Oregon

Tina Kotek, Governor

Department of Environmental Quality
Eastern Region Eugene Office
475 NE Bellevue Dr., Suite 110
Bend, OR 97701
(541) 388-6146
FAX (541) 388-8283
TTY 711

June 27, 2024

Pineriver Homes LLC
23410 Hwy 20
Bend, OR 97701

Re: WQ: CAS: Variance Denial: 248-23-000488-VAR: 17089 Indio Rd; T.20S; R.10E; Sec. 12D; Tax Lot 16900; Deschutes River Recreation Homesites Inc. (C), 0.57 Acres; Deschutes County.

Dear Pineriver Homes LLC,

This correspondence verifies that a variance hearing provided for under Oregon Administrative Rules (OAR) 340-071-0430, was held at 1:30 pm on April 24, 2024 at the property referenced above on Eclipse Drive in south Deschutes County. The purpose of the hearing was to provide a forum for the presentation of supportive facts to show that strict compliance with certain rules regulating onsite sewage disposal are inappropriate, or that special physical conditions at the site render strict compliance unreasonable, burdensome or impractical. The proposal and associated supporting information you provided with the application was presented during the recorded hearing.

Variance Decision:
Standards found in Oregon Administrative Rules Chapter 340, Division 071 & 073 have been developed to protect public health and the environment in Oregon. The variance officer's duty is to determine if in their professional judgement, the system proposed for this variance consideration is adequate to safeguard the public's health and the environment if variance from the requested standards in the Oregon Administrative Rules are granted. In my opinion, your proposal does not adequately address all of the limitations that are present at the site.

Based on review and evaluation of the variance record, observations made at the site, and testimony given during the variance hearing, I regret to inform you that your variance request is hereby denied. It is my judgement that the proposed system has the potential to present a health hazard risk and/or have significant adverse impact to groundwater or surface water quality if allowed.

Some factors for decision:

- Current Oregon Administrative Rules require that the water table is at least 24 inches below the ground surface throughout the year, and a minimum 24-inch separation is maintained between a water table and the bottom of the sand filter. The proposal assumes a seasonally high shallow permanent water table of 10 inches below ground surface; however, based on observed soil characteristics from the site evaluation by Deschutes County on September 19, 2023 and during the variance officer's site visit on April 23, 2024, it is likely that saturated conditions occur at even shallower depths within the proposed area.
- Southern Deschutes County is an area where nitrate contamination is of concern due to coarse rapidly draining soils overlaying a shallow unconfined aquifer. Many lots are served

by private wells and draw from this aquifer for drinking water. Even with a proposed design capable of producing high quality effluent before discharging into the soil, treatment does not eliminate all nutrients and pathogens from the wastewater.

- Even with a septic design capable of producing high quality effluent, the treatment proposed in conjunction with continued development in the area may still present a risk to the groundwater that may be irreversible to the shallow aquifer system from both an environmental health and public health perspective.
- Management area 1 represents a high risk to adverse impacts to groundwater, and is one of the three most susceptible to continued loading

Variance Proposal:
The proposal was to install an Orenco AdvanTex®AX20RTN-Mode 3B Alternative Treatment Technology (ATT) System prior to discharge to RidNox post anoxic tank (solid phase flow through filter) followed by a 250 square foot reduced sized Bottomless Sand Filter (BSF) system constructed on an additional 16 inches of sand filter media to the ground surface. This provides 30 inches of separation between the bottom of the conventional bottomless sand filter design and the highest potential groundwater in this area (assumed at 14 inches bgs for this design).

You are seeking a variance from the following Oregon Administrative Rules regulating onsite wastewater treatment systems:

1) **OAR 340-071-0130(1) which states: (1)** Protection of public waters from public health hazards. An agent may not authorize installing or using a system that is likely to pollute public waters or create a public health hazard. If, in the judgment of the agent, the minimum standards in this division will not adequately protect public waters or public health on a particular site, the agent must require a system to meet requirements that are protective. This may include but is not limited to increasing setbacks, increasing drainfield sizing, or using an alternative system. The agent must provide the applicant with a written statement of the specific reasons why more stringent requirements are necessary.

2) **OAR 340-071-0150(4)(a)(B) which states: (B)** All criteria for approving a specific type or types of systems, as described in this division are satisfied.

3) **OAR 340-071-0290(4)(a) which states: (4)** Sand filter without a bottom. Sites may use a bottomless sand filter if the site meets the criteria in this section and section (3) of this rule. **(a)** Saprolite; fractured bedrock; gravel; or soil textures of sand, loamy sand, or sandy loam occur in a continuous section at least 2 feet thick in contact with and below the bottom of the sand filter.

4) **OAR 340-071-0290(4)(d) which states: (4)** Sand filter without a bottom. Sites may use a conventional sand filter without a bottom (BSF) if the site meets the criteria in this section and section **(3)** of this rule. **(d)** The water table is at least 24 inches below the ground surface throughout the year, and a minimum 24-inch separation is maintained between a water table and the bottom of the sand filter.

Site History:

Deschutes County conducted a site evaluation with two test pits on the subject property on September 15, 2023 which was denied on September 19, 2023. The denied use of an onsite wastewater system was due to observed conditions associated with saturation that are used to determine water table levels and site suitability. These conditions are present above 24 inches, and were estimated to be between 10 and 14 inches below ground surface (bgs), though the soil notes also suggest that these conditions may occur shallower based on soil characteristics and depleted soil matrix colors closer to the ground surface.

