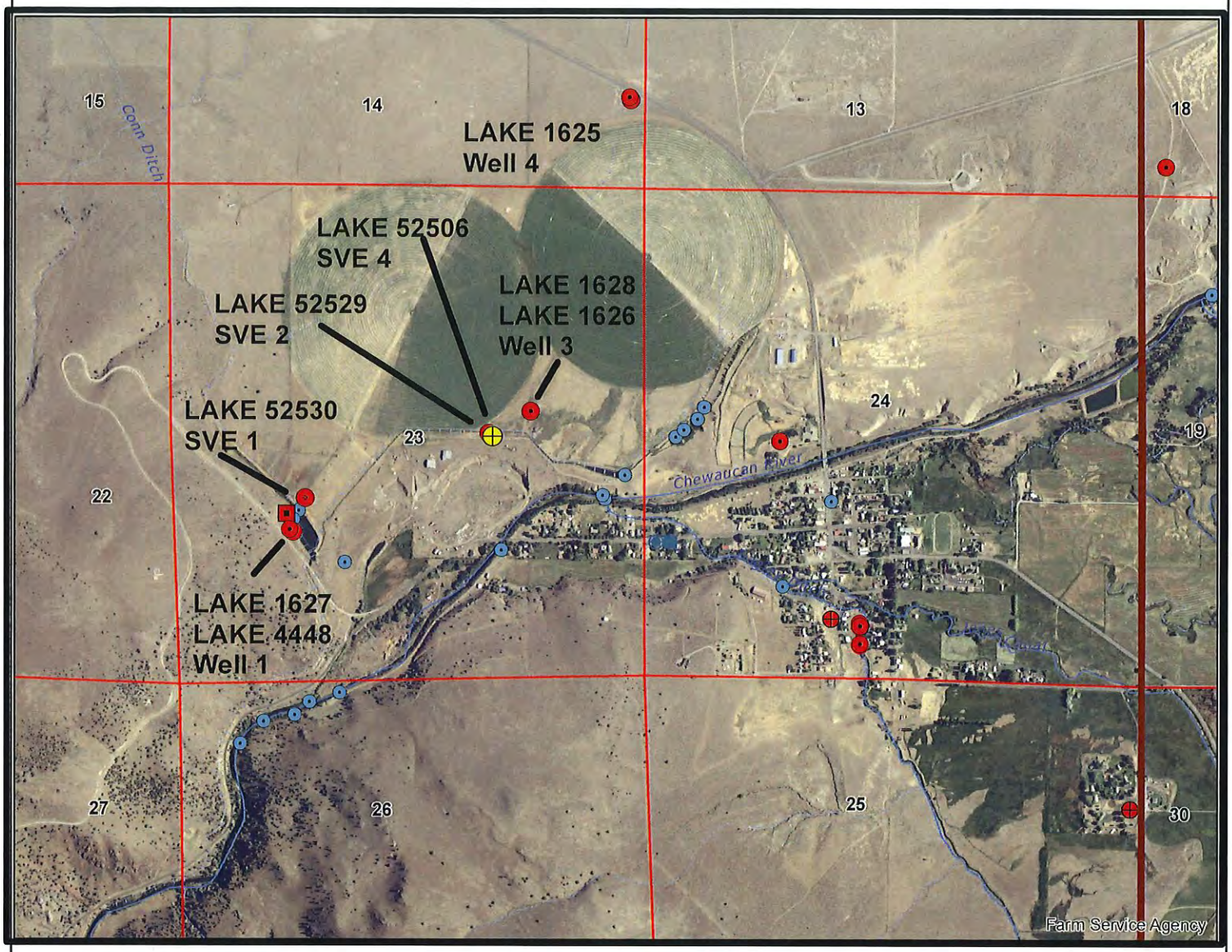
Miles

Yellow = Application Noted Well(s)
Red = Other Existing or Proposed Wells

Blue and Other = surface water rights

N

Groundwater Permit Application G-17890
Suprise Valley Electrification Corp.



0 0.5 1 2

Miles

Yellow = Application Noted Well(s)
Red = Other Existing or Proposed Wells

Blue and Other = surface water rights

N

LAKE 52506

LAKE 52506

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

WELL LABEL # L 111501

START CARD # 209509

Instructions for completing this report are on the last page of this form.

(1) LAND OWNER Owner Well I.D. _____
First Name MARK Last Name DOUGLAS
Company Surprise Valley Electric
Address 516 Hiway 395E
City Alturas State ~~CA~~ CA Zip 96101

(2) TYPE OF WORK ☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD ☐ Rotary Air ☒ Rotary Mud ☐ Cable ☐ Auger ☐ Cable Mud ☐ Reverse Rotary ☐ Other _____

(4) PROPOSED USE ☐ Domestic ☐ Irrigation ☐ Community ☐ Industrial/Commercial ☐ Livestock ☐ Dewatering ☐ Injection ☐ Thermal ☑ Other cooling water

(5) BORE HOLE CONSTRUCTION Special Standard: ☐ Yes (attach copy)
Depth of Completed Well 378 ft.

BORE HOLE Dia	From	To	Material	SEAL From	To	Amount	Sacks/lbs
26	0	20	cement	0	20		35
12 3/4	20	378					

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☑ E
☐ Other _____
Backfill placed from _____ ft. to _____ ft. Material _____
Filter pack from 0 ft. to 378 ft. Material G.V.L. Size 3/8
Explosives used: ☐ Yes Type _____ Amount _____

(6) CASING/LINER

Csng	Linr	Dia	+	From	To	Gauge	Steel	Plastic	Welded	Thrd
✓		10 3/4		2	315	.250	✓		✓	

Shoe ☐ Inside ☐ Outside ☐ Other Location of shoe(s) _____
Temporary casing ☐ Yes Diameter _____ From _____ To _____

(7) PERFORATIONS/SCREENS
Perforations Method Lo-carbon steel / Holte Perf
Screens Type wire wound Material _____

Perf	Scrn	Csng	Linr	Screen Dia	From	To	Screen/slot width	Slot length	# of slots	Tele/pipe size
	✓			10 3/4	315	375	.100			
✓					40	315		3	2200	

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
<100		335	14 hrs

Temperature 118 °F Lab analysis ☐ Yes By _____
Water quality concerns? ☐ Yes (describe below)

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)
County LAKE Twp 33 N or S Range 18 E or W W.M.
Sec 23 SW 1/4 of the NE 1/4 Tax Lot _____
Tax Map Number _____ Lot _____
Lat ___ ° ___ ' ___ . ___ " or LOT 699888 mE DMS or DD
Long ___ ° ___ ' ___ . ___ " or 4730012 mN DMS or DD
Street Address of Well (or nearest address) 1/4 mile NO OF DAISLEY

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL (ft)
Existing Well/Predeepening				
Completed Well	2-8-14	83		

Flowing Artesian? ☐ Yes Dry Hole? ☐ Yes

WATER BEARING ZONES Depth water was first found 83'

SWL Date	From	To	Bar Flow	SWL (psi)	+	SWL (ft)
Well was completed using mudy						

(11) WELL LOG Ground Elevation 4476

Material	From	To
Soil w/Brn clay	0	25
Pea Gravel	25	45
Gray Sand-pebbles w/clay	45	185
Grey Sand	185	220
Brn/Grey Pebbly clay	220	275
Brn pebbly clay	275	320
Brn pebbly clay w/sand	320	360
Coarse Sand	360	378

Date Started 1-18-14 Completed 2-8-14

(unbonded) Water Well Constructor Certification
I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

RECEIVED BY OWRD FEB 21 2014

License Number _____ Date _____

Signed APR 04 2014 SALEM, OR

(bonded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

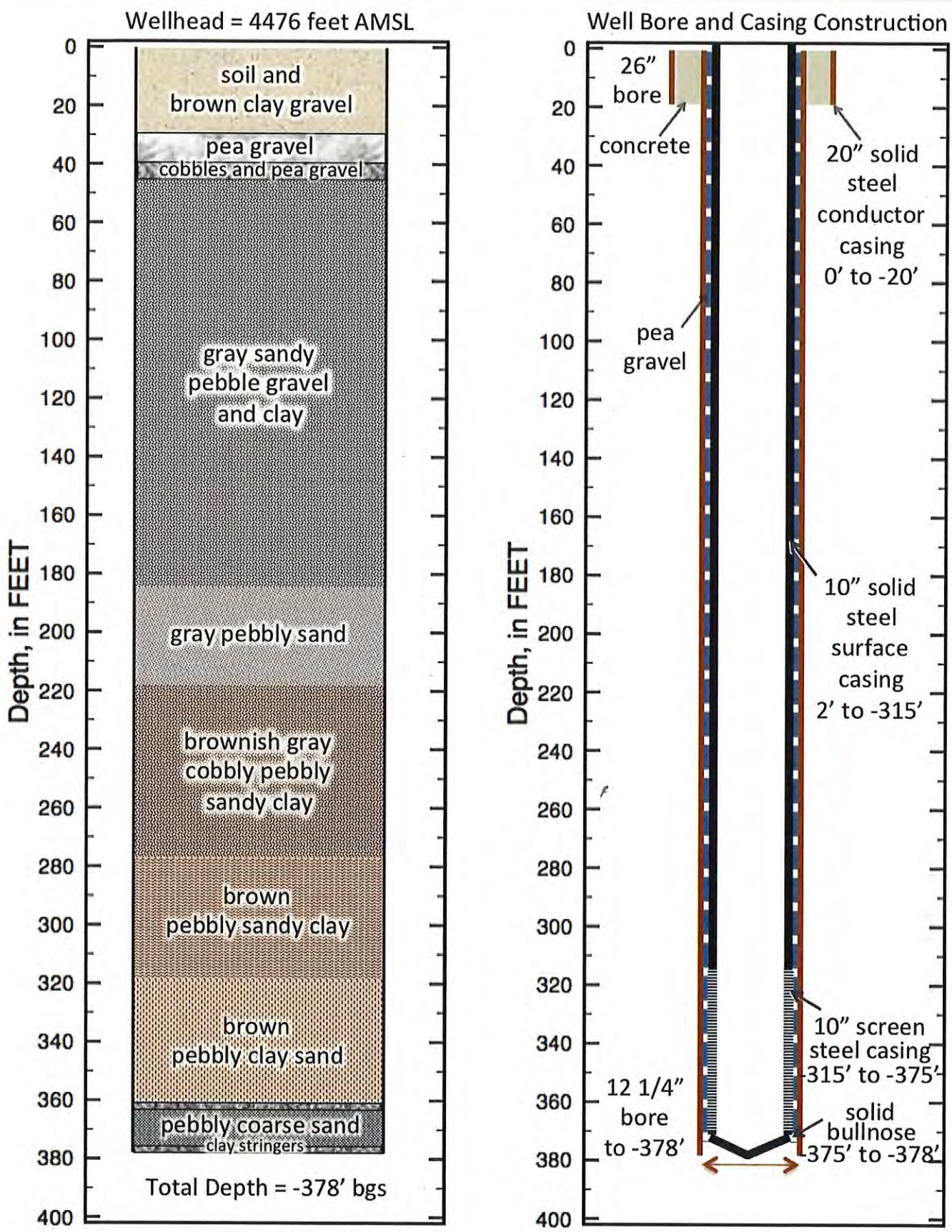
License Number 1946 Date 2-14-14

Signed _____

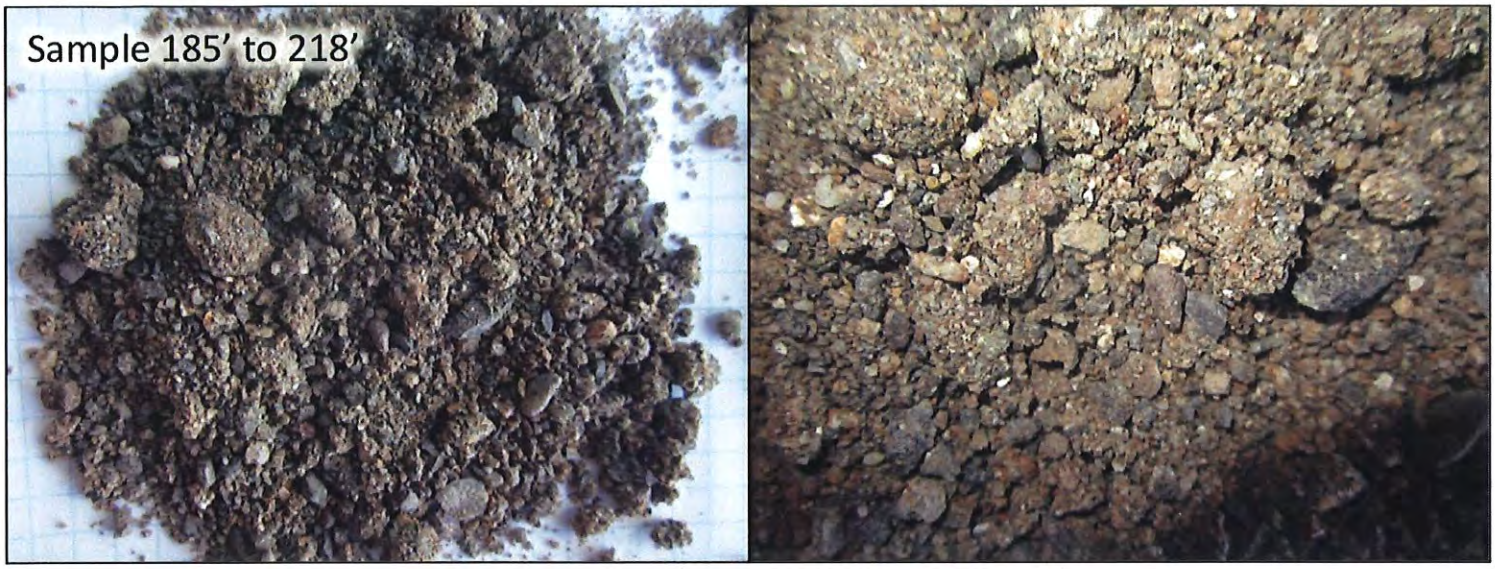
Contact Info. (optional)
775-217-0620

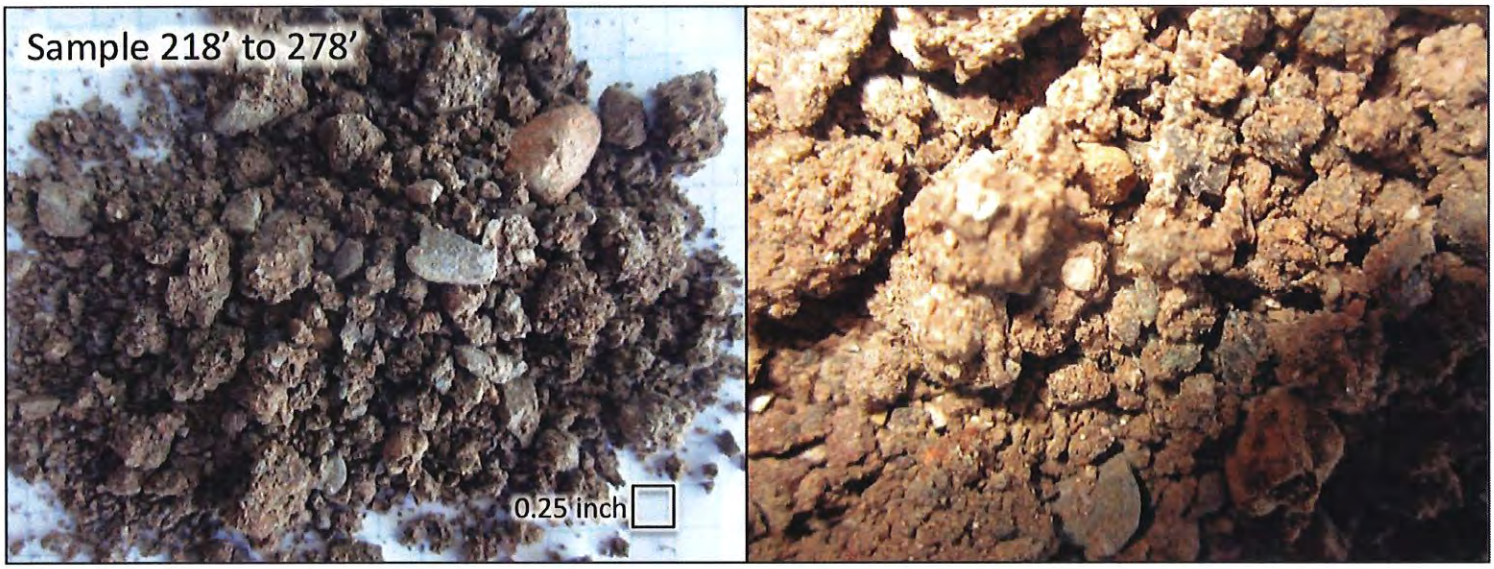
ORIGINAL – WATER RESOURCES DEPARTMENT ONE COPY FOR CONSTRUCTOR ONE COPY FOR CUSTOMER
THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK 10/16/2006

Lithologic Section and As-Built Casing Construction for Well LL_1450 (SVE-4)