A site visit was made by the variance officer on April 23, 2024 to observe the site and proposed system layout. The stake-out of the bottomless sand filter locations appeared to match the proposal site plan and were located near the existing test pits 1&2 from the site evaluation conducted by Deschutes County. Gray / depleted soil colors were observed to the ground surface in both pits, indicating that the depth of seasonal high saturation could be higher than the assumed depths used for the proposed system.

Conclusion:
The decision to deny your variance request is a final Order of DEQ. You (or any other person who is adversely affected) have the right to appeal this Order to the Circuit Court for Marion County or the Circuit Court for the county within which you reside or have a principal business office, pursuant to ORS 183.484. To appeal you must file a petition for judicial review with the Circuit Court within 60 days from the day this Order was served on you. If this Order was personally delivered to you, the date of service is the day you received the Order. If this Order was mailed to you, the date of service is the day it was mailed, not the day you received it. If you do not file a petition for judicial review within the 60 day time period, you will lose your right to appeal.

Please feel free to contact me if you have any questions concerning this decision. I can be reached by telephone at (541) 776-6130 or by email at david.hurley@deq.oregon.gov

Sincerely,

David Hurley

David Hurley, REHS
Variance Officer
On-Site Sewage Disposal Program
Water Quality Division

cc:

Todd Cleveland, REHS; Deschutes County Onsite Wastewater Division, 117 NW Lafayette Ave, Bend OR 97703
Brian T. Rabe, CPSS, WWS; Principal Soil Scientist, of Elkhorn Consulting LLC, 14833 Goodrich Creek Lane, Baker City, OR 97814
Megan M. Delucia, 12411 SE Yoakam Ln., Happy Valley, OR 97086
Garcia Family Trust, 1205 Country Club Dr., Ojai, CA 93023

Eric L. Moore, 620 Thimbleberry Ln., Sandpoint, ID 83864
Justin & Cheryl Lynn, PO Box 301523, Portland, OR 97294
Larry D. Hager, 307 SE Elliot Ave., Gresham, OR 97080
` Todd A. Fulcher, PO Box 546, Philomath, OR 97370
Gary & Laura Westall, 17081 Indio Rd., Bend, OR 97707

Variance Protocol

Date: April 24, 2024
Time: 1:30 PM
Variance Officer: David Hurley

Applicant: Pineriver Homes LLC
Address: 23410 Hwy 20
Bend, OR 97701

WQ/O – Variance Assignment 248-23-000488-VAR
T. 20S, R. 10E, Sec. 12D, Tax Lot 16900, 0.57 acres
Site address: 17089 Indio Rd, Bend
Deschutes County

Variance location: **17089 Indio Rd, Bend OR**
Legal description: **T. 20S, R. 10E, Sec. 12D, Tax Lot 16900**
Acreage: **0.57 acres**

Attendance: See attached attendance record sheet and hearing introductory sheet.

Prior to recording start:
This is a public informational gathering hearing and is recorded. I will begin by introducing myself and reading the proposal narrative and exhibits of records submitted by Brian Rabe on behalf of Pineriver Homes LLC. After completion, I will open it up for any questions or comments.

Good morning, it is now 1:30 pm on Wednesday, April 24, 2024.

My name is David Hurley and I am a Department of Environmental Quality employee assigned as today's variance officer.

(Roll call)

We are conducting a public information hearing regarding at the subject property located at 17089 Indio Rd in Bend owned by Pineriver Homes LLC. The parcel is approximately 0.57 acres in size; described as Township 20 South, Range 10 East, Section 12D, Tax lot 16900, in Deschutes County.

I visited the site on April 23, 2024 as required by Oregon Administrative Rule Chapter 340 Division 71 Section 0430 subsection 4.

This is a public information gathering hearing which is being held pursuant to OAR 340-071-0430. This hearing is being held to gather testimony into the record that will demonstrate:

1) Why strict compliance with certain Oregon Administrative Rules is inappropriate for cause, or
2) Why specific physical conditions render strict compliance to rules unreasonable, burdensome, or impractical.

Since this is a public information gathering hearing rather than a contested case hearing, cross-examination of persons providing testimony will not be allowed.

As a variance officer, I may request that a person providing testimony expand upon information submitted into the record. I may also ask questions to clarify the record.

All persons wishing to testify must preface their remarks with their name and affiliation with the variance proposal.

Introduction

Deschutes County denied Site Evaluation 247-23-000863-EVAL for this property on September 19, 2023 because the water table rises to within 10 inches of ground surface.

The site evaluation was denied due to the following reasons:

Does not meet minimum separation from permanent water table (OAR 340-071-0220, 0260, 0265,
0275, 0280, 0285, 0290, 0302).
• Installation of an onsite wastewater system in the area evaluated will likely lead to nitrate pollution
of public waters. The Nitrate Loading Management Model indicates this area, Management Area 1,cannot sustain added loading from high groundwater lots if nitrate levels are to remain below the action level in groundwater (Morgan, Hinkle, Weick. USGS. 2007). Groundwater shall be protected
from pollution that could impair existing and future beneficial uses, including domestic drinking water from wells (OAR 340-040-0020).
• Deschutes County, may not authorize installation or use of a system that is likely to pollute public waters or create a public health hazard (OAR 340-071-0130(1)).

You are requesting a variance from the following Oregon Administrative Rules:

1) OAR 340-071-0135(1) which states: Coordination with listing of alternative treatment technologies, OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)). Under OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)), DEQ maintains a list of alternative treatment technologies (ATTs) that have been tested by an NSF/ANSI organization that meets the requirements of ISO/IEC 17025 – 2005. The ATT must meet the performance standards and other requirements in OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)). ATTs are usually separate treatment units that are installed in onsite systems. Only listed ATTs may be installed under the siting criteria in OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)). This rule provides a process for approving new or innovative technologies, materials, or designs for various components of onsite systems, such as drainfield products or appurtenances. Add-on treatment units, such as units to remove nitrogen following an ATT or sand filter, may also be approved under this rule. However, DEQ does not intend to approve alternatives to standard systems under this rule. Alternative systems will need to be listed as ATTs under OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)) or approved under new rules in this division.
2) OAR 340-071-0150(4)(a)(B) which states: Approval or denial:
(a) A site must be approved for a system if the site evaluation report documents the following:
(A) The site evaluation report identifies the types of the initial and replacement systems for which the site is approved.
(B) All criteria for approving a specific type or types of systems, as described in this division are satisfied.
3) OAR 340-071-0290(4)(d) which states: Bottomless sand filter. Sites may use a conventional sand filter without a bottom (BSF) if the site meets the criteria in this section and section (3) of this rule. (d) The water table is at least 24 inches below the ground surface throughout the year, and a minimum 24-inch separation is maintained between a water table and the bottom of the sand filter.

I have identified an additional rule that requires a variance:

- OAR 340-071-0130(1) which states: Protection of public waters from public health hazards. An agent may not authorize installing or using a system that is likely to pollute public waters or create a public health hazard. If, in the judgment of the agent, the minimum standards in this division will not adequately protect public waters or public health on a particular site, the agent must require a system to meet requirements that are protective. This may include but is not limited to increasing setbacks, increasing drainfield sizing, or using an alternative system.

The agent must provide the applicant with a written statement of the specific reasons why more stringent requirements are necessary

Variance Description:

Brian Rabe, Elkhorn Consulting LLC, prepared your proposal and system plans to overcome the site limitations through the use of a recirculating textile filter system (AdvanTex AX20N-Mode 3B) prior to discharge through a RidNOx™ post-anoxic tank (solid-phase flow-through filter) and then into a 250 sqft elevated reduced sized Bottomless Sand Filter (BSF) system constructed on a 12-inch bed of sand filter media embedded at least 6 inches into the native soil. The proposal includes deviating from the ATT Mode 3B configuration slightly by not installing UV disinfection because it is assumed that discharging to a bottomless sand filter will meet treatment standard 2 criteria independently of the treatment unit.

Open up for discussion, comments, other input……

Any questions:

My Questions:

Leave room for additional questions

I will now review all of the exhibits and comments entered into the record and will make a decision within 45 days to grant the variance as presented or deny the variance. Approval of the variance may be appealed to the Environmental Quality Commission. Denial of the variance may be appealed in Circuit Court per ORS 183.484.

Last call for anyone wishing to enter testimony.

I then declare the hearing closed (or hold open for _____ days for the submission of additional testimony).

End recording.

Attendance list:

Oregon
Tina Kotek, Governor

Department of Environmental Quality
Eastern Region Bend Office
475 NE Bellevue Dr., Suite 110
Bend, OR 97701
(541) 388-6146
FAX (541) 388-8283
TTY 711

April 10, 2024

Pineriver Homes LLC
23410 Highway 20
Bend, OR 97701

Re: WQ: CAS: Variance Assignment: 248-23-000488-VAR: 17089 Indio Road; T.20S; R.10E; Sec. 12D; Tax Lot 16900; Lot 9, Block 36 Deschutes River Recreation Homesites Inc (Unit 4), 0.57 Acres; Deschutes County.

Dear Pineriver Homes LLC,

The Department of Environmental Quality is in receipt of your onsite wastewater variance application and proposal. The application has been assigned to me for further action. I plan to hold an information gathering hearing (as provided under OAR 340-71-430) regarding your proposal on **Wednesday, April 24, 2024, at 1:30 pm** at the subject property. Your proposal and system plans have been prepared by Brian T. Rabe, CPSS, WWS; Principal Soil Scientist, of Elkhorn Consulting LLC. It is my understanding that Mr. Rabe will be present to answer any questions regarding the proposal.

Deschutes County conducted a site evaluation with three test pits at the subject property on September 15, 2023, where a denial was issued for the use of an onsite wastewater system on September 19, 2023. The primary reason for denial was due to the predicted depth to the seasonally high permanent water table being less than 24 inches below the ground surface. Observed conditions associated with saturation that are used to determine water table levels and site suitability were observed less than 24 inches from the ground surface between 10 and 14 inches below ground surface (bgs).

Southern Deschutes County has a shallow water table that is typically unconfined in porous pumice soils and is susceptible to contamination from soluble and mobile constituents. The most common constituent of concern is nitrate-nitrogen from septic systems.

The proposal is to overcome the site limitations by installing an Orenco® AdvanTex AX20N-Mode 3B Alternative Treatment Technology (ATT) System followed by a reduced sized Bottomless Sand Filter (BSF) system constructed with a reinforced concrete berm. The nitrate-nitrogen is proposed to be further reduced with a post-anoxic RidNOx unit. You are seeking variance from the following Oregon Administrative Rules (OARs):

OAR 340-071-0135(1): which addresses Department of Environmental Quality approval of new or innovative technologies, materials, or designs for onsite systems.