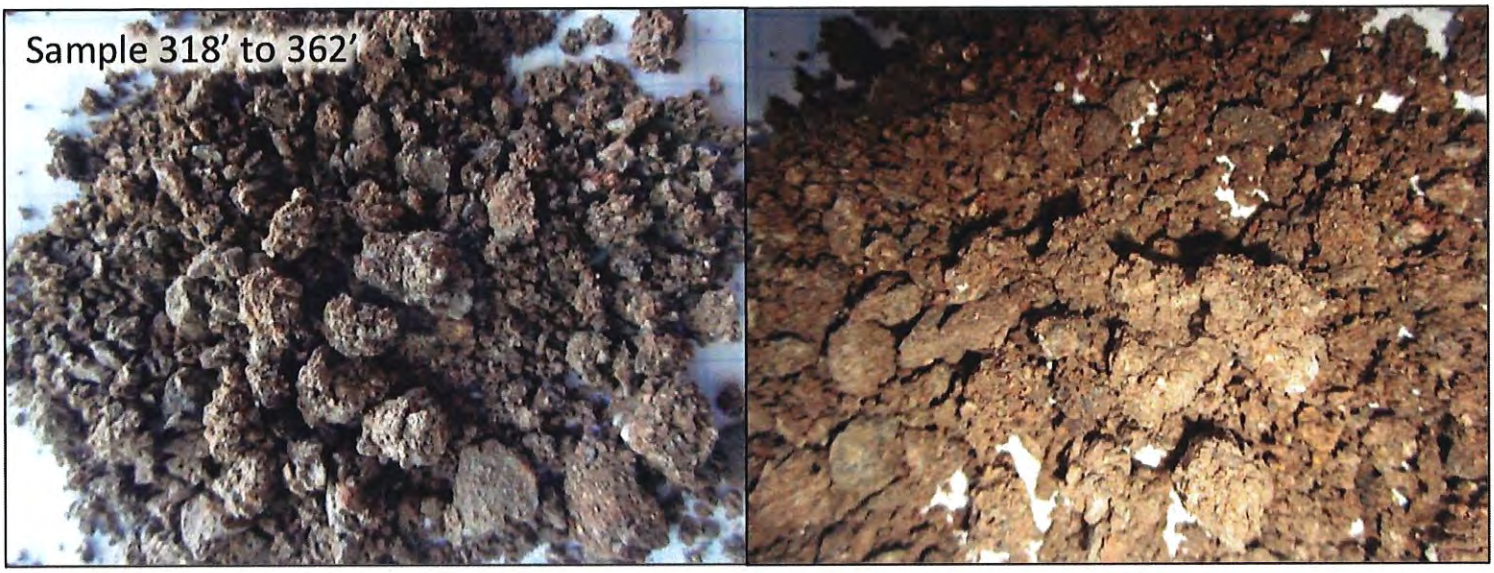
Drill Samples from Well LL_1450 (SVE-4)





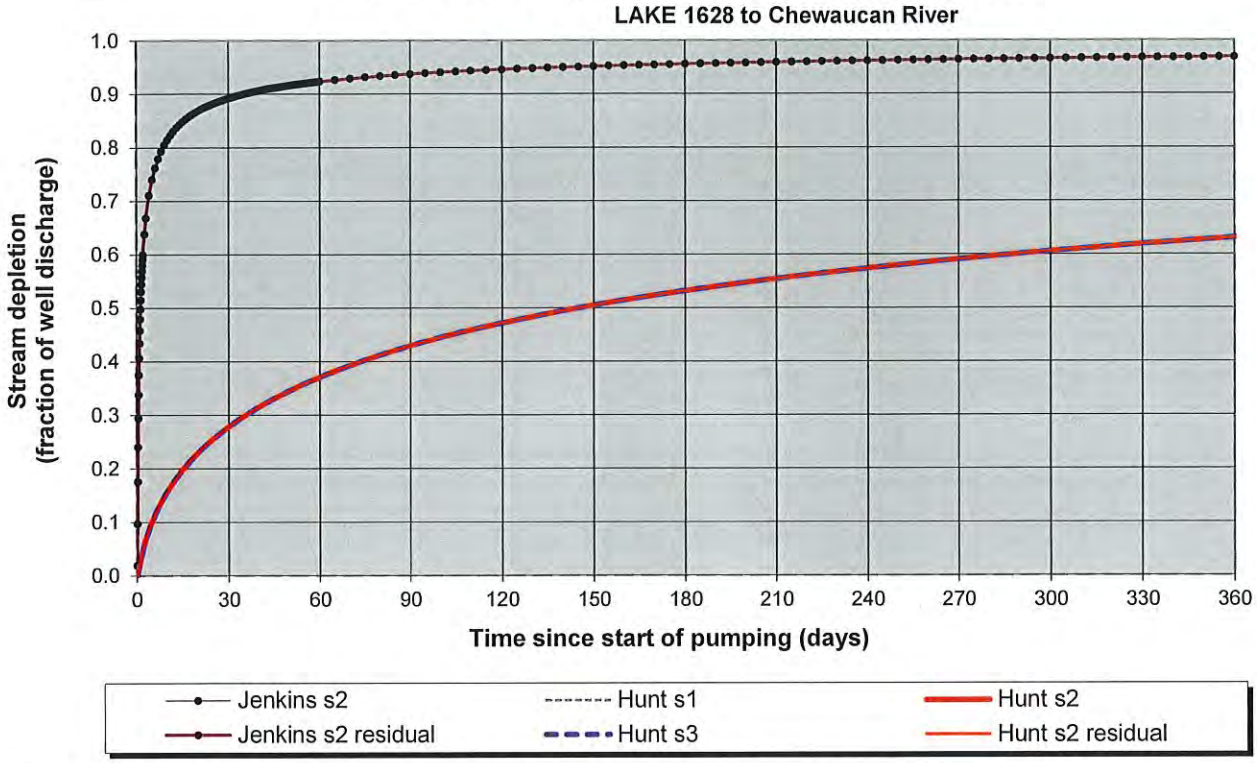


More Drill Samples from Well LL_1450 (SVE-4)





Transient Stream Depletion (Jenkins, 1970; Hunt, 1999)



Output for Hunt Stream Depletion, Scenerio 2 (s2): **Time pump on = 365 days**

Days	30	60	90	120	150	180	210	240	270	300	330	360
Qw, cfs	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509	0.509
Jenk SD %	0.892	0.924	0.938	0.946	0.952	0.956	0.959	0.962	0.964	0.966	0.967	0.969
Jen SD cfs	0.454	0.470	0.477	0.482	0.484	0.487	0.488	0.490	0.491	0.492	0.492	0.493
Hunt SD %	0.278	0.371	0.429	0.472	0.505	0.532	0.554	0.574	0.591	0.605	0.619	0.631
Hunt SD cfs	0.142	0.189	0.219	0.240	0.257	0.271	0.282	0.292	0.301	0.308	0.315	0.321

Parameters:		**Scenario 1**	**Scenario 2**	**Scenario 3**	**Units**
Net steady pumping rate	Qw	0.509	0.509	0.509	cfs
Distance to stream	a	5435	5435	5435	ft
Aquifer hydraulic conductivity	K	29.8	29.8	29.8	ft/day
Aquifer thickness	b	900	900	900	ft
Aquifer transmissivity	T	26820	26820	26820	ft*ft/day
Aquifer storage coefficient	S	0.001	0.001	0.001	
Stream width	ws	50	50	50	ft
Streambed hydraulic conductivity	Ks	0.3	0.3	0.3	ft/day
Streambed thickness	bs	20	20	20	ft
Streambed conductance	sbc	0.75	0.75	0.75	ft/day
Stream depletion factor (Jenkins)	sdf	1.101387957	1.101387957	1.101387957	days
Streambed factor (Hunt)	sbf	0.151985459	0.151985459	0.151985459	

Transmissivity from Specific Capacity using the Theis Equation

Adapted from Vorhis (1979)

Theis Equation: T = [Q/(4*s*pi)][W(u)]
u = (r*r*S)/(4*T*t)
W(u) = (-ln u)-(0.5772157)+(u/1*1!)-(u*u/2*2!)+(u*u*u/3*3!)-(u*u*u*u/4*4!)+...

T = transmissivity (L*L/T)
s = drawdown (L)
S = storage coefficient (dimensionless)
pi = 3.141592654
r = radial distance (L)
t = time (T)
u = dimensionless
W(u) = well function

Note: Transmissivity is derived using an iterative process
The calculations use a known or assumed Storage Coeficient (S) provided by the user
Specific Capacity (Q/s) is used to first approximate the Transmissivity (T) used to calculate u in the first Theis equation iteration
The Transmissivity of the previous iteration is used to calculate u in a given Theis equation iteration
Total Theis Equation iterations = 25 iterations
Can accept answer if difference in calculated Transmissivity for the last 2 iterations is < 0.0001
Can accept answer if u in the last iteration is < 7.1

Note: Well efficiency is not included in the calculations

References:

Theis, C.V. 1935. The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using ground water storage. American Geophysical Union Transactions, 16 annual meeting, vol. 16, pg. 519-524.

Vorhis, R.C. 1979. Transmissivity from pumped well data. Well Log, National Water Well Association newsletter, vol. 10, no. 11, Dec. 1979, pg. 50-52.

Data Entry	Enter Data Below (yellow boxes only)	
Well Log ID or Comment for Records	LAKE 4448	
Pumping Rate (gpm) = Q =	800.00	(gpm)
Drawdown (feet) = s =	8.00	(feet)
Time (hours) = t =	4.0000	(hours)
Storage Coefficient = S =	0.001000	(dimensionless)
Well Diameter (inches) = d =	12.0000	(inches)
	Press F9 to Calculate	

Calculated Results	Calculated Results	
Transmissivity (ft2/day) = T =	26,820.35	(ft2/day)
Transmissivity (gpd/ft) = T =	200,630.17	(gpd/ft)
Transmissivity Difference = (last 2 iterations)	0.0000E+00 okay to use T if diff < 0.0001	(ft2/day)
u = (last iteration)	1.3982E-08 okay to use T if u <7.1	

Drawdown s (feet)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft3/sec)	Time t (days)	Distance r = d/2 (feet)	u	W(u)	Transmissivity T (ft2/day)	Transmissivity difference from previous	Comments	Theis Equation Iteration
Note: yellow grid areas are where values are calculated						Note : W(u) calculation valid when u < 7.1					
						7.0000	1.1545E-04			W(u) calculation test	
8.00	0.00100	800.00	1.78	0.17	0.50			19,250.00		T = Q/s	
8.00	0.00100	800.00	1.78	0.17	0.50	1.9481E-08	17.1766	26,312.31	7.0623E+03	T = Theis Equation	1.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.4252E-08	17.4892	26,791.05	4.7875E+02	T = Theis Equation	2.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3997E-08	17.5072	26,818.68	2.7622E+01	T = Theis Equation	3.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3983E-08	17.5082	26,820.25	1.5785E+00	T = Theis Equation	4.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	9.0162E-02	T = Theis Equation	5.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	5.1497E-03	T = Theis Equation	6.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	2.9413E-04	T = Theis Equation	7.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	1.6799E-05	T = Theis Equation	8.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	9.5951E-07	T = Theis Equation	9.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	5.4803E-08	T = Theis Equation	10.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	3.1323E-09	T = Theis Equation	11.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	1.7462E-10	T = Theis Equation	12.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	13.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	14.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	15.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	16.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	17.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	18.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	19.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	20.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	21.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	22.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	23.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	24.00
8.00	0.00100	800.00	1.78	0.17	0.50	1.3982E-08	17.5083	26,820.35	0.0000E+00	T = Theis Equation	25.00

Water Availability Analysis

CHEWAUCAN R > L ABERT - AT MOUTH
GOOSE & SUMMER LAKE BASIN
Water Availability as of 3/25/2013

Watershed ID #: 31300602
Date: 3/25/2013

Exceedance Level: 80%
Time: 8:43 AM

Water Availability

Select any Watershed for Details

Nesting Order	Watershed ID #	Stream Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sto
1	31300602	CHEWAUCAN R> L ABERT- AT MOUTH	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes

Limiting Watersheds

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Limiting Watershed ID #	Stream Name	Water Available?	Net Water Available
JAN	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	33.00
FEB	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	63.80
MAR	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	79.20
APR	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	48.30
MAY	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	14.90
JUN	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	No	-15.10
JUL	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	No	-0.76
AUG	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	No	-0.14
SEP	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	1.93
OCT	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	19.80
NOV	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	33.80
DEC	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	32.10
ANN	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	66,600.00

Detailed Reports for Watershed ID #31300602

CHEWAUCAN R > L ABERT - AT MOUTH
GOOSE & SUMMER LAKE BASIN
Water Availability as of 3/25/2013

Watershed ID #: 31300602
Date: 3/25/2013

Exceedance Level: 80%
Time: 8:43 AM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	33.80	0.83	33.00	0.00	0.00	33.00
FEB	64.90	1.11	63.80	0.00	0.00	63.80
MAR	103.00	23.80	79.20	0.00	0.00	79.20
APR	161.00	113.00	48.30	0.00	0.00	48.30
MAY	314.00	299.00	14.90	0.00	0.00	14.90
JUN	234.00	249.00	-15.10	0.00	0.00	-15.10
JUL	81.90	82.70	-0.76	0.00	0.00	-0.76
AUG	47.40	47.50	-0.14	0.00	0.00	-0.14
SEP	42.30	40.40	1.93	0.00	0.00	1.93
OCT	42.20	22.40	19.80	0.00	0.00	19.80
NOV	34.40	0.63	33.80	0.00	0.00	33.80
DEC	32.80	0.68	32.10	0.00	0.00	32.10
ANN	120,000.00	53,400.00	66,600.00	0.00	0.00	66,600.00

Detailed Report of Consumptive Uses and Storage

Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	0.63	0.00	0.00	0.17	0.00	0.02	0.01	0.00	0.83
FEB	0.91	0.00	0.00	0.17	0.00	0.02	0.01	0.00	1.11
MAR	1.29	22.30	0.00	0.17	0.00	0.02	0.01	0.00	23.80
APR	2.33	110.00	0.00	0.17	0.00	0.02	0.01	0.00	113.00
MAY	3.73	295.00	0.00	0.17	0.00	0.02	0.01	0.00	299.00
JUN	1.88	247.00	0.00	0.17	0.00	0.02	0.01	0.00	249.00
JUL	0.55	81.90	0.00	0.17	0.00	0.02	0.01	0.00	82.70
AUG	0.30	47.00	0.00	0.17	0.00	0.02	0.01	0.00	47.50
SEP	0.32	39.90	0.00	0.17	0.00	0.02	0.01	0.00	40.40
OCT	0.32	21.90	0.00	0.17	0.00	0.02	0.01	0.00	22.40
NOV	0.43	0.00	0.00	0.17	0.00	0.02	0.01	0.00	0.63
DEC	0.48	0.00	0.00	0.17	0.00	0.02	0.01	0.00	0.68

Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

No reservations were found for this watershed.

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

No instream flow requirements were found for this watershed.

E-2 Standard Application Completeness Checklist

Minimum Requirements (OAR 690-310-0040)(ORS 537.400)

Yes (No) This is the checklist used by WRD staff

Application G-17890 County LAKE Priority Date 9-9-14

Township 33S Range 18E Section 23

Amount 228.5gpm ~ 0.51CFS Use _____ WM Dist. # 12

Applicant Name SURPRISE VALLEY ELECTRIFICATION CORP.

Receipt No. 113391 Caseworker Assigned: ☐ Barbe ☑ Kim

Lr 9/9/14 pd $1900.00

☑ Contact info: Applicant/Organization Name and Mailing Address

☑ Signature (in ink) of *all* applicants or the applicant's authorized agent (include title or authority if for an organization or corporation).

☑ Property ownership: Does the applicant own all the land for the proposed project? Y / (N)

If No:

☑ The affected landowner's name and mailing address must be listed

☑ A signed statement declaring the existence of either written authorization or an easement permitting access to land crossed by the proposed ditch canal or other work must be submitted.

☑ *For a SW Application*: Source of water must be indicated.

☐ If the source is stored water, is the stored water component filled out and does the applicant own the reservoir or include a non-expired agreement for stored water? (ORS 537.400)
NOTE: *A surface water application cannot be filed at the same time as a Reservoir or Alt Reservoir if it will be for the use of the stored water under the PROPOSED Reservoir application, Exp. Secondary (E2).*

☐ If for stored water not under contract, is the source authorized under a permit, certificate, or decree?

Permit or Certificate issued? Y / N Permit or Certificate # _____

☑ *For a GW Application*: Well Development Tables completed and/or a well log report included (if existing)
well SVE-4 (LAKE 52506)

☑ Proposed water use

☑ Amount of water from *each* source in GPM, CFS, or AF 228.5gpm ~ 0.51CFS

☑ Period of use indicated YR

☑ If for supplemental irrigation, primary acreage or underlying permit or certificate number listed industrial
(*Primary and Supplemental Irrigation counts as 2 uses*)

☑ Water Management Section (*Estimates if the water system has not been designed*)

N/A ☐ Resource Protection Section (*N/A for Groundwater*)

N/A ☐ *For all standard reservoir applications:* Preliminary plans and specifications including dam height, width, crest width and surface area for each reservoir.

☑ Project schedule (If system is already completed, indicate "existing.")

☐ Supplemental data sheets enclosed (if needed)

- ☐ Form M (Municipal or Quasi-Municipal)
- ☐ Spring Description Sheet (if source is a spring)

☐ A completed **Land-Use Form** or receipt signed and dated by the appropriate planning department officials. *Please be certain that the Land-Use form lists all lands involved and all uses proposed. Date of signature must be within the past 12 months.*

☐ A **Legal Description** of all the properties involved where water is diverted, crossed, and used. The Legal description includes a metes and bounds or other government survey description. A copy of the deed, land sales contract or title insurance policy can provide this information, or applicant may submit a lot book report prepared by a title company. Copies of tax bills are not acceptable.

☐ The proposed source **IS / IS NOT** (circle one) restricted or withdrawn from further appropriation.
***NOTE:** If it is withdrawn under ORS 538, then return application and fees. If it is withdrawn by other means, accept the application and a negative IR will be issued.* gw app →

☐ The **map** must meet all the minimum requirements of OAR 690-310-0050.