OAR 340-071-0150(4)(a)(B) which states: All criteria for approving a specific type or types of systems, as described in this division are satisfied.

OAR 340-071-0290(4)(d) which states: Bottomless sand filter. Sites may use a conventional sand filter without a bottom (BSF) if the site meets the criteria in this section and section (3) of this rule. (d) The water table is at least 24 inches below the ground surface throughout the year, and a minimum 24-inch separation is maintained between a water table and the bottom of the sand filter.

Sometimes during a hearing, it can be determined that other rules or standards need to be considered in order to finalize a proposal. Should this occur, based on the proposal, site observations, and other considerations, I may or may not proceed with the hearing and my final decision process until further information is provided.

Notice of the hearing will be mailed to the neighboring property owners and to the Deschutes County Onsite Wastewater Division staff, see copy enclosed. However, all persons who wish to attend the hearing are welcome. The hearing will provide an opportunity for you and others to offer additional facts or reasons either in support of or in opposition to the proposal and requested variance to the rules.

Please remember, it is the burden of the applicant to show that strict compliance to the rules or standards are inappropriate, or that special physical conditions render strict compliance with the rules or standards to be unreasonable, burdensome or impractical. Additionally, the applicant needs to provide prudent reasonable justification in how their proposal will still protect both public health and the environment.

Deschutes County Onsite Wastewater Division staff will get a copy of your proposal and will have an opportunity to provide both written and verbal comments on your proposal. Others wishing to review your proposal can contact me.

The Department is committed to accommodating people with disabilities. Please notify DEQ of any special physical or language accommodations needed as far in advance of the hearing date as possible. To make any of these arrangements please contact, David Hurley, at (541) 776-6130 or toll free at (866)-863-6668, or by email at: david.hurley@deq.oregon.gov. People with hearing impairments can call DEQ's TTY at (800)-735-2900.

If you have questions concerning the variance process or hearing arrangements, please give me a call. You may also visit https://ordeq.org/septicvariance for more information about variances.

Sincerely,

David Hurley

David Hurley, REHS
Natural Resource Specialist 4
Variance Officer – Onsite Wastewater Program

cc: Todd Cleveland, REHS; Deschutes County Onsite Wastewater Division, 117 NW Lafayette Ave, Bend OR 97703
Brian T. Rabe, CPSS, WWS; Principal Soil Scientist, of Elkhorn Consulting LLC, 14833 Goodrich Creek Lane, Baker City, OR 97814

In Addition, To The Following Adjacent Property Owners:

Megan M. Delucia, 12411 SE Yoakam Ln., Happy Valley, OR 97086
Garcia Family Trust, 1205 Country Club Dr., Ojai, CA 93023
Eric L. Moore, 620 Thimbleberry Ln., Sandpoint, ID 83864
Justin & Cheryl Lynn, PO Box 301523, Portland, OR 97294
Larry D. Hager, 307 SE Elliot Ave., Gresham, OR 97080
` Todd A. Fulcher, PO Box 546, Philomath, OR 97370
Gary & Laura Westall, 17081 Indio Rd., Bend, OR 97707

Encl. Neighbor Notice

Oregon
Tina Kotek, Governor

Department of Environmental Quality
Eastern Region Bend Office
475 NE Bellevue Dr., Suite 110
Bend, OR 97701
(541) 388-6146
FAX (541) 388-8283
TTY 711

April 10, 2024

Hearing Date/Time is 1:30 PM on April 24, 2024

Re: WQ: CAS: Variance Assignment: 248-23-000488-VAR: 17089 Indio Road; T.20S; R.10E; Sec. 12D; Tax Lot 16900; Lot 9, Block 36 Deschutes River Recreation Homesites Inc (Unit 4), 0.57 Acres; Deschutes County.

Dear Resident:

Neighbors of yours, Pineriver Homes LLC , own the property referenced above and herein to be referred to as the "Property", has submitted an application to the Oregon Department of Environmental Quality (DEQ) requesting a "For Cause Variance" from Oregon Administrative Rules regulating Onsite Wastewater Treatment Systems. The Property has been denied due to conditions associated with saturation being within 24 inches of the ground surface.

In the variance application, the applicant's proposal is to install an Orenco® AdvanTex AX20N-Mode 3B Alternative Treatment Technology (ATT) System followed by a reduced sized Bottomless Sand Filter (BSF) system with an additional RidNOx unit for nitrate-nitrogen reduction.

For more detail, please review the enclosed variance hearing notice.

A variance to the Oregon Administrative Rules regulating Onsite Wastewater Treatment Systems may be granted if a variance officer finds that:

1. Strict compliance with the rules or standards are inappropriate: or

2. Special physical conditions render strict compliance unreasonable, burdensome or impractical.

Part of the variance process involves an information gathering hearing. In this hearing, information is shared about the site conditions, rule requirements, public health or environmental protection concerns, and how the proposed system design overcomes these concerns. It is also an opportunity for all parties involved, including adjacent property owners, to voice any concerns they might have with the proposal. Department policy requires a variance officer to inform all adjacent property owners of the variance hearing date, time and place. You are not required to attend this hearing, but can, should you desire to do so.

The information gathering hearing for this variance proposal is to begin at **1:30 PM, Wednesday, April 24, 2024,** at the subject property.
The Department is committed to accommodating people with disabilities. Please notify DEQ of any special physical or language accommodations needed as far in advance of the hearing date as possible. To make any of these arrangements please contact, David Hurley, at (541) 776-6130 or toll free at (866)-863-6668,, or by email at: david.hurley@deq.oregon.gov. People with hearing impairments can call DEQ's TTY at (800)-735-2900.

If you have any questions concerning this variance process or hearing arrangements, please give me a call.

Sincerely,

David Hurley

David Hurley, REHS
Natural Resource Specialist 4
Variance Officer – Onsite Wastewater Program

cc: Todd Cleveland, REHS; Deschutes County Onsite Wastewater Division, 117 NW Lafayette Ave, Bend OR 97703
Brian T. Rabe, CPSS, WWS; Principal Soil Scientist, of Elkhorn Consulting LLC, 14833 Goodrich Creek Lane, Baker City, OR 97814
Pineriver Homes, 23410 Highway 20, Bend, OR 97701

In Addition, To The Following Adjacent Property Owners:

Megan M. Delucia, 12411 SE Yoakam Ln., Happy Valley, OR 97086
Garcia Family Trust, 1205 Country Club Dr., Ojai, CA 93023
Eric L. Moore, 620 Thimbleberry Ln., Sandpoint, ID 83864
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Larry D. Hager, 307 SE Elliot Ave., Gresham, OR 97080
` Todd A. Fulcher, PO Box 546, Philomath, OR 97370
Gary & Laura Westall, 17081 Indio Rd., Bend, OR 97707

Encl. Variance Hearing Notice

Certificate of Mailing

Concerning the matter of notification of a variance information gathering hearing for property owned by Pineriver Homes LLC in Deschutes County, Oregon.

RE: WQ: CAS: Variance Assignment: 248-23-000488-VAR
Pineriver Homes LLC
T. 20S, R. 10E, Sec. 12D, Tax Lot 16900, .57 Acres
Site address: 17089 Indio Rd., Bend, OR
Deschutes County

I certify that I mailed the attached letter containing the variance officer's decision about this matter to each of the following persons on April 11, 2024:

Todd Cleveland, REHS; Deschutes County Onsite Wastewater Division, 117 NW Lafayette Ave, Bend OR 97703
Brian T. Rabe, CPSS, WWS; Principal Soil Scientist, of Elkhorn Consulting LLC, 14833 Goodrich Creek Lane, Baker City, OR 97814

In Addition, To The Following Adjacent Property Owners:
Megan M. Delucia, 12411 SE Yoakam Ln., Happy Valley, OR 97086
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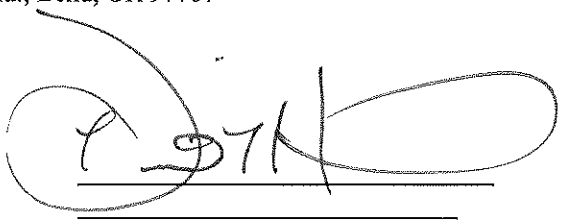

David Hurley, Variance Officer

4/11/24

Date

ELKHORN CONSULTING LLC

14833 Goodrich Creek Lane
Baker City, OR 97814 • 503-881-1604
elkhornconsultingllc@gmail.com

November 13, 2023

Variance Officer
Onsite Variance Program
DEQ - Eastern Region Water Quality
475 NE Bellevue, Ste. 110
Bend, Oregon 97701

SUBJECT: Formal Variance Request – Pineriver Homes LLC – T20S, R10E, Section 12D, Tax Lot 16900 (0.49 acres), Deschutes County, South of Bend, Oregon.

Dear Variance Officer:

A formal variance from selected onsite rules is hereby requested under the provisions of Oregon Administrative Rules, Chapter 340, Division 071, Section 0415 (OAR 340-071-0415).[1] The property is located at 17089 Indio Road, south of Bend in Deschutes County, Oregon (Site) (Figure 1) and consists of 0.57 acres. A Tax Lot map is attached in Appendix A and a copy of the Deed is attached in Appendix B.

Background

A site evaluation was conducted on September 15, 2023, and a denial was issued by Deschutes County on September 19, 2023. The evaluation included a total of 3 test pits; one near the northeastern corner of the parcel, one about 35 feet to the south, and one more about 40 feet to the west. The test pits were described with indications of a seasonally high permanent water table at between 10 and 14 inches below the existing ground surface (bgs). A copy of the site evaluation documentation from Deschutes County is attached in Appendix C. The primary reasons cited for the denial was the predicted depth to the highest level attained by a fluctuating permanent water table. A copy of the site evaluation documentation from Deschutes County is attached in Appendix C.

Southern Deschutes County has a shallow water table that is typically unconfined in porous pumice soils and is susceptible to contamination from soluble and mobile constituents. The most common constituent of concern is nitrate-nitrogen from septic systems. The onsite rules require a minimum of 24 inches of separation from the upper limit of the water table to the bottom of a bottomless sand filter as well as being 24 inches below the ground surface.

Soils

The web soil survey shows the location of the Site and a copy of the output from the web soil survey is provided in Appendix D. The entire parcel is shown within a delineation of Map Unit 144A, Sunriver sandy loam 0 to 3 percent slopes. Sunriver soils are described as very deep, somewhat poorly drained soils that formed on pumice mantled stream terraces. The typical profile generally consists of the following:

[1] Onsite wastewater treatment systems, 340 OAR § 340.71. (2020).