- ☐ Township, Range, Section
- ☐ Location of main canals, ditches, pipelines or flumes (if POA/POD is outside of POU)
- ☐ Place of use, ¼-¼'s and tax lot clearly identified
- ☐ Even map scale not less than 4" = 1 mile (1"= 1320 ft.); examples: 1" = 100 ft., 1" = 200 ft.
- ☐ Location of *each* diversion point, well or dam by reference to a recognized public land survey corner. Multiple wells shall be uniquely labeled, and identified on well logs if existing.
- ☐ Reference corner on map
- ☐ North Directional Symbol
- ☐ Number of acres per ¼-¼ if for irrigation, nursery, or agriculture industrial
- ☐ For a standard reservoir application to store ≥ 9.2 acre feet AND having a dam height ≥ 10 feet, map must be prepared by a CWRE

☐ **Fees:** 0.57 CFS 9-9-14 Paid $1900.00

Base Fee	$ 1150	Permit Recording Fees	$ 450
1st CFS @ $300 (one well one use)	$ 300	Mitigation Fee	$
____ add'l CFS @ $300 ea	$		
____ AF up to 20 AF @ $30 ea	$	Rec Fee Total	$ 450
____ add'l AF @ $1 ea	$	Rec Fee Paid	$ 450
____ add'l ☐pod/poa ☐use @ ____ ea	$		
____ add'l res @ $125 ea	$		
Exam Fee Total	$ 1450		
Exam Fee Paid	$ 1450		
		Amount Returned	$ Ø

Reviewed by: K L Kowanad Date: 9-10-14

Oregon Water Resources Department
Water Right Services Division

Water Rights Application
Number G-17890

Proposed Final Order

Summary of Recommendation: The Department recommends that the attached draft permit be issued with conditions.

Findings of Fact

1. On September 9, 2014, Surprise Valley Electrification Corp submitted an application to the Department for the following water use permit:

   - Amount of Water: 0.509 cubic foot per second (CFS)
   - Use of Water: industrial/manufacturing uses
   - Source of Water: SVE-4 Well (LAKE 52506/L111501) in Chewaucan River Basin
   - Area of Proposed Use: Lake County within Section 23, Township 33 South, Range 18 East, W.M.

2. On December 5, 2014, the Department mailed the applicant notice of its Initial Review, determining that "*the appropriation of 0.509 CFS from SVE-4 Well (LAKE 52506/L111501) in Chewaucan River Basin for year-round industrial/manufacturing uses is allowable.*" The applicant did not notify the Department to stop processing the application within 14 days of that date.

3. On December 9, 2014, the Department gave public notice of the application in its weekly notice. The public notice included a request for comments, and information for interested persons about obtaining future notices and a copy of the Proposed Final Order. No written comments were received within 30 days.

In reviewing applications, the Department may consider any relevant sources of information, including the following:

- any applicable basin program
- applicable statutes, administrative rules, and case law
- the amount of water available
- the rate and duty for the proposed use
- any general basin-wide standard for flow rate and duty of water allowed
- the need for a flow rate and duty higher than the general standard
- pending senior applications and existing water rights of record
- any applicable comprehensive plan or zoning ordinance
- recommendations by other state agencies
- the Scenic Waterway requirements of ORS 390.835

- designations of any critical ground water areas
- any comments received

4. The Goose & Summer Lake Basin Program allows industrial/ manufacturing use (OAR 690-513-0030).

5. An assessment of ground water availability has been completed by the Department's Ground Water/Hydrology section. A copy of this assessment is in the file. Ground water will likely be available within the capacity of the resource, and if properly conditioned, the proposed use of ground water will avoid injury to existing ground water rights.

6. Ground Water Findings Under OAR 690-009
The Department determined, consistent with OAR 690-009-0040(4), that the proposed ground water use will not have the potential for substantial interference with surface water.

In making this determination, the Department considered whether:

(a) There is a hydraulic connection from the proposed well(s) to any surface water sources.
(b) The point of appropriation is a horizontal distance less than one-fourth mile from the surface water source;
(c) The rate of appropriation is greater than five cubic feet per second, if the point of appropriation is a horizontal distance less than one mile from the surface water source;
(d) The rate of appropriation is greater than one percent of the pertinent adopted minimum perennial streamflow or instream water right with a senior priority date, if one is applicable, or of the discharge that is equaled or exceeded 80 percent of time, as determined or estimated by the Department, and if the point of appropriation is a horizontal distance less than one mile from the surface water source;
(e) The ground water appropriation, if continued for a period of 30 days, would result in stream depletion greater than 25 percent of the rate of appropriation, if the point of appropriation is a horizontal distance less than one mile from the surface water source.

According to the Department's rules, the potential for substantial interference is assumed if (a) and either (b) or (c) or (d) or (e) are met. For this application, the Department determined that there is no potential for substantial interference, because either (a) is not met, or (b), (c), (d) or (e) are not met, or both.

7. Senior water rights exist on SVE-4 Well (LAKE 52506/L111501) in Chewaucan River Basin, or on downstream waters.

8. SVE-4 Well (LAKE 52506/L111501) in Chewaucan River Basin is not within or above a State Scenic Waterway.

9. The Department finds that the amount of water requested, 0.509 CFS, is an acceptable amount.

10. Documentation has been submitted from the relevant land-use planning jurisdiction that indicates the proposed use is allowed outright.

11. The proposed ground water use is not within a designated critical ground water area.

Conclusions of Law

1. Under the provisions of ORS 537.621, the Department must presume that a proposed use will ensure the preservation of the public welfare, safety and health if the proposed use is allowed in the applicable basin program established pursuant to ORS 536.300 and 536.340 or given a preference under ORS 536.310(12), if water is available, if the proposed use will not injure other water rights and if the proposed use complies with rules of the Water Resources Commission.

2. The proposed use requested in this application is allowed in the Goose & Summer Lake Basin Program.

3. Water is available for the proposed use.

4. The proposed use will not injure other water rights.

5. The proposed use complies with other rules of the Water Resources Commission not otherwise described above.

6. The application is in compliance with the State Agency Coordination Program regarding land use.

7. No proposed flow rate and duty of water higher than the general basin-wide standard is needed.

8. For these reasons, the required presumption has been established.

9. Under the provisions of ORS 537.621, once the presumption has been established, it may be overcome by a preponderance of evidence that either:

   (a) One or more of the criteria for establishing the presumption are not satisfied; or

(b) The proposed use would not ensure the preservation of the public welfare, safety and health as demonstrated in comments, in a protest . . . or in a finding of the department that shows:

(A) The specific aspect of the public welfare, safety and health under ORS 537.525 that would be impaired or detrimentally affected; and

(B) Specifically how the identified aspect of the public welfare, safety and health under ORS 537.525 would be impaired or be adversely affected.

10. In this application, all criteria for establishing the presumption have been satisfied, as noted above. The presumption has not been overcome by a preponderance of evidence that the proposed use would impair or be detrimental to the public interest.

11. The Department therefore concludes that the proposed use would ensure the preservation of the public welfare, safety and health as described in ORS 537.525.

12. When issuing permits, ORS 537.628(1) authorizes the Department to include limitations and conditions which have been determined necessary to protect the public welfare, safety, and health. The attached draft permit is conditioned accordingly.

Recommendation

The Department recommends that the attached draft permit be issued with conditions.

DATED March 24, 2015

E. Timothy Wallin, Water Rights Program Manager
for Thomas M. Byler, Director

Protests

Under the provisions of ORS 537.153(7) (for surface water) or ORS 537.621(8) (for ground water), you can protest this Proposed Final Order. Protests must be received in the Water Resources Department no later than **May 8, 2015**. Protests must be in writing, and must include the following:

- Your name, address, and telephone number;

- A description of your interest in the Proposed Final Order, and, if you claim to represent the public interest, a precise statement of the public interest represented;
- A detailed description of how the action proposed in the Proposed Final Order would impair or be detrimental to your interest;
- A detailed description of how the Proposed Final Order is in error or deficient, and how to correct the alleged error or deficiency;
- Any citation of legal authority to support your protest, if known;
- To affect the department's determination that the proposed use in this application will, or will not, ensure the preservation of the public welfare, safety and health as described in ORS 537.525, ORS 537.621(2)(b) requires that a protest demonstrate, by a preponderance of evidence any of the following: (a) One or more of the criteria for establishing the presumption are, or are not, satisfied; or (b) The specific aspect of the public welfare, safety and health under ORS 537.525 that would be impaired or detrimentally affected, and specifically how the identified aspect of the public welfare, safety and health under ORS 537.525 would be impaired or be adversely affected;
- If you are the applicant, the protest fee of $350 required by ORS 536.050; and
- If you are not the applicant, the protest fee of $700 required by ORS 536.050 and proof of service of the protest upon the applicant.
- If you are the applicant, a statement of whether or not you are requesting a contested case hearing. If you do not request a hearing, the Department will presume that you do not wish to contest the findings of the Proposed Final Order.

Requests for Standing

Under the provisions of ORS 537.153(7) (for surface water) or ORS 537.621(8) (for ground water), persons other than the applicant who support a Proposed Final Order can request standing for purposes of participating in any contested case proceeding on the Proposed Final Order or for judicial review of a Final Order.

Requests for standing must be received in the Water Resources Department

no later than **May 8, 2015**. Requests for standing must be in writing, and must include the following:

- The requester's name, mailing address and telephone number;
- If the requester is representing a group, association or other organization, the name, address and telephone number of the represented group;
- A statement that the requester supports the Proposed Final Order as issued;
- A detailed statement of how the requester would be harmed if the Proposed Final Order is modified; and
- A standing fee of $200. If a hearing is scheduled, an additional fee of $500 must be submitted along with a petition for party status.

After the protest period has ended, the Director will either issue a Final Order or schedule a contested case hearing. The contested case hearing will be scheduled only if a protest has been submitted and either:

- upon review of the issues, the director finds that there are significant disputes related to the proposed use of water, or
- the applicant requests a contested case hearing within 30 days after the close of the protest period.

If you do not request a hearing within 30 days after the close of the protest period, or if you withdraw a request for a hearing, notify the Department or the administrative law judge that you will not appear or fail to appear at a scheduled hearing, the Director may issue a Final Order by default. If the Director issues a Final Order by default, the Department designates the relevant portions of its files on this matter, including all materials that you have submitted relating to this matter, as the record for purpose of proving a *prima facie* case upon default.

You may be represented by an attorney at the hearing. Legal aid organizations may be able to assist a party with limited financial resources. Generally, partnerships, corporations, associations, governmental subdivisions or public or private organizations are represented by an attorney. However, consistent with OAR 690-002-0020 and OAR 137-003-0555, an agency representative may represent a partnership, corporation, association, governmental subdivision or public or private organization if the Department determines that appearance of a person by an authorized representative will not hinder the orderly and timely development of the record in this case.

Notice Regarding Service Members: Active duty service members have a right to stay proceedings under the federal Service Members Civil Relief Act. 50 U.S.C. App. §§501-597b. You may contact the Oregon State Bar or the Oregon Military Department for more information. The toll-free telephone number for the Oregon State Bar is: 1 (800) 452-8260. The toll-free telephone number of the Oregon Military Department is: 1 (800) 452-7500. The Internet address for the United States Armed Forces Legal Assistance Legal Services Locator website is: http://legalassistance.law.af.mil

This document was prepared by Kim French. If you have any questions about any of the statements contained in this document I am most likely the best person to answer your questions. You can reach me at 503-986-0816.

If you have questions about how to file a protest or a request for standing, please refer to the respective sections in this Proposed Final Order entitled "Protests" and "Requests for Standing". If you have previously filed a protest and want to know its status, please contact Patricia McCarty at 503-986-0820.

If you have other questions about the Department or any of its programs please contact our Customer Service Group at 503-986-0801. Address all other correspondence to:

Water Rights Section, Oregon Water Resources Department, 725 Summer St NE Ste A, Salem OR 97301-1266, Fax: 503-986-0901.

DRAFT This is not a permit. DRAFT

STATE OF OREGON

COUNTY OF LAKE

DRAFT PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS DRAFT PERMIT IS HEREBY ISSUED TO

SURPRISE VALLEY ELECTRIFICATION CORP
516 US HWY 395E
ALTURAS, CA 96101

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

APPLICATION FILE NUMBER: G-17890

SOURCE OF WATER: SVE-4 WELL (LAKE 52506/L111501) IN CHEWAUCAN RIVER BASIN

PURPOSE OR USE: INDUSTRIAL/MANUFACTURING USES

MAXIMUM RATE: 0.509 CUBIC FOOT PER SECOND

PERIOD OF USE: YEAR-ROUND

DATE OF PRIORITY: SEPTEMBER 9, 2014

WELL LOCATION: SW ¼ NE ¼, SECTION 23, T33S, R18E, W.M.; 60 FEET NORTH AND 1680 FEET WEST FROM E1/4 CORNER, SECTION 23

THE PLACE OF USE IS LOCATED AS FOLLOWS:

NE ¼ SE ¼
SECTION 23
TOWNSHIP 33 SOUTH, RANGE 18 EAST, W.M.

Measurement devices, and recording/reporting of annual water use conditions:

A. Before water use may begin under this permit, the permittee shall install a totalizing flow meter at each point of appropriation. The permittee shall maintain the device in good working order.

B. The permittee shall allow the watermaster access to the device; provided however, where any device is located within a private structure, the watermaster shall request access upon reasonable notice.

C. The permittee shall keep a complete record of the volume of water diverted each month, and shall submit a report which

includes water-use measurements 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.

D. The Director may provide an opportunity for the permittee to submit alternative measuring and reporting procedures for review and approval.

Static Water Level Conditions

A 380 foot deep monitoring well with a casing diameter no less than 6 inches shall be constructed within 100 feet east of the proposed well (LAKE 52506/L111501). The well seal, casing, casing perforations, and well screen intervals shall be the same as well (LAKE 52506/L111501). The monitoring well must be constructed before use of water under this permit begins.

At minimum, the static groundwater level at the monitoring well shall be measured monthly by hand to the nearest 0.10 foot and reported to the Department monthly on forms provided by or specified by the Department. The first measurement must be received by the Department before use of water under this permit begins. Any use of a non-hand measurement water-level recorder device (shaft encoder, transducer, or other device) shall be in addition to the monthly hand measurement.

The reference level shall be the March 2015 static groundwater level measurement. If that measurement is missed for any reason, the reference level shall be 83 feet below land surface.

All measurements shall be made monthly 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, a hydrogeologist in the Department's Groundwater Section located in Salem. 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 Department may require the discontinuance of groundwater use, or reduce the rate or volume of withdrawal, from the well(s) if any of the following events occur:

A. A monthly measurement is not made; or
B. The monthly measurement is not submitted to the Department monthly or received by the Department monthly; or
C. Annual water-level measurements reveal an average water-level decline of two or more feet per year for five consecutive years; or
D. Annual water-level measurements reveal a water-level decline of 10 or more feet in fewer than five consecutive years; or
E. Annual water-level measurements reveal a water-level decline of 10 or more feet; or
F. Hydraulic interference leads to a decline of 10 or more feet in any neighboring well with senior priority.

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 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.

Dedicated Measuring Tube: Wells with pumps shall be equipped with a minimum 3/4-inch diameter, unobstructed, dedicated measuring tube pursuant to figure 200-5 in OAR 690-200. If a pump has been installed prior to the issuance of this permit, and if static water levels and pumping levels can be measured using an electrical tape, then the installation of the measuring tube can be delayed until such time that water levels cannot be measured or the pump is repaired or replaced.

The maximum volume allowed per month shall be equal to or less than 228.5 gallons per minute (43,986 cubic feet per day = 1.01 acre-feet per day) times the number of days in the month.

Groundwater use under LL-1450 shall terminate when groundwater use under this permit begins.

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 and maintained in accordance with the General Standards for the Construction and Maintenance of Water Supply Wells in Oregon. The works shall be equipped with a usable access port 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

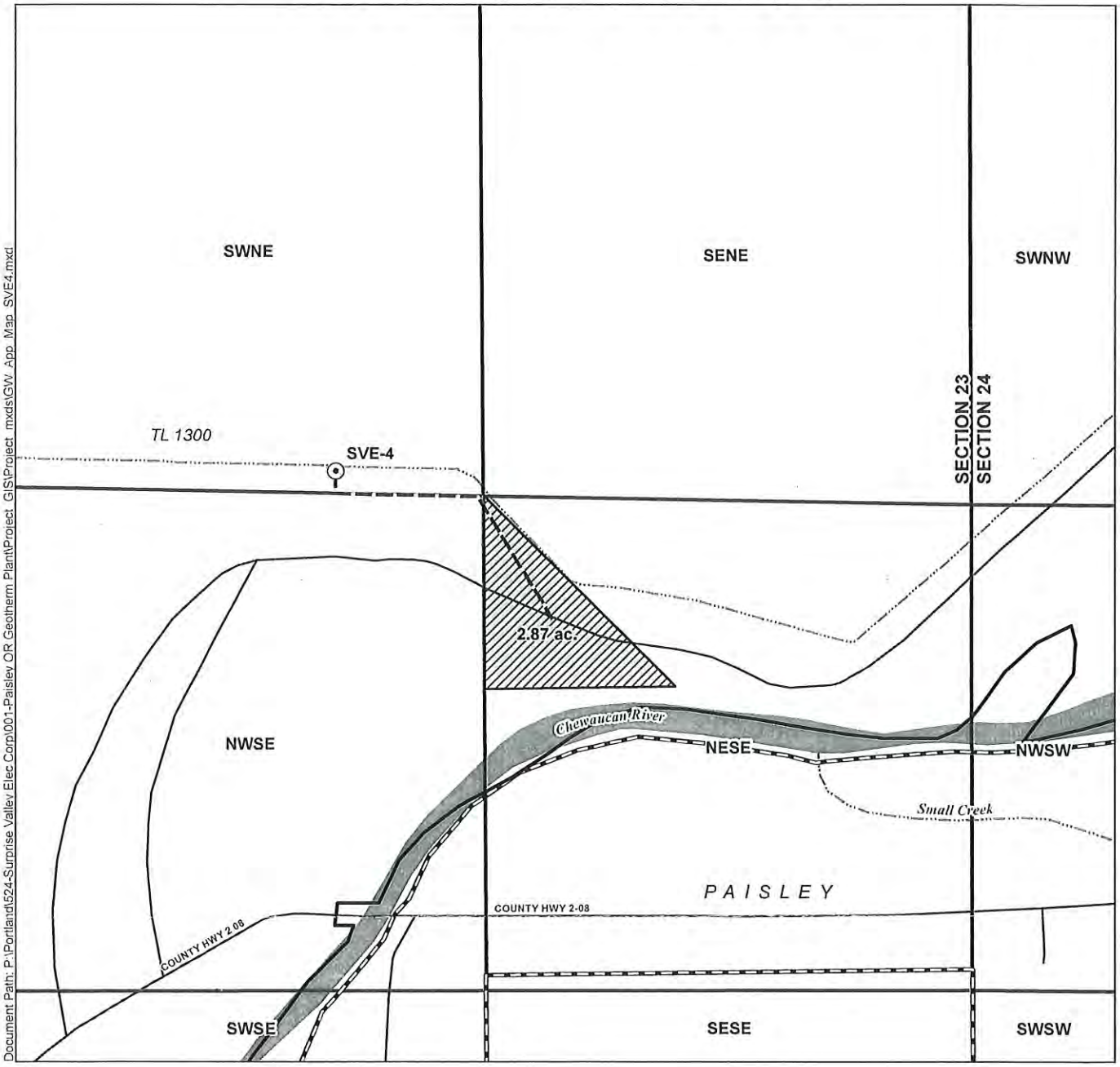
DRAFT - THIS IS NOT A PERMIT

E. Timothy Wallin, Water Rights Program Manager
for Thomas M. Byler, Director

Application for a Permit to Use Groundwater
Place of Use/Point of Appropriation Map

Application in the Name of Surprise Valley Electrification Corporation

Section 23, Township 33 South, Range 18 East (W.M.)



Document Path: P:\Portland\524-Surprise Valley Elec Corp\001-Paisley OR Geotherm Plant\Project GIS\Project mxds\GW App Map SVE4.mxd

LEGEND

- Point of Appropriation (POA)
- Place of Use (POU)
- Distribution Pipeline
- Paisley City Limits
- Roads
- Watercourses
- Waterbodies

POA Location Description

SVE-4

Located 60 feet North and 1,680 feet West from the E1/4 corner of Section 23, Township 33 South, Range 18 East (W.M.)

G-17810

RECEIVED

SEP 09 2014

WATER RESOURCES DEPT
SALEM, OREGON

Disclaimer

This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

Map Notes

Date: July 24, 2014
Data Sources: OWRD, USGS, US BLM, ESRI
Prepared By: GSI Water Solutions, Inc.

N

0 200 400
1 inch = 400 feet

GSI Water Solutions, Inc.

Mailing List for PFO Copies

Application #G-17890 PFO Date March 10, 2015

Original mailed via CERTIFIED MAIL to applicant:

SURPRISE VALLEY ELECTRIFICATION CORP, 516 US HWY 395E, ALTURAS, CA 96101

Copies Mailed
By: KF
(SUPPORT STAFF)
on: 3/24/15
(DATE)

SENT VIA EMAIL:
1. Applicant - lynnsvec@frontier.com
2. Agent - bbheine@gsiws.com
3. WRD - Watermaster # 12

Copies sent to:
1. WRD - File # G-17890

Protest/
Standing Dates
checked
_____

CASEWORKER : Kim French

Oregon
John A. Kitzhaber, MD, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271
503-986-0900
FAX 503-986-0904

December 5, 2014

SURPRISE VALLEY ELECTRIFICATION CORP
ATTN: LYNN CULP
516 US HWY 395E
ALTURAS, CA 96101

Reference: File G-17890

Dear Applicant:

THIS IS NOT A PERMIT AND IS SUBJECT TO CHANGE AT THE NEXT PHASE OF PROCESSING.

This letter is to inform you of the preliminary analysis of your water-use permit application and to describe your options. In determining whether an application may be approved, the Department must consider the factors listed below, all of which must be favorable to the proposed use if it is to be allowed. Based on the information you have supplied, the Water Resources Department has made the following preliminary determinations:

Initial Review Determinations:

1. The application proposed the appropriation of 0.509 cubic foot per second (CFS) of water from SVE-4 Well (LAKE 52506/L111501) in Chewaucan River Basin for year-round industrial/manufacturing uses.

2. The proposed use is not prohibited by law or rule except where otherwise noted below.

3. The appropriation of water from SVE-4 Well (LAKE 52506/L111501) in Chewaucan River Basin for industrial/manufacturing uses is allowable under the Goose & Summer Lake Basin Program.

4. Ground water will likely be available within the capacity of the resource, and if properly conditioned, the proposed use of ground water will avoid injury to existing ground water rights.

   The Department has determined, based upon OAR 690-009, that the proposed ground water use will not have the potential for substantial interference with any surface water source.

Summary of Initial Determinations

The appropriation of 0.509 CFS from SVE-4 Well (LAKE 52506/L111501) in Chewaucan River Basin for year-round industrial/manufacturing uses is allowable.

Because of these favorable determinations, the Department can now move your application to the next phase of the water-rights application review process, where public interest factors will be evaluated.

Please reference the application number when sending any correspondence regarding the conclusions of this initial review. Comments received within the comment period will be evaluated at the next phase of the process.

To Proceed With Your Application:

If you choose to proceed with your application, you do not have to notify the Department. Your application will automatically be placed on the Department's Public Notice to allow others the opportunity to comment. After the comment period the Department will complete a public interest review and issue a Proposed Final Order.

Withdrawal Refunds:

If you choose not to proceed, you may withdraw your application and receive a refund (minus a $225 processing charge per application). To accomplish this you must notify the Department in writing by **Friday, December 19, 2014**. For your convenience you may use the enclosed "STOP PROCESSING" form.

If A Permit Is Issued It Will Likely Include The Following Conditions:

1. Measurement devices, and recording/reporting of annual water use conditions:

   A. Before water use may begin under this permit, the permittee shall install a totalizing flow meter at each point of appropriation. The permittee shall maintain the device in good working order.

   B. The permittee shall allow the watermaster access to the device; provided however, where any device is located within a private structure, the watermaster shall request access upon reasonable notice.

   C. The permittee shall keep a complete record of the volume of water diverted each month, and shall submit a report which includes water-use measurements 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.

   D. The Director may provide an opportunity for the permittee to submit alternative measuring and reporting procedures for review and approval.

2. Static Water Level Conditions

   A 380 foot deep monitoring well with a casing diameter no less than 6 inches shall be constructed within 100 feet east o the proposed well (LAKE 52506/L111501). The well seal, casing casing perforations, and well screen intervals shall be the same as well (LAKE 52506/L111501). The monitoring well must be constructed before the use of water under this permit begins.

At minimum, the static groundwater level at the monitoring well shall be measured monthly by hand to the nearest 0.10 foot and reported to the Department monthly on forms provided by or specified by the Department. The first measurement must be received by the Department before the use of water under the permit begins. Any use of a non-hand measurement water-level recorder device (shaft encoder, transducer, or other device) shall be in addition to the monthly hand measurement.

The reference level shall be the March 2015 static groundwater level measurement. If that measurement is missed for any reason, the reference level shall be 83 feet below land surface.

All measurements shall be made monthly 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, a hydrogeologist in the Department's Groundwater Section located in Salem. 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 Department may require the discontinuance of groundwater use, or reduce the rate or volume of withdrawal, from the well(s) if any of the following events occur:

A. A monthly measurement is not made; or
B. The monthly measurement is not submitted to the Department monthly or received by the Department monthly; or
C. Annual water-level measurements reveal an average water-level decline of two or more feet per year for five consecutive years; or
D. Annual water-level measurements reveal a water-level decline of 10 or more feet in fewer than five consecutive years; or
E. Annual water-level measurements reveal a water-level decline of 10 or more feet; or
F. Hydraulic interference leads to a decline of 10 or more feet in any neighboring well with senior priority.

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 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.

3. Dedicated Measuring Tube: Wells with pumps shall be equipped with a minimum 3/4-inch diameter, unobstructed, dedicated measuring tube pursuant to figure 200-5 in OAR 690-200. If a pump has been installed prior to the issuance of this permit, and if static water levels and

pumping levels can be measured using an electrical tape, then the installation of the measuring tube can be delayed until such time that water levels cannot be measured or the pump is repaired or replaced.

4. The maximum volume allowed per month shall be equal to or less than 228.5 gallons per minute (43,986 cubic feet per day = 1.01 acre-feet per day) times the number of days in the month.

5. Groundwater use under LL-1450 shall terminate when groundwater use under this permit begins.

6. 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.

The water source identified in your application may be affected by an Agricultural Water Quality Management Area Plan. These plans are developed by the Oregon Department of Agriculture (ODA) with the cooperation of local landowners and other interested stakeholders, and help to ensure that current and new appropriations of water are done in a way that does not adversely harm the environment. You are encouraged to explore ODA's Water Quality Program web site at http://www.oregon.gov/ODA/NRD/water_agplans.shtml to learn more about the plans and how they may affect your proposed water use.

If you have any questions:

Feel free to call me at 503-986-0816 if you have any questions regarding the contents of this letter or your application. Please have your application number available if you call. General questions about water rights and water use permits should be directed to our customer service staff at 503-986-0801. When corresponding by mail, please use this address: Kim French, Oregon Water Resources Department, 725 Summer St NE Ste A, Salem OR 97301-1266. Our fax number is 503-986-0901.

Sincerely,

Kim French
Water Right Application Caseworker

enclosures: Application Process Description and Stop Processing Request Form

G-17890
WAB 13-No PSI
POU 13-No PSI
GW

APPLICATION FACT SHEET

Application File Number: G-17890

Applicant: SURPRISE VALLEY ELECTRIFICATION CORP, ATTN: LYNN CULP

County: Lake

Watermaster: 12

Priority Date: September 9, 2014

Source: SVE 4 WELL (LAKE 52506/L111501) IN CHEWAUCAN RIVER BASIN

Use: INDUSTRIAL/MANUFACTURING USES

Quantity: 0.509 CUBIC FOOT PER SECOND

Basin Name & Number: Goose & Summer Lake, #13

Stream Index Reference: Volume 2 CHEWAUCAN R

Well Location: SWNE, SECTION 23, T33S, R18E, W.M.; 60 FEET NORTH AND 1680 FEET WEST FROM E1/4 CORNER, SECTION 23

Place of Use:

NE ¼ SE ¼
SECTION 23
TOWNSHIP 33 SOUTH, RANGE 18 EAST, W.M.

14 DAY STOP PROCESSING DEADLINE DATE: Friday, December 19, 2014

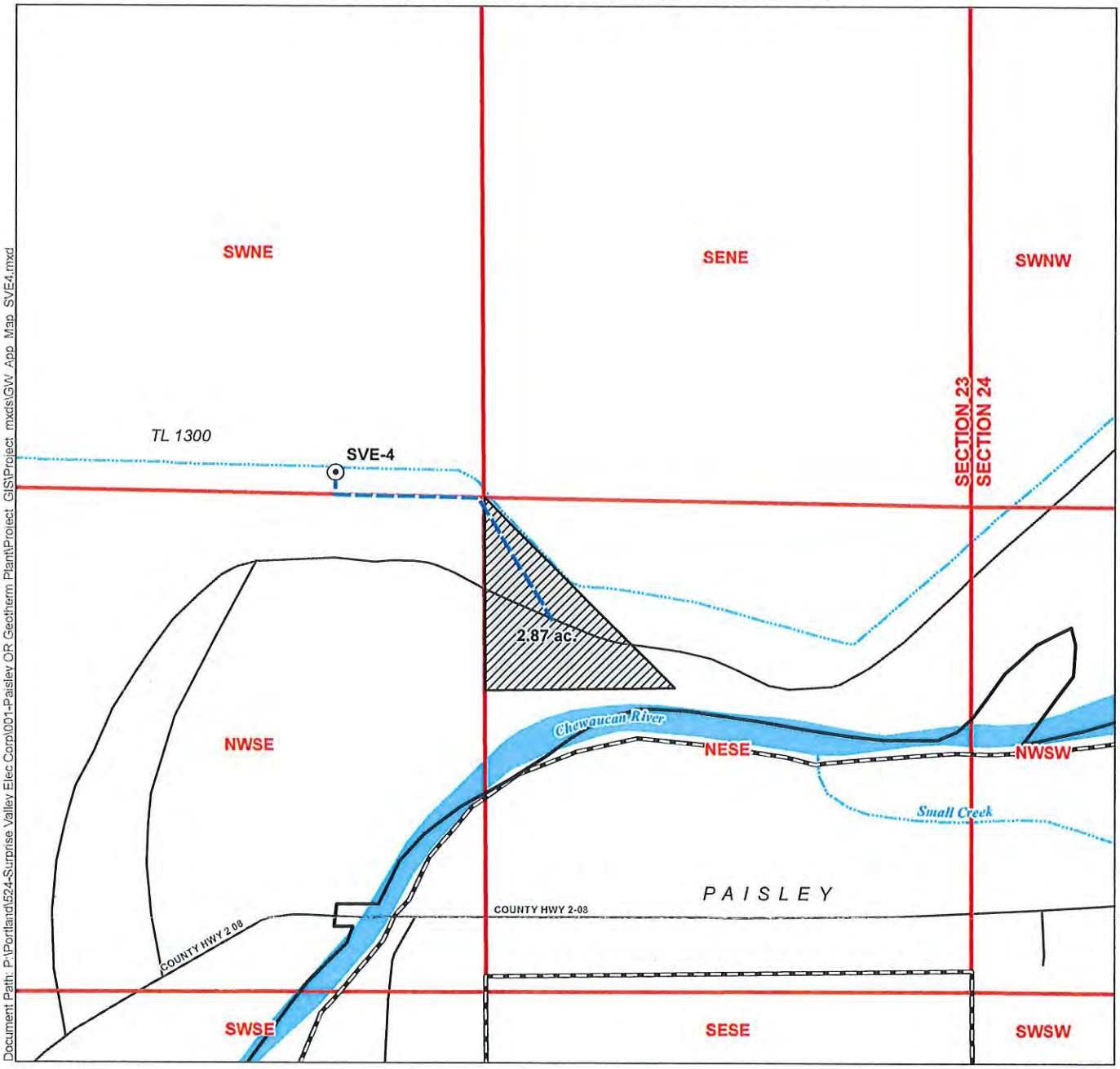
PUBLIC NOTICE DATE: Tuesday, December 9, 2014

30 DAY COMMENT DEADLINE DATE: Thursday, January 8, 2015

Application for a Permit to Use Groundwater
Place of Use/Point of Appropriation Map

Application in the Name of Surprise Valley Electrification Corporation

Section 23, Township 33 South, Range 18 East (W.M.)



Document Path: P:\Portland\524-Surprise Valley Elec Corp\001-Paisley OR Geotherm Plant\Project GIS\Project mxds\GW App Map SVE4.mxd

LEGEND

- Point of Appropriation (POA)
- Place of Use (POU)
- Distribution Pipeline
- Paisley City Limits
- Roads
- Watercourses
- Waterbodies

POA Location Description

SVE-4

Located 60 feet North and 1,680 feet West from the E1/4 corner of Section 23, Township 33 South, Range 18 East (W.M.)

G-17870

RECEIVED

SEP 09 2014

WATER RESOURCES DEPT
SALEM, OREGON

Disclaimer

This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

Map Notes

Date: July 24, 2014
Data Sources: OWRD, USGS, US BLM, ESRI
Prepared By: GSI Water Solutions, Inc.

N

0 200 400

1 inch = 400 feet

GSI Water Solutions, Inc.

APPLICATION PROCESS DESCRIPTION FOR GROUNDWATER, SURFACE WATER AND REGULAR RESERVOIR APPLICATIONS

In order to take and use the waters of Oregon, a citizen must first obtain a permit from the Water Resources Department. The water must be used for beneficial purpose - without waste. To become well-informed about water right topics, weekly public notice, forms and fees please visit our web site at **www.wrd.state.or.us**

1. ***Pre-application considerations***
   - follow instructions in the application packet
   - if you have questions about completing an application or would like to arrange a pre-application conference contact the Department's Water Rights Information Group (WRIG) at 503-986-0801

2. ***Application filing***
   - application with fee is received by the Department
   - Department determines completeness of application
   - if use is not allowed by statute (ORS 538), the application and fees are returned to the applicant
   - incomplete application and fees are returned to the applicant
   - only a complete application receives a tentative priority date, is assigned a caseworker, and moves forward for processing

3. ***Initial Review (IR)***
   - caseworker reviews application by considering basin plans, water availability, statutory restrictions and all other appropriate factors
   - caseworker sends IR report to applicant
   - contact the caseworker if you have questions about the IR
   - seven days after date of the IR, it is included in Department's weekly Public Notice
   - public comments must be submitted within 30 days after the Public Notice
   - **administrative hold** may be requested in writing by applicant

4. ***Proposed Final Order (PFO)***
   - caseworker evaluates application against required criteria and develops draft permit, if appropriate
   - PFO includes instructions for filing of protests
   - caseworker considers public comments and mails PFO to applicant
   - the PFO is included in Department's weekly Public Notice
   - public protests to the PFO must be submitted within 45 days after the Public Notice

Stop Processing deadline is within 14 days of Initial Review - use the form below
- applicant may request no further action and fee refund of all but $225

STOP PROCESSING REQUEST FOR
GROUNDWATER, SURFACE WATER AND REGULAR RESERVOIR APPLICATIONS

Applicant notification to withdraw Water Right Application # _____
After reviewing the Initial Review for my application, I request that processing be stopped and the fees be refunded (minus a $225 examination fee.) I understand that without a valid permit I may not legally use the water as requested in my application
Signature _____ date _____
Signature _____ date _____
Under ORS 537.150 (5) and 537.620 (5) timely submission of this request authorizes that the water right application process be stopped and all filing fees (except $225 examination fee) be returned.