- Up to 2 inches of organic material underlain by,
- 5 inches of very dark gray ashy sandy loam underlain by,
- 15 inches of dark gray ashy loamy coarse sand underlain by,
- 9 inches of light brownish gray ashy coarse sand underlain by,
- 31 inches of very dark gray sandy loam.

The Sunriver series is described as having a water table that rises to about 2 to 4 feet below the surface from April to June.

The characteristics documented by Deschutes County are reasonably similar to the Sunriver series.

Preliminary Assessment

The Site was reviewed by Brian Rabe, CPSS, WWS, on October 24, 2023. The purpose was to review the Site conditions and assess the potential to design a modified bottomless sand filter that incorporates additional fill to create adequate separation from the underlying water table following advanced secondary treatment meeting the criteria for Treatment Standard 2 (TS2). The proposed bottomless sand filter area is located on this highest ground, represented by Test Pits 2 and 3 in the 2023 site evaluation (northeastern part of the lot - see Figure 2 and Appendix C).

Other Considerations

This parcel and developed parcels in the surrounding area are served by individual private wells. A search of the database of the Oregon Department of Water Resources was conducted for the section that the subject property lies within (Section 12 of Township 20 South, Range 10 East of the Willamette Meridian). There are about 496 records on file for this section. A total of 14 water well records (well logs) were identified in Section 12 that could be tied to specific parcels within about one-eighth of a mile of the subject property (Appendix E).

The closest existing well is on Tax Lot 16800, about 115 feet southwest of the proposed bottomless sand filter area. This well was completed on September 13, 2021, to a depth of 80 feet. Water was described as being first found at a depth of 68 feet in a layer of “sand and fine gravel” and had a static water level of 18 feet bgs on the date of completion with a reported yield of 20 gpm with 6 feet of drawdown after 2 hours.

The next closest existing well is on Tax Lot 17100, about 140 feet northwest of the proposed bottomless sand filter area. This well was completed on October 6, 2022, to a depth of 69 feet. Water was described as being first found at a depth of 66 feet in a layer of “medium cinders” and had a static water level of 27 feet bgs on the date of completion with a reported yield of 20 gpm with 6 feet of drawdown after 1 hour.

There was another well on Tax Lot 16800 that was about 140 feet west of the proposed bottomless sand filter area. This well was completed on November 24, 2004 to a depth of 40 feet. Water was described as being first found at a depth of 20 feet in a layer of “blk sand” and had a static water level of 20 feet bgs on the date of completion with a reported yield of 20 gpm with 2 feet of drawdown after

1 hour. This well may have been deepened at some time since the abandonment record from August 19, 2020, indicates that it was 85 feet deep.

The well for Tax Lot 15300 is about 240 feet north of the proposed bottomless sand filter area. This well was completed on November 22, 2021, to a depth of 69 feet. Water was described as being first found at a depth of 67 feet in a layer of "medium fine gravel" and had a static water level of 18 feet bgs on the date of completion with a reported yield of 20 gpm with 7 feet of drawdown after 1 hour.

The well for Tax Lot 15400 is about 240 feet north-northwest of the proposed bottomless sand filter area. This well was completed on November 19, 2022, to a depth of 68 feet. Water was described as being first found at a depth of 12 feet in a layer of "brown sand course." This layer was sealed off and the next water was described as being found at a depth of 62 feet in a layer of "cinders black" and had a static water level of 18 feet bgs on the date of completion with a reported yield of 14 gpm with 14 feet of drawdown after 2 hours.

The well for Tax Lot 13000 is about 350 feet north-northeast of the proposed bottomless sand filter area. This well was completed on October 26, 1998, to a depth of 85 feet. Water was described as being first found at a depth of 60 feet in a layer of "sand gravel" underlain by a layer of "worm hole lava-basalt" and had a static water level of 12 feet bgs on the date of completion with a reported yield of 25 gpm with 3 feet of drawdown after 1 hour.

The well for Tax Lot 19800 is about 380 feet south-southwest of the proposed bottomless sand filter area. This well was completed on October 2, 2007, to a depth of 73 feet. Water was described as being first found at a depth of 21 feet in a layer of "green diatomite." The well was cased and perforated in a layer of "cinders & black sand" between 66 feet and 71 feet bgs. The well had a static water level of 14 feet bgs on the date of completion with a reported yield of 10 gpm with 10 feet of drawdown after 1 hour.

The well for Tax Lot 12700 (mislabeled as 2700 on the log) is about 400 feet northwest of the proposed bottomless sand filter area. This well was completed on June 22, 2018, to a depth of 77 feet. Water was described as being first found at a depth of 68 feet in a layer of "gray sand coarse" and had a static water level of 16 feet bgs on the date of completion with a reported yield of 16 gpm with 4 feet of drawdown after 2 hours.

The well for Tax Lot 13200 is at least 500 feet west of the proposed bottomless sand filter area. This well was completed on June 22, 2002 to a depth of 89 feet. Water was described as being first found at a depth of 10 feet in a layer of "gravel + sand." This layer was sealed off and the next water was described as being found at a depth of 85 feet in a layer of "… sand + gravel" and had a static water level of 21 feet bgs on the date of completion with a reported yield of 15 gpm with 7 feet of drawdown after 1 hour.