This notice must be received at Water Resources Department by _____
Return the notice to: OWRD, Water Rights Division
STOP PROCESSING
725 Summer Street, NE - Suite A
Salem OR 97301-1271

5. ***Final Order (FO)***
   - if no protest is filed, Final Order is issued

The protest process

If one or more protests are filed, permit process consists of:
- settlement discussion
- contested case hearing
- proposed order
- period of time to file exceptions
- possible hearing by Water Resources Commission
- final order issued

Permit holder responsibilities

- comply with all water use conditions of the permit
- advise Department of address change or assignment to new permit holder
- if need arises, request extension of time or authorize cancellation of permit
- submit timely claim of beneficial use (COBU) to Department
- most permits require COBU to be prepared by a Certified Water Right Examiner
- permits may be canceled by the permit holder or by the Department for failure to comply with or one or more permit conditions

Mailing List for IR Copies

Application #G-17890 IR Date: December 5, 2014

Original and map e-mailed to applicant:

~~SURPRISE VALLEY ELECTRIFICATION CORP ATTN: LYNN CULP, 516 US HWY 395E, ALTURAS, CA 96101~~

SENT VIA EMAIL:
1. Applicant - lynnsvec@frontier.com
2. Agent - bbheine@gsiws.com
3. WRD -Watermaster # 12

Copies Mailed
By: BW
(SUPPORT STAFF)
on: 12/5/14
(DATE)

IR, Map, and Fact Sheet Copies sent to:
1. WRD - File # G-17890
2. Department of Agriculture

Affected Landowners (include "Notice of Initial Review--Affected Landowner")
1. Colahan Enterprises, PO Box 300, Paisley, OR 97636

COPYSHT.IR

Caseworker: Kim French

KF

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

G-17890
~~G-17980~~
Suprise Valley Electrification Corp
516 US Hwy 395E
Alturas, CA 96101

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Dorothy Corp ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Dorothy Corp

C. Date of Delivery 3-27-15

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7014 1200 0000 8250 8897

PS Form 3811, February 2004 Domestic Return Receipt KFWR 102595-02-M-1540

Application for a Permit to Use

Ground Water

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

SECTION 1: APPLICANT INFORMATION AND SIGNATURE

Applicant Information

NAME			PHONE (HM)
PHONE (WK)	CELL		FAX
ADDRESS			
CITY	STATE	ZIP	E-MAIL*

Organization Information

NAME SURPRISE VALLEY ELECTRIFICATION CORP.; ATTN: LYNN CULP			PHONE 530-233-3511	FAX
ADDRESS 516 US HWY 395E				CELL
CITY ALTURAS	STATE CA	ZIP 96101	E-MAIL* lynnsvec@frontier.com	

Agent Information – The agent is authorized to represent the applicant in all matters relating to this application.

AGENT / BUSINESS NAME GSI WATER SOLUTIONS; Attn: Bruce Brody-Heine			PHONE 541-390-0591	FAX
ADDRESS 147 SW SHEVLIN HIXON DRIVE, SUITE 201				CELL
CITY BEND	STATE OR	ZIP 97702	E-MAIL* BBHEINE@GSIWS.COM	

Note: Attach multiple copies as needed

* By providing an e-mail address, consent is given to receive all correspondence from the department electronically. (paper copies of the final order documents will also be mailed.)

RECEIVED
SEP 09 2014
WATER RESOURCES DEPT
SALEM, OREGON

By my signature below I confirm that I understand:

- I am asking to use water specifically as described in this application.
- Evaluation of this application will be based on information provided in the application.
- I cannot use water legally until the Water Resources Department issues a permit.
- Oregon law requires that a permit be issued before beginning construction of any proposed well, unless the use is exempt. Acceptance of this application does not guarantee a permit will be issued.
- If I get a permit, I must not waste water.
- If development of the water use is not according to the terms of the permit, the permit can be cancelled.
- The water use must be compatible with local comprehensive land-use plans.
- Even if the Department issues a permit, I may have to stop using water to allow senior water-right holders to get water to which they are entitled.

I (we) affirm that the information contained in this application is true and accurate.

Applicant Signature	Print Name *and title if applicable*	Date
Bradley A Kresge	**Bradley A. Kresge/General Manager**	9/3/14

For Department Use		
App. No. G-17890	Permit No.	Date

SECTION 2: PROPERTY OWNERSHIP

Please indicate if you own all the lands associated with the project from which the water is to be diverted, conveyed, and used.

☐ Yes
- ☐ There are no encumbrances.
- ☐ This land is encumbered by easements, rights of way, roads or other encumbrances.

☒ No
- ☒ I have a recorded easement or written authorization permitting access. **–Attachment D -**
- ☐ I do not currently have written authorization or easement permitting access.
- ☐ Written authorization or an easement is not necessary, because the only affected lands I do not own are state-owned submersible lands, and this application is for irrigation and/or domestic use only (ORS 274.040).
- ☐ Water is to be diverted, conveyed, and/or used only on federal lands.

List the names and mailing addresses of all affected landowners *(attach additional sheets if necessary)*.

Colahan Enterprises
P.O. Box 300
45190 Highway 31
Paisley, OR 97636-9724

You must provide the legal description of : 1. The property from which the water is to be diverted, 2. Any property crossed by the proposed ditch, canal or other work, and 3. Any property on which the water is to be used as depicted on the map.

Please see Attachment C

SECTION 3: WELL DEVELOPMENT

		IF LESS THAN 1 MILE:	
WELL NO.	NAME OF NEAREST SURFACE WATER	DISTANCE TO NEAREST SURFACE WATER	ELEVATION CHANGE BETWEEN NEAREST SURFACE WATER AND WELL HEAD
SVE-4	Chewaucan River	Well located beyond a mile from where hydraulic connection occurs**)	Well located beyond a mile from where hydraulic connection occurs

** - Information based on OWRD review and recommendations on SVEC's 2013 limited license application, for well location and subsequently issued limited license LL-1450.

Please provide any information for your existing or proposed well(s) that you believe may be helpful in evaluating your application. For existing wells, describe any previous alteration(s) or repair(s) not documented in the attached well log or other materials *(attach additional sheets if necessary)*.

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SECTION 3: WELL DEVELOPMENT, CONTINUED

Total maximum rate requested: **228.5 gpm** (each well will be evaluated at the maximum rate unless you indicate well-specific rates and annual volumes in the table below).

The table below must be completed for each source to be evaluated or the application will be returned. If this is an existing well, the information may be found on the applicable well log. *(If a well log is available, please submit it in addition to completing the table.)* If this is a proposed well, or well-modification, consider consulting with a licensed well driller, geologist, or certified water right examiner to obtain the necessary information.

(See attached well log – Attachment E)

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										PROPOSED USE			
OWNER'S WELL NAME OR NO.	PROPOSED	EXISTING	WELL ID (WELL TAG) NO.* OR WELL LOG ID**	FLOWING ARTESIAN	CASING DIAMETER	CASING INTERVALS (IN FEET)	PERFORATED OR SCREENED INTERVALS (IN FEET)	SEAL INTERVALS (IN FEET)	MOST RECENT STATIC WATER LEVEL & DATE (IN FEET)	SOURCE AQUIFER***	TOTAL WELL DEPTH	WELL-SPECIFIC RATE (GPM)	ANNUAL VOLUME (ACRE-FEET)
SVE-4	☐	☒	LAKE 52506	☐	10 3/4"	2'- 315'	Perf. 40'-315' Scrn. 315' -375'	0'- 20'		Basin fill sediment	378'		
	☐	☐		☐									
	☐	☐		☐									
	☐	☐		☐									
	☐	☐		☐									
	☐	☐		☐									
	☐	☐		☐									
	☐	☐		☐									

* Licensed drillers are required to attach a Department-supplied Well Tag, with a unique Well ID or Well Tag Number to all new or newly altered wells. Landowners can request a Well ID for existing wells that do not have one. The Well ID is intended to serve as a unique identification number for each well.

** A well log ID (e.g. MARI 1234) is assigned by the Department to each log in the agency's well log database. A separate well log is required for each subsequent alteration of the well.

*** Source aquifer examples: Troutdale Formation, gravel and sand, alluvium, basalt, bedrock, etc.

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SECTION 4: WATER USE

USE	PERIOD OF USE	ANNUAL VOLUME (ACRE-FEET)
General Industrial	Year-round	228.5 gpm 368.5 Acre-Ft/year

Exempt Uses: Please note that 15,000 gallons per day for single or group **domestic** purposes and 5,000 gallons per day for a single **industrial or commercial** purpose are exempt from permitting requirements.

For irrigation use only: *- NA -*
Please indicate the number of primary and supplemental acres to be irrigated (*must match map*).

Primary: _____ Acres Supplemental: _____ Acres

List the Permit or Certificate number of the underlying primary water right(s): _____

Indicate the maximum total number of acre-feet you expect to use in an irrigation season: _____

- If the use is **municipal or quasi-municipal**, attach **Form M** - NA -
- If the use is **domestic**, indicate the number of households: - NA -

  If the use is **mining**, describe what is being mined and the method(s) of extraction: - NA -

SECTION 5: WATER MANAGEMENT

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A. Diversion and Conveyance
What equipment will you use to pump water from your well(s)?

☒ Pump (give horsepower and type): 15 HP submersible pump

☐ Other means (describe): _____

Provide a description of the proposed means of diversion, construction, and operation of the diversion works and conveyance of water.

Water will be pumped and conveyed from the well(s) to the plant through a pipeline.

B. Application Method
What equipment and method of application will be used? (e.g., drip, wheel line, high-pressure sprinkler)

The plant will use the water for general industrial uses, including but not limited to make-up water for the geothermal energy extraction operations within the plant site.

C. Conservation
Please describe why the amount of water requested is needed and measures you propose to: prevent waste; measure the amount of water diverted; prevent damage to aquatic life and riparian habitat; prevent the discharge of contaminated water to a surface stream; prevent adverse impact to public uses of affected surface waters.

SVEC will constantly manage the use of the water from the well(s) in a manner to prevent waste, minimize leaks and discharges from the well and pipeline. Once the water reaches the plant, it will be used for general industrial uses, including but not limited to make-up water in the operating processes which will be monitored by the operators and carefully managed to minimize use.

SECTION 6: STORAGE OF GROUND WATER IN A RESERVOIR - NA -

If you would like to store ground water in a reservoir, complete this section *(if more than one reservoir, reproduce this section for each reservoir).*

Reservoir name: _____ Acreage inundated by reservoir: _____

Use(s): _____

Volume of Reservoir (acre-feet): _____ Dam height (feet, if excavated, write "zero"):

***Note**: If the dam height is greater than or equal to 10.0' above land surface **AND** the reservoir will store 9.2 acre feet or more, engineered plans and specifications must be approved prior to storage of water.*

SECTION 7: USE OF STORED GROUND WATER FROM THE RESERVOIR - NA -

If you would like to use stored ground water from the reservoir, complete this section *(if more than one reservoir, reproduce this section for each reservoir).*

Annual volume (acre-feet): _____

USE OF STORED GROUND WATER	PERIOD OF USE
- NA -	

SECTION 8: PROJECT SCHEDULE

Date construction will begin: immediately upon issuance of the permit

Date construction will be completed: immediately upon issuance of the permit

Date beneficial water use will begin: immediately upon issuance of the permit

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SECTION 9: WITHIN A DISTRICT

☐ Check here if the point of diversion or place of use are located within or served by an irrigation or other water district.

Irrigation District Name - NA -	Address	
City	State	Zip

SECTION 10: REMARKS

N/A

Use this space to clarify any information you have provided in the application *(attach additional sheets if necessary).*

Attachment A

Groundwater Permit Map

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Attachment B

Land Use Information Form

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Land Use Information Form

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

Applicant: Surprise Valley Electrification Corp. (First) Attn: Lynn Culp (Last)

Mailing Address: 516 US HWY 395E

Alturas (City) CA (State) 96101 (Zip) Daytime Phone: 530- 233-3511

A. Land and Location

Please include the following information for all tax lots where water will be diverted (taken from its source), conveyed (transported), and/or used or developed. Applicants for municipal use, or irrigation uses within irrigation districts may substitute existing and proposed service-area boundaries for the tax-lot information requested below.

Township	Range	Section	¼ ¼	Tax Lot #	Plan Designation (e.g., Rural Residential/RR-5)	Water to be:			Proposed Land Use:
33S	18E	23	SW NE	1300		☒ Diverted	☒ Conveyed	☐ Used	Industrial
33S	18E	23	NE SE	1300		☐ Diverted	☒ Conveyed	☒ Used	Industrial
						☐ Diverted	☐ Conveyed	☐ Used	
						☐ Diverted	☐ Conveyed	☐ Used	

List all counties and cities where water is proposed to be diverted, conveyed, and/or used or developed:

Lake County

B. Description of Proposed Use

Type of application to be filed with the Water Resources Department:

☒ Permit to Use or Store Water ☐ Water Right Transfer ☐ Permit Amendment or Ground Water Registration Modification
☐ Limited Water Use License ☐ Allocation of Conserved Water ☐ Exchange of Water

Source of water: ☐ Reservoir/Pond ☒ Ground Water ☐ Surface Water (name) ____

Estimated quantity of water needed: 228.5 ☐ cubic feet per second ☒ gallons per minute ☐ acre-feet

Intended use of water: ☐ Irrigation ☐ Commercial ☒ Industrial ☐ Domestic for ____ household(s)
☐ Municipal ☐ Quasi-Municipal ☐ Instream ☐ Other ____

Briefly describe:

The water will be used for general industrial water (such as make up cooling water) at the geothermal facility.

Note to applicant: If the Land Use Information Form cannot be completed while you wait, please have a local government representative sign the receipt at the bottom of the next page and include it with the application filed with the Water Resources Department.

See bottom of Page 3. →

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For Local Government Use Only

The following section must be completed by a planning official from each county and city listed unless the project will be located entirely within the city limits. In that case, only the city planning agency must complete this form. This deals only with the local land-use plan. Do not include approval for activities such as building or grading permits.

Please check the appropriate box below and provide the requested information

☐ Land uses to be served by the proposed water uses (including proposed construction) are allowed outright or are not regulated by your comprehensive plan. Cite applicable ordinance section(s): _____.

☒ Land uses to be served by the proposed water uses (including proposed construction) involve discretionary land-use approvals as listed in the table below. (Please attach documentation of applicable land-use approvals which have already been obtained. Record of Action/land-use decision and accompanying findings are sufficient.) **If approvals have been obtained but all appeal periods have not ended, check "Being pursued."**

Type of Land-Use Approval Needed (e.g., plan amendments, rezones, conditional-use permits, etc.)	Cite Most Significant, Applicable Plan Policies & Ordinance Section References	Land-Use Approval:	
CONDITIONAL USE PERMIT	L.C.Z.O. ARTICLE 24	☒ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued

Local governments are invited to express special land-use concerns or make recommendations to the Water Resources Department regarding this proposed use of water below, or on a separate sheet.

SEE FILE #1256-CUP, APPROVED FEB, 2011.

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Name: DARWIN JOHNSON JR. Title: PLANNING DIRECTOR

Signature: _____ Phone: 541-947-6036 Date: 2 SEPT 2014

Government Entity: LAKE COUNTY PLANNING DEPT.

Note to local government representative: Please complete this form or sign the receipt below and return it to the applicant. If you sign the receipt, you will have 30 days from the Water Resources Department's notice date to return the completed Land Use Information Form or WRD may presume the land use associated with the proposed use of water is compatible with local comprehensive plans.

Receipt for Request for Land Use Information

Applicant name: _____

City or County: _____ Staff contact: _____

Signature: _____ Phone: _____ Date: _____

Attachment C

Legal Description (Deed)

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FORM No. 633-1—WARRANTY DEED. 56910 STEVENS-NESS LAW PUB. CO., PORTLAND, ORE.

1967 EN 735

KNOW ALL MEN BY THESE PRESENTS, That ROSS H. COLAHAN and DORIS COLAHAN, husband and wife, *hereinafter called the grantor, for the consideration hereinafter stated, to grantor paid by* COLAHAN ENTERPRISES, INC. an Oregon corporation, *hereinafter called the grantee, does hereby grant, bargain, sell and convey unto the said grantee and grantee's heirs, successors and assigns, that certain real property, with the tenements, hereditaments and appurtenances thereunto belonging or appertaining, situated in the County of* Lake *and State of Oregon, described as follows, to-wit:*

Township 33 South, Range 18 East of the Willamette Meridian

Section 23: NE¼, SE¼NW¼, SE¼SW¼, SW¼SE¼ excepting deed recorded in Book 53 at page 635 of Record of Deeds.
N½SW¼
That portion of NE¼SE¼ of said Section 23 lying North of the Chewaucan River, excepting therefrom that portion of said NE¼SE¼ contained in a deed from Northwest Townsite Company to Kittie Loveland recorded in Book 52 at page 593 of the Record of Deeds.

Section 24: N½NE¼, SW¼NE¼, NW¼, excepting a tract of land conveyed to State of Oregon in Book 79 at page 395 of Record of Deeds and highway right-of-way.
That portion of NW¼SW¼ of said Section 24 lying North of the extension of Mill Street in Paisley, Oregon, excepting therefrom those tracts of land heretofore conveyed by Northwest Townsite Company and its predecessors in interest recorded in Book 44 at Page 95, Book 51 at pages 10, 432 and 549; Book 52 at page 593; Book 53 at page 147; Book 56 at page 504; Book 62 at page 386 of the Record of Deeds.

Section 26: NW¼NW¼.

SUBJECT TO all reservations, restrictions, easements and rights-of-way of record or apparent on the ground, including, but not limited to, reservation of one-half of all gas, coal, oil and other sub-surface minerals, together with right to take and remove.

(IF SPACE INSUFFICIENT, CONTINUE DESCRIPTION ON REVERSE SIDE)

To Have and to Hold the same unto the said grantee and grantee's heirs, successors and assigns forever.

And said grantor hereby covenants to and with said grantee and grantee's heirs, successors and assigns, that grantor is lawfully seized in fee simple of the above granted premises, free from all encumbrances ..... *and that grantor will warrant and forever defend the above granted premises and every part and parcel thereof against the lawful claims and demands of all persons whomsoever, except those claiming under the above described encumbrances.*

The true and actual consideration paid for this transfer, stated in terms of dollars, is $ 1.00 *①However, the actual consideration consists of or includes other property or value given or promised which is* ~~[illegible]~~ the whole *consideration (indicate which).①*

In construing this deed and where the context so requires, the singular includes the plural.

WITNESS grantor's hand this 1st *day of* April, 1981.

Ross H Colahan

Doris Colahan

STATE OF OREGON, County of Lake) ss. April 1, 1981

Personally appeared the above named Ross H. Colahan and Doris Colahan, husband and wife

and acknowledged the foregoing instrument to be ..... *voluntary act and deed.*

NOTARY PUBLIC STATE OF OREGON

(OFFICIAL SEAL)

Before me: Barbara Snider
Notary Public for Oregon
My commission expires 9-10-82

NOTE: The [illegible] between the symbols ①, ② and applicable, should be deleted. See Chapter 462, Oregon Laws 1967, as amended by the 1967 Special Session.

Ross H. Colahan and Doris Colahan, husband and wife
GRANTOR'S NAME AND ADDRESS

Colahan Enterprises, Inc. an Oregon corporation
GRANTEE'S NAME AND ADDRESS

After recording return to:
Colahan Enterprises, Inc.
Rte 1 Box 380
Paisley, Oregon 97636
NAME, ADDRESS, ZIP

Until a change is requested all tax statements shall be sent to the following address:
Colahan Enterprises, Inc.
Rte 1 Box 380
Paisley, Oregon 97636
NAME, ADDRESS, ZIP

SPACE RESERVED FOR RECORDER'S USE

STATE OF OREGON,
County of Lake } ss.

I certify that the within instrument was received for record on the 3 *day of* August, 1984, *at* 11:45 *o'clock A.M., and recorded in book/reel/volume No.* 198 *on page* 735 *or as document/fee/file/instrument/microfilm No.* ..... *Record of Deeds of said county.*

Witness my hand and seal of County affixed.

Karen O'Connor, Co. Clerk
NAME TITLE

By ..... *Deputy*

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Attachment D

Lease Agreement

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GEOTHERMAL LEASE AND AGREEMENT

THIS GEOTHERMAL LEASE AND AGREEMENT, (herein sometimes referred to as "Lease") made and entered as of the 24th day of September, 2010 by and between COLAHAN ENTERPRISES INC., hereinafter referred to as "Lessor", and SURPRISE VALLEY ELECTRIFICATION CORP., a Rural Electric Cooperative, Incorporated under IRS 501(c)(12) . Hereinafter referred to as "Lessee".

WITNESSETH:

1. Purpose. That Lessor, for and in consideration of Ten Dollars ($10.00) in hand paid to Lessor by Lessee, and other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, and in consideration of the covenants and agreements hereinafter contained, has granted, leased, let and demised and by these presents does grant, lease, let and demise exclusively to Lessee, its grantees, successors and assigns, upon and subject to the terms and conditions hereinafter set forth, these certain extractable mineral rights and certain geothermal rights for real property located in the County of Lake, State of OREGON, more particularly described in Exhibit "A" attached hereto and by this reference made a part hereof (hereinafter referred to as the "leased rights"), including all roads, streets, alleys, easements and rights of way owned or claimed by Lessor, on or within the lands above described. This Lease shall cover all the interest in the leased rights now owned or hereafter acquired by Lessor on the property described in Exhibit A".

By the use of such methods as Lessee may desire, Lessee, and its designated representatives, shall have the sole and exclusive right to utilize the leased rights, including but not limited to the right to explore for, drill for, test, develop, operate, produce, extract, take, remove or sell Hot Water, Steam and Thermal Energy and Extractable Minerals, and to store, utilize, process, convert and otherwise treat such Hot Water, Steam and Thermal Energy, and to extract any Extractable Minerals during the term hereof and to transport same, and to inject or re inject effluents into the well or any wells drilled pursuant to the leased rights; or inject water, gas or other fluid or substances by artificial means into formations containing Hot Water, Steam or Thermal Energy as agreed to in the body of this lease agreement. Further, Lessee, its designated representatives and anyone purchasing Leased Substances (as hereinafter defined) from Lessee are hereby granted the use of any easements owned by Lessor across said land, to the full extent of any such rights held by Lessor as set forth in the body of this lease agreement. The possession by Lessee of the leased rights shall be sole and exclusive for the purposes hereof and for purposes incident or related thereto.

Lessee agrees to conduct its activities in a safe, good and workmanlike manner and use reasonable care at all times in all of Lessee's operations on the premises, in accordance with generally accepted, good engineering practice; with due regard for the protection of life and property, preservation of the environment and conservation of natural resources, and minimal intrusion to agricultural operations of the Lessor to prevent injury or damage to cattle, livestock, buildings, fish, water rights, water diversion works, ditches, tanks and water wells or other property or operations of the Lessor located thereon; and Lessee agrees to repair, mitigate or pay the Lessor the fair market value (as agreed to by the parties, or if no agreement is reached, then after 7 days as determined by an independent third-party appraiser) for all damages to the cattle, crops, buildings, livestock, fish, fences, water rights, water diversions, ditches, tanks, water, water wells and other property of the Lessor situated on the surface of the premises resulting from Lessee's operations on the premises, and conduct its activities in a manner which will not unreasonably interfere with any rights reserved to Lessor. Lessee also agrees that all damages to pipe and equipment caused by cattle shall be the responsibility of Lessee. Lessee shall at all time allow Lessor access to well water for irrigation

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and secondary uses as required by Lessor, and access to the online heat exchange upon construction.

2. Term. This Lease shall be for a term of five (5) years from and after the date hereof (hereinafter referred to as the "Primary Term") and so long thereafter as electricity is produced in commercial quantities from the well or through the leased rights, or lands, and for so long as Lessee is prevented from producing same, or the obligations of Lessee hereunder are suspended, for the causes hereinafter set forth, or this Lease is continued in force by reason of any other provision hereof.

3. Primary Term Consideration. It is understood and agreed that the initial consideration paid upon the execution hereof is Twenty- Five Thousand Dollars ($25,000.00) for all the lease rights during the initial five (5) year lease term, excluding any royalties and rents that are otherwise payable during the term of this lease agreement.

4. Lessee shall conduct all work in compliance with the applicable laws and regulations of the state of Oregon and the United States of America. Lessee shall be fully responsible for compliance with all applicable Federal, state, and local statutes, regulations, and ordinances relating to such work, and for reclamation bonding and any bonding required for geothermal wells. Lessor agrees to cooperate with Lessee in Lessee's application for governmental licenses, permits, and approvals, all costs of which shall be borne by Lessee.

Both Lessee and Lessor are bound by applicable federal, state, and local statutes, regulations, and ordinances that may affect this project now or in the future.

Lessee shall fence all excavations (including sumps and settling ponds), and, upon the termination of the Lease, except any certain sump hole(s) and excavation(s) identified by the Lessor, Lessee shall level and fill all sump holes and excavations, shall remove all debris and shall leave the locations or premises used by Lessee in a clean and sanitary condition.

Lessee shall keep the premises utilized by Lessee clean and orderly throughout the term of occupancy.

Lessee shall replace all fences which the Lessee removed for its purposes and repair all fences which Lessee damaged, and if and when so required by the Lessor, will provide a proper livestock guard at any new point of entry upon lands used by Lessee and utilize best efforts to ensure Lessor's livestock are not allowed to escape as a result of Lessee's utilization of premises.

Lessee shall have reasonable access to and use of water from the leased land for Lessee's drilling, testing and exploration operations thereon, in the vicinity thereof, provided that such use shall not interfere with Lessor's own use for domestic, commercial, stock or agricultural purposes, nor interfere with any legal or contractual commitments of Lessor relating thereto and existing on the date hereof. Lessee shall be allowed to enter on to the Lands during the term of the lease for regular water monitoring activities of all wells or water sources. Lessee acknowledges that except for that certain real property specifically identified and agreed to be taken out of production and for which Lessee is paying rents, Lessor, and Lessor's principals, officers and shareholders, shall have full use and exploitation of the whole of the premises.

Lessee shall protect Lessor's interest in the leased rights against liens of every character arising from its operations thereon. Lessee, at its own expense, prior to commencing operations pursuant to the leased rights, shall obtain, and thereafter while this Lease is in effect shall maintain, adequate Workers Compensation Insurance. Lessee shall protect Lessor

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against damages of every kind and character arising out of the operations or working of Lessee or those under Lessee's control pursuant to the leased rights, but Lessee shall not be liable hereunder in the event of the negligence or willful misconduct of parties other than Lessee, unless retained or approved by the Lessee or Lessee's agents to be on the premises, or perform any service on the premises.

Lessee shall indemnify and defend Lessor from any claim, loss, or liability arising out of or related to any activity of Lessee on the premises utilized by Lessee or any condition of the premises in the possession or under the control of Lessee including any such claim, loss, or liability that may be caused or contributed to in whole or in part failure to effect any repair or maintenance required by this lease and damages to growing crops based upon the fair market value of such crops at the time of such damages. Lessor shall have no liability to Lessee for any injury, loss, or damage caused by third parties, or by any condition of the premises.

Lessee, before going into possession of the premises, shall procure and thereafter during the term of the lease shall continue to carry the following insurance at Lessee's cost: comprehensive general liability insurance in a responsible company with limits of not less than $300,000 for injury to one person, $1,000,000 for injury to two or more persons in one occurrence, and $1,000,000 for damage to property, commercial general liability policy (occurrence version) in a responsible company with coverage for bodily injury and property damage liability, personal injury liability, and medical payment with a general aggregate limit of not less than $1,000,000 and a per occurrence limit of not less than $100,000.00. Such insurance shall cover all risks arising directly or indirectly out of Lessee's activities on or any condition of the premises. Such insurance shall protect Lessee against the claims of Lessor on account of the obligations assumed by Lessee and shall name Lessor as an additional insured. Certificates evidencing such insurance and bearing endorsements requiring 10 days' written notice to Lessor prior to any change or cancellation shall be furnished to Lessor prior to Lessee's occupancy of the premises.

Lessor shall have all rights to thermal heat from the electric generating facility after electricity production. In addition, Lessor has the right to the spent geothermal fluids after the generation of electricity to use for traditional agriculture use including, but not limited to irrigation, stock water, aquaculture and greenhouses. Lessee shall provide an online heat exchange to the Lessor adequate for the above purposes.

Lessee shall make available, after the commercial production of electricity and uses by the Lessor and to the extent that it is feasible, thermal energy to the City of Paisley, Oregon, and other non-federal public buildings within the City of Paisley, Oregon, for the purpose of space heating of public buildings.

Lessee shall re inject all geothermal fluids produced after they are used for the production of electricity and Lessor's uses.

5. Royalty. Royalties shall be payable as follows:

(a) With respect to Hot Water, Steam or Thermal Energy produced, saved and used for the generation of electric power which is then sold by Lessee, Lessee shall pay to Lessor as royalty Four Percent (4.0 %) of the Actual Revenue. At the time the Lessee decides to sell the electricity produced to the current and future Members of the Lessee, the royalty payment will then be converted to dollars per kwh in an amount that equals the then total dollar per kwh royalty paid to the Lessor. The dollars per kwh paid to the Lessor at the time the Lessee sells the electricity to the Members of Lessee, and shall increase by two percent (2%) per annum for the remaining life of the project.

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(b) With respect to Extractable Minerals, Lessee shall pay as royalty to Lessor Five Percent (5%) of the net proceeds received by Lessee from the sale of any gases (as herein defined) and from the sale of minerals and/or minerals in solution extracted from the effluents produced and sold from the well or in exercise of the leased rights, or, in the event Lessee extracts from the effluents minerals and/or minerals in solution, Five Percent (5%) of the proceeds received by Lessee from the sale of minerals and/or minerals in solution contained in and extracted from such effluents less costs of transportation and extraction.

Lessee shall pay to Lessor on or before the twenty-fifth day of each month the royalties accrued and payable for the preceding calendar month, or on or before the twenty-fifth day of the month next following that in which Lessee receives payment therefore from the purchaser thereof, whichever method may be chosen by Lessee from time to time, and in making such royalty payments Lessee shall deliver to Lessor statements setting forth the basis for computation and determination of such royalty.

Lessee shall not be required to account to Lessor for or to pay any royalty on Hot Water, Steam, Thermal Energy or Extractable Minerals produced by Lessee which is not utilized, saved and sold, or which is used by Lessee in its operations with respect to the well or the leased rights for or in connection with the developing, recovering, producing, extracting and/or processing of Hot Water, Steam, Thermal Energy and/or minerals in solution or in facilities for the generation of electric power, or which are unavoidably lost.

6. Use of Lease. Lessee shall have the right to drill such well or wells as Lessee may deem desirable for the exercise of the leased rights, including wells for injection or re injection purposes, and shall have the further right to dispose in any such wells waste brine, water and other substances, waste products from a well or wells, power plants or other facilities. Lessee shall further have the right for testing purposes, to freely transfer Leased Substances and Geothermal Resources and to inject such leased Substances and Geothermal Resources into well or into any wells developed pursuant to the leased rights.

7. Well Abandonment. In the event Lessor desires to abandon any well it has drilled on the premises, Lessee shall notify Lessor of the Lessee intention to do so, and if the Lessor within thirty(30) days after such notices elect to retain said well as water well or other purpose, and so notifies Lessee in writing of such intent, then Lessee shall not abandon such well and shall be freed of the obligations of abandoning same, and Lessor shall cause Lessee to be released from any abandonment bond posted by Lessee with respect to said well and Lessor shall concurrently post any new bond required for the same as required by any government agency.

8. Land Compensation. In return for actual surface use of leased land, if Producing Agricultural Lands are required by Lessee to be taken out of production, either temporarily or permanently for Lessee's operations, including but not limited to as a result of Lessee's use of water from the leased lands, Lessee shall compensate Lessor at the annual rate of Four Hundred Dollars ($400.00) per acre for such lands so affected for the duration of their use. For greater clarity, if Lessee requires 2 acres of producing agricultural land, but its use impacts 10 acres, the rate would apply to the 10 acres. For these purposes any pipelines shall be deemed to require a 10 foot wide ground area. All pipelines shall be insulated as per typical project specifications and shall be colored according to industry norms or permit requirements as may be imposed. Lessee shall further be responsible for any costs associated with the redesign and/or relocation of structures or sprinkling equipment affected by Lessee's operations, which shall be redesigned and/or relocated according to current commercial agricultural standards, including burying feed lines to pivots at adequate depth to protect the same.

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10. Inspection by Lessor. Lessor, or its agents, at Lessor's sole cost and risk, may during normal hours of operation examine the working, installations, structures, or operations of Lessee constructed or undertaken pursuant to the leased rights, and may at reasonable times inspect the books and records of Lessee with respect to matters pertaining to the payment of royalties to Lessor.

11. Default Notice. Upon the violation of any of the terms and conditions of this Lease by Lessee (including but not limited to payment of rental, advance royalty and/or royalty) and the failure of Lessee, as to monetary matters, to make payment, and as to other violations, to begin in good faith to remedy the same, within sixty (60) days after written notice from Lessor so to do, specifying in said notice the nature of such default, then at the option of Lessor this Lease shall forthwith cease and terminate and all rights of Lessee in and to the well and the leased rights shall be at an end.

12. Termination. Notwithstanding any other provisions of this Lease, and in consideration of the payment made by the Lessee to the Lessor for the execution of this Lease, Lessee shall have the right at any time prior to or after default hereunder, to quitclaim and surrender to Lessor all right, title and interest of Lessee in and to the well and the leased rights, and thereupon all rights and obligations of the parties hereto one to the other shall cease and terminate, save and except as to any then accrued royalty or rent obligations of Lessee then payable, and except Lessee's obligations to restore the sump holes and excavations on the premises, as to which Lessee shall remain liable to Lessor.

13. Partial Ownership Interests. In the event Lessor at the time of making this Lease owns an interest in the leased land less than One Hundred Percent (100%) of the right, title and interest purportedly granted or leased hereby to Lessee, then any payments due Lessor hereunder shall be paid to Lessor only in the proportion which Lessor's Interest bears to a One Hundred Percent (100%) interest in the leased land. Notwithstanding the foregoing, should Lessor hereafter acquire any additional right, title or interest in or to the leased land, it shall be subject to the provisions hereof to the same extent as if owned by Lessor at the date hereof, and any increase in payments of money hereunder necessitated thereby shall commence with the payment next following receipt by Lessee of satisfactory evidence of Lessor's acquisition of such additional interest.

14. Title. Lessor hereby warrants and agrees to defend title to the leased rights and agrees that Lessee, at its option, may pay and discharge any taxes, mortgages, trust deeds or other liens or encumbrances existing, levied or assessed on or against the well or the leased rights, and in the event Lessee exercises such option, Lessee shall be subrogated to the rights of any holder thereof, and shall have, among other rights, the right of applying to the discharge of any such mortgage, tax or other lien or encumbrance any payments accruing to Lessor hereunder.

15. Tax Payments. Lessee shall pay all taxes levied on structures and improvements constructed by Lessee pursuant to this Lease. In the event any taxes are levied or assessed against the right to produce Leased Substances, or against any Leased Substances on or in the land associated with the well or the leased rights, or in the event any increase in the taxes levied or assessed against the well or the leased rights shall be based upon the production of Leased Substances from, or reserves of Leased Substances attributed to, the well or the lease rights, then in either such event Lessee shall pay One Hundred Percent (100%) of any such taxes or increase, as the case may be, and Lessor shall not be required to pay any part thereof.