The well for Tax Lot 21400 is about 570 feet south-southwest of the proposed bottomless sand filter area. This well was completed on May 17, 2022, to a depth of 78 feet. Water was described as being first found at a depth of 73 feet in a layer of "medium black sand and fine gravel" and had a static water level of 18 feet bgs on the date of completion with a reported yield of 20 gpm with 10 feet of drawdown after 1.5 hours.

The well for Tax Lot 12400 is about 580 feet northwest of the proposed bottomless sand filter area. This well was completed on July 19, 1996, to a depth of 38 feet. Water was described as being first found at a depth of 30 feet in a layer of "sand + gravel" and had a static water level of 12 feet bgs on the date of completion with a reported yield of 20 gpm with 10 feet of drawdown after 1 hour.

The well for Tax Lot 11600, about 630 feet northwest of the proposed bottomless sand filter area, was completed on March 13, 1992 to a depth of 84 feet. Water was described as being first found at a depth of 8 feet in a layer of "black sand." The well was cased and perforated in a layer of "black sand & med gravel" between 64 and 84 feet bgs. The well had a static water level of 20 feet bgs on the date of completion with a reported yield of 100 gpm (air) after 1 hour.

The well for Tax Lot 11400 is about 660 feet north-northwest of the proposed bottomless sand filter area. This well was completed on June 18, 2002, to a depth of 75 feet. Water was described as being first found at a depth of 8 feet in a layer of "Brn sand & gravel." This layer was sealed off and the next water was described as being found at a depth of 67 feet in a layer of "red & black cinders" and had a static water level of 15 feet bgs on the date of completion with a reported yield of 15 gpm with 25 feet of drawdown after 1 hour.

The regional groundwater gradient, as indicated in a study published by the U.S. Geological Survey, is to the east-northeast toward the Deschutes River.[2] The subject property is located within Management Area 1, which recommends a 79% to 100% reduction from the base scenario loading (standard systems) for existing and future homes. The results of the Nitrate Loading Management Model within the study (Figures 25 and 26) suggest that this area represents a moderate to high risk of adverse impacts to groundwater quality. According to the interactive map for Oregon Domestic Well Testing, this part of Deschutes County has an average nitrate-nitrogen concentration in domestic wells of 0.51 milligrams per liter (mg/L) with 7.58% exceeding 3 mg/L and none exceeding 10 mg/L (based on 211 test results, viewed on November 6, 2023).[3]

Formal Variance Request

Variance is requested from the following rules:

1. OAR 340-071-0135(1) – which addresses Department of Environmental Quality (DEQ) approval of new or innovative technologies, materials, or designs for onsite systems.[1]
2. OAR 340-071-0150(4)(a)(B) – which requires all criteria for approval shall be met.[1]
3. OAR 340-071-0290(4)(d) – which states that the water table is at least 24 inches bgs throughout the year.[1]

This request seeks to overcome the limitations of this Site by treating the sewage using a recirculating textile filter system (AdvanTex® AX20N-Mode 3B) prior to discharge into an elevated bottomless sand filter. AdvanTex units do an effective job of reducing five-day biochemical oxygen demand and

[2] Morgan, D. S., & Hinkle, R. S. (2007). *Evaluation of approaches for managing nitrate loading from on-site wastewater systems near La Pine, Oregon*, (Scientific Investigations Report 2007-5237). Reston, VA: U.S. Geologic Survey.

[3] ARC GIS Online. (n.d.). Oregon domestic well testing, [Data file]. Retrieved November 6, 2023, from ARC GIS Online: https://www.arcgis.com/apps/MapSeries/index.html?appid=c0d7daea497049c1a686d07dab7106e5

total suspended solids to below 10 mg/L. Nitrogen is often fully converted from ammonia-nitrogen to nitrate-nitrogen (greater than 90%). Operating in Mode 3, the AdvanTex unit reduces total nitrogen sufficiently to meet TS2 (less than 30 mg/L). The DEQ approval of the AX20N in Mode 3B includes an ultraviolet light to satisfy the pathogen reduction requirements of TS2. However, this request includes the use of a modified bottomless sand filter to achieve the pathogen reduction requirements of TS2 instead of an ultraviolet light and, therefore, this configuration does not have (or need) an ultraviolet disinfection unit. The "B" designation indicates the AdvanTex unit is configured with the second pump for the final discharge to the modified bottomless sand filter. A post-anoxic treatment process (RidNOx^{TM}) is proposed to reduce the total nitrogen concentration in the final effluent pumped to the modified bottomless sand filter to less than 2 mg/L.

The AX20 systems in the La Pine project produced a effluent with an average total nitrogen (TN) concentration of 17 mg/L. A post-anoxic process similar to the RidNOx unit that is proposed, referred to at the time as Nitrex, was tested following treatment through a lined intermittent sand filter. The Nitrex unit consisted of a 2-compartment concrete tank filled with what was described as a proprietary carbon media (wood chips).

The sand filters in the La Pine project produced an average TN of about 50 mg/L and the final effluent from the Nitrex units had an average TN of 2.4 mg/L, representing a 96% reduction from the 60 mg/L average TN concentration in the septic tank effluent. So long as there is sufficient soluble carbon being released from the wood chips, and the hydraulic loading rate is low enough to allow the dissolved oxygen in the effluent to approach zero, the NO_3-N concentration will typically be below the method detection limit. What nitrogen remains in the effluent will often be organic, as measured by the Total Kjeldahl Nitrogen (TKN) method. The organic nitrogen may be subsequently oxidized in the bottomless sand filter, but is just as likely to be retained or recycled in the biomass that develops in the sand filter media. Therefore, the concentration of nitrogen leaving the bottomless sand filter after treatment through both the AX20 and the RidNOx unit is expected to be even lower than the results from the La Pine project.