16. Assignment. The rights of either party hereunder may be assigned in whole or in part, and the right and privilege to do so is hereby reserved by each party, and the provisions hereof shall extend to the heirs, personal representatives, successors and assigns of the parties hereto, but no change or division in ownership of the well, rights, rentals or royalties,

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however accomplished, shall operate to enlarge the obligations or diminish the rights of Lessee, and no such change in ownership shall be binding upon Lessee until the expiration of thirty (30) days after Lessee is furnished with written notice of such transfer or assignment, together with a certified copy of the instruments of transfer or assignment. Lessee's right of assignment expressly includes the right to sublease all or any portion of its rights and obligations hereunder. Lessee must notify the Lessor, in writing, within 30 days of any assignment, however, Lessee will guarantee the performance of any assignee, unless released in writing by Lessor.

17. Force Majeure. The obligation of the Lessee hereunder shall be suspended and the terms of this Lease shall be extended as the case may be, while Lessee is prevented from complying therewith, in whole or in part, by strikes, lockouts, riots, war or the results thereof, acts of God or the elements, fire, flood, accidents, delays in transportation, inability to secure labor or material in the open market, laws, orders, rules, or regulations of Federal, State, County, Municipal, or other governmental agencies, authority, or representative, or any other matter or condition beyond reasonable control of Lessee, whether or not similar to the conditions or matters herein specifically enumerated, or while litigation contesting Lessor's title to the well or the leased rights or the rights granted Lessee hereunder or litigation involving Lessee's operations hereunder shall be pending and undetermined or during any period when Lessee has no market for the products it is then capable of producing from the leased rights or the market price then available for such products will not produce an acceptable profit. For so long as any of the above circumstances continue to exist, Lessee, without impairment of its rights hereunder, shall be excused from performance of all obligations hereunder except payment of taxes, protection of the leased rights, keeping the premise clean and free from debris, and paying the sum of $4.00 per acre per annum if conditions continue for a period of 6 months or more. It is expressly agreed that the prevention of settlement of any litigation or strike or labor disturbance shall not be considered a matter subject to Lessee's control within the meaning of this Paragraph.

If the permission or approval of any governmental agency is necessary before drilling or producing operations may be commenced pursuant to the leased rights, then if such permission or approval has been applied for at least thirty (30) days prior to the date upon which such operations must be commenced under the terms hereof, the obligation to commence such operations shall be suspended until ninety (90) days after the governmental permit is granted or approval given, or if such permit or approval is denied initially, then so long as Lessee in good faith appeals from such denial or conducts further proceedings in an attempt to secure such permit or approval and ninety (90) days thereafter. Lessor agrees to fully support and cooperate with Lessee in securing permits and authorizations to conduct geothermal operations on the leased rights, all costs of which shall be borne by Lessee.

18. All statements of production and royalty and all payments to be made by Lessee to Lessor hereunder shall be sent to the person hereinafter set forth, at the address indicated:

COLAHAN ENTERPRISE INC.
P.O. BOX 300
PAISLEY, OR 97636

Lessee shall, upon written notification of change of ownership in the well or leased rights or in the rentals or royalties hereunder, as provided in Paragraph ___ above hereof, divide and distribute the same to the new owners of such interest; provided,

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however, that if at any time there are three or more persons entitled to rentals or royalties hereunder, Lessee may, at its option, withhold payment of such rentals or royalties until a majority in interest of such persons designate in writing in a recordable instrument delivered to Lessee, a bank, trust company or corporation, as a common agent and depositary, to receive all payments due hereunder to such persons. Such designation may be changed at any time in the same manner. Delivery of all statements and payments hereunder may be made by depositing same in the United States mail duly addressed to Lessor at the above address or addresses or to such agent and depositary, which shall constitute full performance of Lessee's obligation to make such delivery.

19. Notice. Any notice herein required, or permitted to be given, or furnished by one party to the other shall be in writing. Delivery of such written notice to Lessor shall be made in person, by depositing the same in the United States mail duly certified or by express delivery and addressed to Lessor at P.O. BOX 300 PAISLEY, OR 97636 and delivery of such written notice to Lessee shall be made in person, by depositing the same in the United States mail duly certified or delivered by express delivery and addressed to Lessee at P.O. BOX 691 ALTURAS, CA 96101. Either party hereto may by written notice to the other party change its address to any other location.

20. Definitions. For the purposes of this Lease the following definitions shall apply:

(a) The terms "Hot Water", "Steam" and "Thermal Energy", collectively referred to as "Energy Produced", each shall mean natural geothermal water and/or steam, and shall also mean the natural heat of the earth and the energy present in, resulting from or created by, or which may be extracted from, the natural heat of the earth or the heat present below the surface of the earth, in whatever form such heat or energy naturally occurs;

(b) The term "Extractable Minerals" shall mean any minerals in solution in the well or effluents and all minerals and gases in solution or in the effluents produced from or by means of the well or any well or wells developed in exercise of the leased rights or by means of condensing steam or processing water produced from the effluents from any such well or wells. Said terms shall also include any water so produced or obtained from condensation or steam; provided, however, that the term "gases" shall not include hydrocarbon gases that can be produced separately from the well effluents;

(c) The term "Leased Substances" shall collectively mean the matter, substances and resources defined in subparagraphs 18(a) and 18(b) that are subject to this Lease;

(d) The term "Geothermal Resources" shall collectively mean the matter, substances and resources defined in subparagraph 18(a) and 18(b) that are not subject to this Lease but are located on adjacent land or lands in reasonable proximity thereto;

(e) The term "Actual Revenues" shall mean the sum of those gross sales derived from the sale of electricity generated from the premises, together with production incentives, carbon credits, green tags, and other quantifiable benefits, that now exist or may exist at some future time, that accrue from use of the geothermal resources or production of electricity from the leased premises, and less third party wheeling costs to disseminate the electricity generated from the premises.

(f) The term "Producing Agricultural Lands" shall mean all crop lands, irrigated lands, or grazing lands (which may or may not be irrigated), holding facilities, operational facilities.

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21. Severability. In the event any part or portion or provision of this instrument shall be found or declared to be null, void or unenforceable for any reason whatsoever by any Court of competent jurisdiction, then and in such event only such part, portion or provision shall be affected thereby, and such finding, ruling or decision shall not in any way affect the remainder of this instrument or any of the other terms or conditions hereof, which said remaining terms and conditions shall remain binding, valid and subsisting and in full force and effect between the parties hereto, it being specifically understood and agreed that the provisions hereof are severable for the purposes of the provisions of this clause. In this connection, this Lease shall not in any event extend beyond such term as may be legally permissible under present applicable laws, and should be any such applicable law limit the term hereof to less than that herein provided, then this Lease shall not be void but shall be deemed to be in existence for such term and no longer.

22. Exclusive Rights. Subject to the the Water Rights associated with the premises which are wholely and exclusively retained by the Lessor and the Lessee's obligations hereunder, including the obligation to re inject all geothermal fluids produced after they are used for the production of electricity and Lessor's uses, Lessee shall have the exclusive rights to all Leased Substances and to all power production from Leased Substances on and/or from leased land during the term hereof, subject only to payment of the rents and royalties to Lessor as set forth herein, and other rights and uses as set forth herein.

23. Counterparts. This Lease may be executed in any number of counterparts and all such counterparts shall be deemed to constitute a single lease and the execution of one counterpart by any party Lessor shall have the same force and effect as if such party had signed all the other counterparts.

24. Binding Effect. This Geothermal Lease and Agreement and all of the terms, covenants and conditions hereof shall extend to the benefit of and be binding upon the respective heirs, personal representatives, successors and assigns of the parties hereto.

25. Memorandum of Lease. This lease agreement shall not be recorded. Lessee and Lessor shall, concurrently with execution of this lease, execute and cause to be acknowledged a Memorandum of Geothermal Lease and Agreement approved by Lessee and Lessor, which Memorandum shall be recorded in the official records of the county in which the leased land is located.

26. This lease and agreement shall be interpreted, governed by and construed under the laws of the state of Oregon, without consideration of any conflicts of law between the location of the parties or states of domicile thereof.

[*The remainder of this page is intentionally left blank*]

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IN WITNESS WHEREOF, the parties have caused this instrument to be duly executed as of the date hereinabove first written.

On behalf of,
COLAHAN ENTERPRISES INC.

Erin K. Douglas, Secretary
Lessor

On behalf of,
SURPRISE VALLEY ELECTRIFICATION CORP.

Daniel W. Silveria, General Manager
Lessee

State of ~~California~~ Oregon)
County of ~~Modoc~~ Lake)

OFFICIAL SEAL
MONICA WEIDNER
NOTARY PUBLIC-OREGON
COMMISSION NO. 448732
MY COMMISSION EXPIRES JUNE 12, 2014

On this 24th day of September, 2010 before me,

the undersigned Notary Public, personally appeared
Daniel W. Silveria
( ) personally known to me
(X) proved to me on the basis of satisfactory evidence
to be the person(s) whole name(s) Daniel W. Silveria
subscribed to the within instrument, and acknowledged that
Daniel W. Silveria, executed it.
WITNESS my hand and official seal.

Monica Weidner
Notary's Signature
Commission Expires: June 12, 2014

MONICA WEIDNER
NOTARY PUBLIC
STATE OF OREGON

State of Oregon)
County of Lake)

OFFICIAL SEAL
MONICA WEIDNER
NOTARY PUBLIC-OREGON
COMMISSION NO. 448732
MY COMMISSION EXPIRES JUNE 12, 2014

On this 24th day of September, 2010, before me,

the undersigned Notary Public, personally appeared

( ) personally known to me
(X) proved to me on the basis of satisfactory evidence
to be the person(s) whole name(s) Erin K. Douglas
subscribed to the within instrument, and acknowledged that
Erin K. Douglas executed it.
WITNESS my hand and official seal.

Monica Weidner
Notary's Signature

MONICA WEIDNER
NOTARY PUBLIC
STATE OF OREGON

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Recording requested by
and when recorded mail to:

Re-Recorded to
add Exhibit 'A'

~~M0711422~~

~~M0711101~~

M0711742

~~449~~
~~325~~
489

Surprise Valley Electrification Corp.
Attn: Daniel W. Silveria
P.O. Box 691
Alturas, CA 96101

Re-Recorded to
Correct Exhibit 'A'

130476

~~130359~~

~~130251~~

MEMORANDAM OF GEOTHERMAL LEASE AGREEMENT

THIS MEMORANDUM OF GEOTHERMAL LEASE AGREEMENT (this "Memorandum") is made and entered into as of Sept 24 2010, 2010, by and between COLAHAN ENTERPRISES INC., P.O. Box 308 Paisley, OR 97636 "Landowner" and SURPRISE VALLEY ELECTRIFICATION CORP., a Rural Electric Cooperative, Incorporated under IRS 501(c)(12), P.O. Box 691, Alturas, CA 96101 ("Lessee"), with reference to that certain unrecorded Geothermal Lease Agreement for Colahan Enterprises Inc. dated Sept 24 2010 Assessor's Parcel No.'s 33S18E-203, 33S18E-801, 33S18E-802, 33S18E-1200, 33S18E-1300 (sec 23), 33S18E-1303, 33S18E-1300 (sec 24), situated in Lake County, Oregon, more particularly described on Exhibit A.

Any capitalized terms used and not defined herein shall have the meaning given such terms in the Lease.

Notice is hereby given that, pursuant to the Lease, Landowner has leased the real property described in Exhibit "A" attached hereto and incorporated herein to Lessee for the sole and exclusive right to utilize the leased rights, including but not limited to the right to explore for, drill for, test, develop, operate produce, extract, take, remove, or sell Hot Water, Steam, and Thermal Energy, and Extractable Minerals, and to store, utilize, process, convert and otherwise treat such Hot Water, Steam and Thermal Energy, and to extract any Extractable Minerals during the term hereof and to transport same, and to inject or reinject effluents into the well or any wells drilled pursuant to the leased rights; or inject water, gas or other fluid or substances by artificial means into formations containing Hot Water, Steam, or Thermal Energy as agreed to in the body of the lease agreement.

The initial term of the Lease shall be for five (5) years from and after the date hereof, referred to as the "Primary Term", and so long thereafter as electricity is produced in commercial quantities from the well or through the leased rights, or lands, and for so long as Lessee is prevented from producing same, or the obligations of Lessee hereunder are suspended, for the causes hereinafter set forth, or this Lease is continued in force by reason of any other provision hereof.

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M0711743 ~~M0711423~~ ~~M0711102~~

Landowner and Lessee hereby ratify and adopt the Lease, and agree to be bound by all of the terms and provisions thereof.

This Memorandum and the Lease, and all of the terms and provisions hereof and thereof shall run with the land and shall be binding upon and inure to the benefit of the Landowner and Lessee and their respective successors and assigns.

Reference is hereby made to executed copies of the Lease in the possession of the Landowner and Lessee, respectively, for all of the terms and provisions thereof, and such terms and provision s are incorporated herein and made a part hereof in all respects as though fully set forth herein. This Memorandum is prepared for the purpose of recordation only, and in no way modifies the terms or provisions of the Lease. If there is any inconsistency between this Memorandum and the terms and provisions of the Lease, the terms and provisions of the Lease shall control. This Memorandum may be executed in multiple counterparts, all of which shall constitute one and the same Memorandum.

(SIGNATURES ON NEXT PAGE)

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M0711744 ~~M0711424~~ ~~M0711103~~ 491 ~~811~~ 321

IN WITNESS WHEREOF, Landowner and Lessee have executed this Memorandum as of the date first set forth above.

On behalf of,
COLAHAN ENTERPRISES INC.

Lessor

On behalf of,
SURPRISE VALLEY ELECTRIFICATION CORP.

Daniel W. Silveria, General Manager
Lessee

State of ~~California~~ Oregon)
County of ~~Modoc~~ Lake)

On this 24 day of ~~Sept~~, 2010 before me,

the undersigned Notary Public, personally appeared
Daniel W. Silveria
( ) personally known to me
(X) proved to me on the basis of satisfactory evidence
to be the person(s) whose name(s) Daniel W. Silveria
subscribed to the within instrument, and acknowledged
that Daniel W. Silveria, executed it.
WITNESS my hand and official seal.

OFFICIAL SEAL
MONICA WEIDNER
NOTARY PUBLIC-OREGON
COMMISSION NO. 448732
MY COMMISSION EXPIRES JUNE 12, 2014

MONICA WEIDNER NOTARY PUBLIC STATE OF OREGON

Monica Weidner
Notary's Signature
Commission Expires: June 12, 2014

State of Oregon)
County of Lake)

on this 24 day of ~~Sept~~, 2010, before me,

the undersigned Notary Public, personally appeared
Erin K Douglas
( ) personally known to me
(X) proved to me on the basis of satisfactory evidence
to be the person(s) whose name(s)
subscribed to the within instrument, and acknowledged
that
executed it.
WITNESS my hand and official seal.

OFFICIAL SEAL
MONICA WEIDNER
NOTARY PUBLIC-OREGON
COMMISSION NO. 448732
MY COMMISSION EXPIRES JUNE 12, 2014

MONICA WEIDNER NOTARY PUBLIC STATE OF OREGON

Monica Weidner
Notary's Signature
Commission Expires: June 12, 2014

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STATE OF OREGON, COUNTY OF LAKE Reel 71 File 1101

I hereby certify that the within document was received and filed for record this 24 **day of** September 20 17 G-17890

+92

Commission Expires:_____

M0711745

EXHIBIT A

Lands located in Lake County, Oregon

Tax Lot # 33S18E000130000 and 33S18E000130300
Township33 South, Range 18 East of the Willamette Meridian
Section 23:
NE ¼, SE ¼ NW ¼ , SE ¼ SW ¼ , SW ¼ SE ¼ excepting deed recorded in Book 53 at page 635 of Record of Deeds
N ½ SW ¼
That portion of NE ¼ SE ¼ of said Section 23 lying North of the Chewaucan River, excepting therefrom that portion of said NE ¼ SE ¼ contained in a deed from Northwest Townsite Company to Kittie Loveland recorded in Book 52 at page 593 of the Record of Deeds.
Section 24:
N ½ NE ¼, SW ¼ NE ¼, NW ¼, excepting a tract of land conveyed to State of Oregon in Book 79 at page 395 of Record of Deeds and highway right-of-way.
That portion of NW ¼ SW ¼ of said Section 24 lying North of the extension of Mill Street in Paisley, Oregon, excepting therefrom those tracts of land heretofore conveyed by Northwest Townsite Company and its predecessors in interest recorded in Book 44 at Page 95, Book 51 at pages 10, 432 and 549; Book 52 at page 593; Book 53 at page 147; Book 56 at page 504; Book 62 at page 386 of the Record of Deeds
Section 26:
NW ¼ NW ¼

Tax Lot # 33S18E000120000
SW ¼ SW ¼ of Section 23, Township 33 South, Range 18 East, Willamette Meridian.

Tax Lot #33S18E24C0010000
All that tract or parcel of land in Sections 23 and 24, Township 33 South, Range 18 East of the Willamette Meridian, bounded band described as follows: Beginning at a point on the section line between said sections 23 and 24 South 0 degrees 14 minutes West, 550.84 feet from the quarter corner between said sections 23 and 24, and 15 feet from the mill race of the Chewaucan Mills, thence parallel and 15 feet from said Mill race, North 32 degrees 25 minutes East, 121.95 feet; thence North 40 degrees 45 minutes East, 67.20 feet; thence North 54 degrees 54 minutes East, 85 feet; thence North 74 degrees 16 minutes East, 62.90 feet to a flood channel of the Chewaucan River South 15 degrees 44 minutes East, 27.20 feet; thence southwesterly along the bank of said flood channel to said section line; thence along the north bank of the river westerly about 75 feet; thence North 51 degrees 39 minutes East 73 feet, more or less, to a point and place of beginning, containing one acre, more or less.

Tax Lot #33S18E000139900
A parcel of land lying in the S ½ of the NW ¼ of Section 24, Township 33 South, Range 18 East, Willamette Meridian, Lake County, Oregon, and being that property described in that deed to Ross A. Colahan, recorded in Book 205, Page 230 of Lake County Record of deeds. (Which deed references a prior deed, to the State of Oregon, recorded in Book 79, Page 395 of the Lake County Record of Deeds.)

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EXCEPTING and otherwise excluding, that certain real property described as Tax Lot #33S18E24C0070000 in the property tax records of Lake County, Oregon.

AND EXCEPTING those mineral rights accruing to the following real property parcels that are otherwise retained by the United States of America.

Tax Lot #33S18E000080100 and 33S18E000080200
Township 33 South, Range 18 East of the Willamette Meridian
Section 14: SE ¼ SE ¼ Section 23: NE ¼ NW ¼

Tax Lot #33S18E000020300
Township 33 South, Range 18 East of the Willamette Meridian
Section 13: W ½ SW ¼ SW ¼ Section 13: SE ¼ SW ¼ SW ¼

State of Oregon } ss. Reel 71
County of Lake } File 1742

I hereby certify that the within instrument was received and filed for record on the 2 day of Nov 20 10 at 10:30 o'clock a M. and recorded on page 489 in book 275 record of Deeds of said County

Stacie Graves
County Clerk
By Monica Weidner Deputy

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Attachment E

Well Logs

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LAKE 52506

LAKE 52506

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

WELL LABEL # L 111501

START CARD # 209509

Instructions for completing this report are on the last page of this form.

(1) LAND OWNER Owner Well I.D.
First Name MARK Last Name DOUGLAS
Company Surprise Valley Electric
Address 516 Hiway 395 E
City Alturas State CA Zip 96101

(2) TYPE OF WORK ☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD ☐ Rotary Air ☒ Rotary Mud ☐ Cable ☐ Auger ☐ Cable Mud ☐ Reverse Rotary ☐ Other

(4) PROPOSED USE ☐ Domestic ☐ Irrigation ☐ Community ☐ Industrial/Commercial ☐ Livestock ☐ Dewatering ☐ Injection ☐ Thermal ☑ Other cooling water

(5) BORE HOLE CONSTRUCTION Special Standard: ☐ Yes (attach copy)
Depth of Completed Well 378 ft.

BORE HOLE Dia	From	To	Material	SEAL From	To	Amount	Sacks/lbs
26	0	20	Cement	0	20		35
12 1/4	20	378					

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☑ E ☐ Other
Backfill placed from ft. to ft. Material
Filter pack from 0 ft. to 378 ft. Material G.V. Size 3/8
Explosives used: ☐ Yes Type Amount

(6) CASING/LINER

Csng	Linr	Dia	+	From	To	Gauge	Steel	Plastic	Welded	Thrd
✓		10 3/4		2	315	.250	✓		✓	

Shoe ☐ Inside ☐ Outside ☐ Other Location of shoe(s)
Temporary casing ☐ Yes Diameter From To

(7) PERFORATIONS/SCREENS
Perforations Method Lo-Carbon Steel / Holte Perf
Screens Type wire wound Material

Perf	Scrn	Csng	Linr	Screen Dia	From	To	Screen/slot width	Slot length	# of slots	Tele/pipe size
	✓			10 3/4	315	375	.100			
✓					40	315		3	2200	

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
<100		335	14 hrs

Temperature 118 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below)

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)
County Lake Twp 33 N or S Range 18 E or W W.M.
Sec 23 SW 1/4 of the NE 1/4 Tax Lot
Tax Map Number Lot
Lat ° ' " or LOT 699888 mE DMS or DD
Long ° ' " or 4230012 mN DMS or DD
Street Address of Well (or nearest address) 1/4 mile NO OF PAISLEY

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL (ft)
Existing Well/Predeepening				
Completed Well	2-8-14	83		

Flowing Artesian? ☐ Yes Dry Hole? ☐ Yes

WATER BEARING ZONES Depth water was first found 83'

SWL Date	From	To	Est Flow	SWL (psi)	+	SWL (ft)
Well was completed using muddy						

(11) WELL LOG Ground Elevation 4476

Material	From	To
Soil w/Brn clay	0	25
Pea Gravel	25	45
Gray Sand-pebbles w/clay	45	185
Grey Sand	185	220
Brn/Grey Pebbly clay	220	275
Brn pebbly clay	275	320
Brn pebbly clay w Sand	320	360
Coarse Sand	360	378

Date Started 1-18-14 Completed 2-8-14

(unbonded) Water Well Constructor Certification
I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
RECEIVED BY OWRD FEB 21 2014
License Number Date
Signed APR 04 2014 SALEM, OR

(bonded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
SALEM, OR
License Number 1946 Date 2-14-14
Signed
Contact Info. (optional)
775-217-0620

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WATER RESOURCES DEPT
SALEM, OREGON

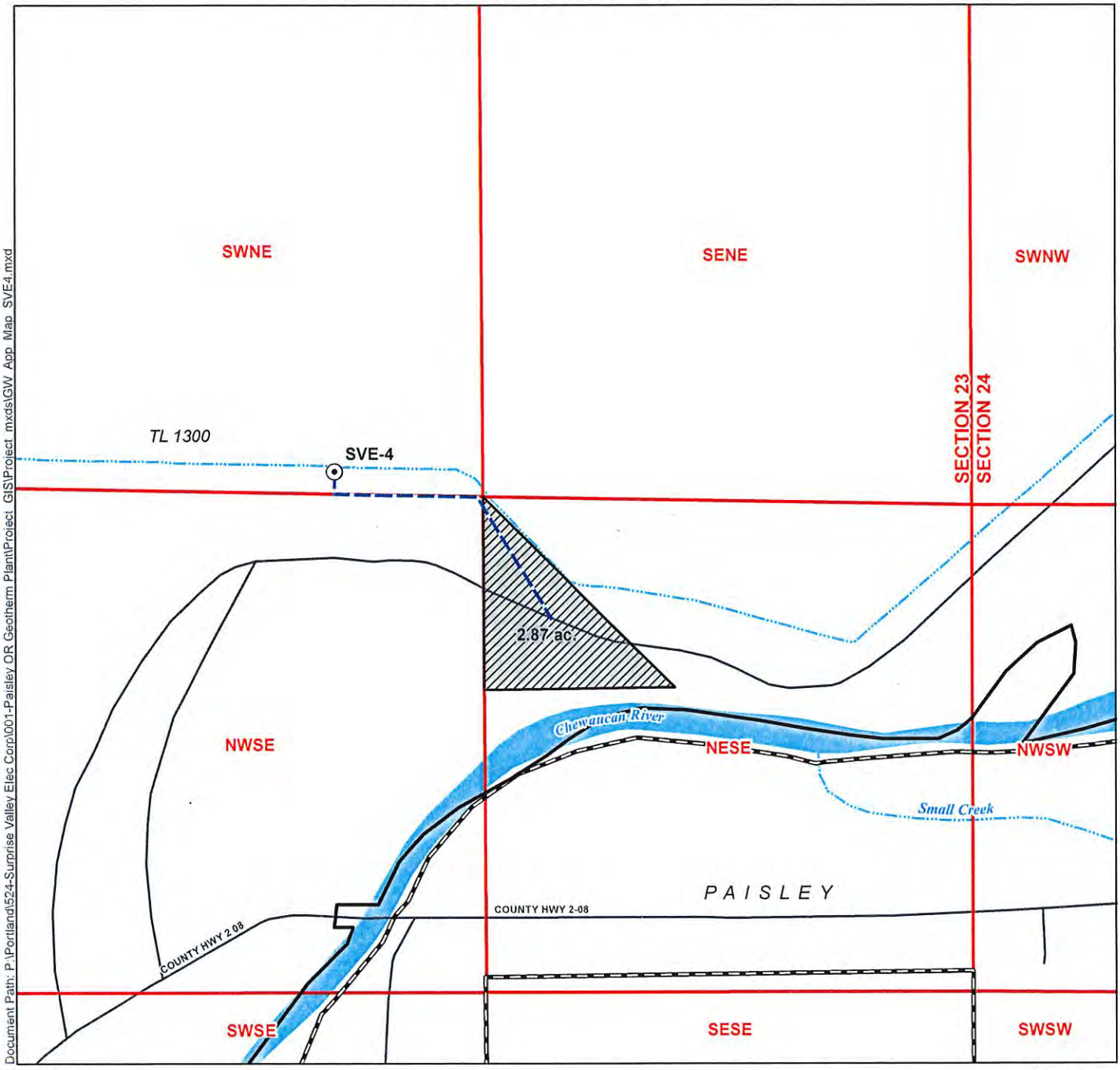
ORIGINAL – WATER RESOURCES DEPARTMENT ONE COPY FOR CONSTRUCTOR ONE COPY FOR CUSTOMER
THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK 10/16/2006

G-17890

Application for a Permit to Use Groundwater
Place of Use/Point of Appropriation Map

Application in the Name of Surprise Valley Electrification Corporation

Section 23, Township 33 South, Range 18 East (W.M.)



LEGEND

- Point of Appropriation (POA)
- Place of Use (POU)
- Distribution Pipeline
- Paisley City Limits
- Roads
- Watercourses
- Waterbodies

POA Location Description

SVE-4

Located 60 feet North and 1,680 feet West from the E1/4 corner of Section 23, Township 33 South, Range 18 East (W.M.)

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Disclaimer

This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

Map Notes

Date: July 24, 2014
Data Sources: OWRD, USGS, US BLM, ESRI
Prepared By: GSI Water Solutions, Inc.

N

0 200 400
1 inch = 400 feet

GSI Water Solutions, Inc.

GSI
Water Solutions, Inc.

September 8, 2014

Ivan Gall
Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301

RE: Application for a Permit to Use Ground Water
Surprise Valley Electrification Corp

Dear Ivan,

As discussed with the Department this spring, the attached application for a groundwater permit is a follow-up to the issuance of the Surprise Valley Electrification Corp's (SVEC) Limited License LL-1450 that allows use of water from well SVE-4 for plant operations. The enclosed application proposes to use water for general industrial uses, including cooling purposes, at SVEC's geothermal facility and is intended to replace the current Limited License LL-1450.

As you recall, based on the Department's review of SVEC's limited license application and subsequent directions in 2013, SVEC constructed and outfitted a new well (in a location and at a distance from surface water recommended by the Department) and modified their limited license application to use this new well (SVE-4) as the point of appropriation. This application is requesting to use the same point of appropriation and rate of use (228.5 gpm) as was approved in Limited License LL-1450.

GSI Water Solutions, Inc., is the authorized representative for the applicant regarding this transaction, and should be copied on all correspondence associated with this application. Please do not hesitate to call if you have any questions or need additional information.

Enclosed is a check for the application fee in the amount of $1,900.00.

Sincerely,

Bruce Brody-Heine

Bruce Brody-Heine
GSI Water Solutions, Inc.

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OWRD

Enclosures
Cc: Lynn Culp, Surprise Valley Electrification Corporation

147 SW Shevlin Hixon Drive, Suite 201 Bend, OR 97702 P: 541.678.5117 www.gsiws.com

G-17880

Application for a Permit to Use

Ground Water

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

Water-Use Permit Application Processing

1. **Completeness Determination**

The Department evaluates whether the application and accompanying map contain all of the information required under OAR 690-310-0040 and OAR 690-310-0050 (www.oregon.gov/owrd/law). The Department also determines whether the proposed use is prohibited by statute. If the Department determines that the application is incomplete, all fees have not been paid, or the use is prohibited by statute, the application and all fees submitted are returned to the applicant.

2. Initial Review

The Department reviews the application to determine whether water is available during the period requested, whether the proposed use is restricted or limited by rule or statute, and whether other issues may preclude approval of or restrict the proposed use. An Initial Review (IR) containing preliminary determinations is mailed to the applicant. The applicant has 14 days from the mailing date to withdraw the application from further processing and receive a refund of all fees paid minus $200. The applicant may put the application on hold for up to 180 days and may request additional time if necessary.

3. Public Notice

Within 7 days of the mailing of the initial review, the Department gives public notice of the application in the weekly notice published by the Department at www.oregon.gov/owrd. The public comment period is 30 days from publication in the weekly notice.

4. Proposed Final Order Issued

The Department reviews any comments received, including comments from other state agencies related to the protection of sensitive, threatened or endangered fish species. Within 60 days of completion of the IR, the Department issues a Proposed Final Order (PFO) explaining the proposed decision to deny or approve the application. A PFO proposing approval of an application will include a draft permit, and may request additional information or outstanding fees required prior to permit issuance.

5. Public Notice

Within 7 days of issuing the PFO, the Department gives public notice in the weekly notice. Notice includes information about the application and the PFO. Protest must be received by the Department within 45 days after publication of the PFO in the weekly notice. Anyone may file a protest. The protest filing fee is $350.00 for the applicant and $700.00 for non-applicants. Protests are filed on approximately 10% of Proposed Final Orders. If a protest is filed, the Department will attempt to settle the protest but will schedule a contested case hearing if necessary.

6. Final Order Issued

If no protests are filed, the Department issues a Final Order consistent with the PFO. If the application is approved, a permit is issued that specifies the details of the authorized use and any terms, limitations or conditions that the Department deems appropriate.

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Minimum Requirements Checklist

Minimum Requirements (OAR 690-310-0040, OAR 690-310-0050 & ORS 537.615)

Include this checklist with the application

Check that each of the following items is included. The application will be returned if all required items are not included. If you have questions, please call the Water Rights Customer Service Group at (503) 986-0900.

- ☒ SECTION 1: applicant information and signature
- ☒ SECTION 2: property ownership
- ☒ SECTION 3: well development
- ☒ SECTION 4: water use
- ☒ SECTION 5: water management
- ☒ SECTION 6: storage of groundwater in a reservoir
- ☒ SECTION 7: use of stored groundwater from the reservoir
- ☒ SECTION 8: project schedule
- ☒ SECTION 9: within a district
- ☒ SECTION 10: remarks

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Attachments:

- ☒ Groundwater Permit Map
- ☒ Land Use Information Form with approval and signature (*must be an original*) or signed receipt
- ☒ Provide the legal description of: (1) the property from which the water is to be diverted, (2) any property crossed by the proposed ditch, canal or other work, and (3) any property on which the water is to be used as depicted on the map. Example: A copy of the deed, land sales contract or title insurance policy.
- ☒ Lease agreement permitting access
- ☒ Well logs
- ☒ Fees - Amount enclosed: $**1,900.00**
  See the Department's Fee Schedule at www.oregon.gov/owrd or call (503) 986-0900.

Provide a map and check that each of the following items is included:

- ☒ Permanent quality and drawn in ink
- ☒ Even map scale not less than 4" = 1 mile (example: 1" = 400 ft, 1" = 1320 ft, etc.)
- ☒ North Directional Symbol
- ☒ Township, Range, Section, Quarter/Quarter, Tax Lots
- ☒ Reference corner on map
- ☒ Location of each well, and/or dam if applicable, by reference to a recognized public land survey corner (distances north/south and east/west). Each well must be identified by a unique name and/or number.
- ☒ Indicate the area of use by Quarter/Quarter and tax lot clearly identified
- ☐ Number of acres per Quarter/Quarter and hatching to indicate area of use if for primary irrigation, supplemental irrigation, or nursery **–Not Applicable -**
- ☒ Location of main canals, ditches, pipelines or flumes (if well is outside of the area of use)
- ☐ Other _____

STATE OF OREGON

WATER RESOURCES DEPARTMENT

725 Summer St. N.E. Ste. A
SALEM, OR 97301-4172
(503) 986-0900 / (503) 986-0904 (fax)

RECEIPT # 113391

INVOICE # _____

RECEIVED FROM: GSI Water Solutions, Inc

BY: _____

APPLICATION	G-17890
PERMIT	
TRANSFER	

CASH: ☐ CHECK:# ☑ 16246 OTHER: (IDENTIFY) ☐ _____

TOTAL REC'D $ 1900.00

1083 TREASURY 4170 WRD MISC CASH ACCT

0407	COPIES		$
_____	OTHER:	(IDENTIFY) _____	$

0243 I/S Lease _____ 0244 Muni Water Mgmt. Plan _____ 0245 Cons. Water _____

4270 WRD OPERATING ACCT

46111

MISCELLANEOUS

0407	COPY & TAPE FEES	$
0410	RESEARCH FEES	$
0408	MISC REVENUE: (IDENTIFY) _____	$
TC162	DEPOSIT LIAB. (IDENTIFY) _____	$
0240	EXTENSION OF TIME	$

WATER RIGHTS:

		EXAM FEE		RECORD FEE
0201	SURFACE WATER	$	0202	$
0203	GROUND WATER	$ 1450.00	0204	$ 450.00
0205	TRANSFER	$		

WELL CONSTRUCTION

		EXAM FEE		LICENSE FEE
0218	WELL DRILL CONSTRUCTOR	$	0219	$
	LANDOWNER'S PERMIT		0220	$

_____ OTHER (IDENTIFY) _____

0536 TREASURY 0437 WELL CONST. START FEE

0211	WELL CONST START FEE	$	CARD #	
0210	MONITORING WELLS	$	CARD #	

_____ OTHER (IDENTIFY) _____

0607 TREASURY 0467 HYDRO ACTIVITY

LIC NUMBER

0233	POWER LICENSE FEE (FW/WRD)		$
0231	HYDRO LICENSE FEE (FW/WRD)		$
_____	HYDRO APPLICATION		$

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_____ TREASURY OTHER / RDX

FUND _____ TITLE _____

OBJ. CODE _____ VENDOR # _____

DESCRIPTION _____ $

RECEIPT: 113391 DATED: 9/9/14 BY: Elizabeth Kops

Distribution – White Copy - Customer, Yellow Copy - Fiscal, Blue Copy - File, Buff Copy - Fiscal