The RidNOx unit described in this proposal is configured similar to larger units used on several systems permitted under Water Pollution Control Facilities (WPCF) permits and monitored on a regular basis. Some of these units have been in tanks and some have been in lined basins. Typical results from the post-anoxic process (prior to discharge, typically to a soil absorption system) include NO3-N concentrations near or below the method detection limit and TKN concentrations between 1 and 3 mg/L.

A recent test result (August 2022) from a similarly configured system (predominantly residential sources using AdvanTex treatment with Mode 3-style pre-anoxic denitrification, followed by post-anoxic treatment in tanks filled with wood chips) produced a TKN concentration of 0.68 mg/L and a NO_3-N concentration of 0.13 mg/L for a TN of 0.81 mg/L.

A recent test result (July 2022) from a high-nitrogen source (150 mg/L TKN treated by AdvenTex with alkalinity augmentation to support full nitrification, configured in a Mode 3-style pre-anoxic process, followed by post-anoxic treatment in lined wood-chip beds) produced a TKN concentration of 0.99 mg/L and a NO_3-N concentration of 0.05 mg/L for a TN of 1.04 mg/L. Assuming a maximum 65 to 75% reduction from the starting concentration, the NO_3-N concentration entering the post-anoxic

process is expected range between 40 and 45 mg/L, similar to the sand filter effluent from the La Pine Project and higher than what is expected from the AX20 in a residential scenario.

Based on the performance of the commercial systems described above, and a typical residential TN concentration of 60 mg/L, an average TN concentration in the AX20 effluent of 17 mg/L, the TN concentration leaving the RidNOx unit and going to the modified bottomless sand filter the typical reduction from the base scenario presented in the groundwater study cited previously is expected to be approximately 98 percent.

The initial and replacement bottomless sand filter areas are proposed on the highest ground near the northeast corner of the parcel. This represents an area with the appropriate spatial footprint and meets all required horizontal setback requirements.

Test Pit 1 (2023) was described as:

- Very dark gray (10YR 3/1) and dark yellowish brown (10YR 4/4) loamy coarse sand from 0 to 14 inches with weak medium to coarse subangular blocky structure; common very fine, few fine and medium roots; with stripping and staining noted beginning at a depth of 10 inches; underlain by
- Dark grayish brown (10YR 4/2) fine sandy loam from 14 to 49 inches with moderate coarse subangular blocky structure; few roots; with redoximorphic features throughout.

The detailed description (above) was made at Test Pit 1, which was the lowest of the 3 test pits and had the shallowest indicators of saturation. Test Pits 2 and 3 were noted as “similar to Pit #1” with the only distinctions being the horizon depths and depth to “stripping/staining” as indicators of saturation. There are a number important details that were not noted.

Brian Rabe, CPSS, WWS, with EHC looked at these test pits prior to the formal site evaluation and noted the first faint hints of redoximorphic features beginning at a depth of 16 inches, 19 inches, and 17 inches for Test Pits 1, 2, and 3, respectively. During the detailed examination of Test Pits 2 and 3 following the formal site evaluation, a conservative interpretation of very faint potential redoximorphic features were noted at a depth of 17 inches and 15 inches, respectively.

It is important to note that the color of the surface horizon of Test Pits 2 and 3 were browner (either very dark grayish brown – 10YR 3/2 or dark brown – 10 YR 3/3). In addition, the number and size of roots were not specifically described for Test Pits 2 and 3, which are common and include fine and medium roots to a depth of at least 25 and 26 inches, respectively (with fewer below). The density, size, and vigor of roots are often used to corroborate other indicators of seasonal saturation.

The described profile for Test Pit 2 was a little over 3 inches higher in elevation than the described profile for Test Pit 3. This, along with the other observations described above, supports a finding that the actual depth to the water table is more likely around 3 inches deeper from the surface at Test Pit 2 than at Test Pit 3. Even if the depth of the redoximorphic features is assumed to be 14 inches in Test Pit 3, the elevation difference supports a finding of 17 inches at Test Pit 2 that I observed upon closer examination.

Relative elevation measurements were made at all 4 corners of both the proposed initial and replacement bottomless sand filters as well as at the existing ground surface adjacent to Test Pits 2 and 3 (2023). The highest level of the water table is expected to be just over 14 inches below the existing ground surface at the lowest point within the area proposed for the initial and replacement sand filters based on the depth to the redoximorphic features described in Test Pit 3 (2023).

The proposed system seeks to overcome this limitation by elevating the modified bottomless sand filter in a manner that provides an additional 6 inches of separation (Figure 3). The sod and underlying sandy soil to a depth of 6 inches within the footprint of the sand filter will be excavated and replaced with sand filter media. An additional 16 inches of sand filter media (total of 22 inches) will be used to exceed the 24-inch separation from shallowest water table depth standard by providing a total separation of 30 inches. In order to optimize the use of the highest available ground and maximize separation from the underlying water table, the sand filters are proposed in a reinforced concrete container with inside dimensions of 16 feet by 16 feet with the south wall of the initial sand filter intended to serve as the north wall of the replacement sand filter at such time as it needs to be installed. The rest of the sand filter will be "conventional" from there up, consisting of 6 inches of underdrain media, 24 inches of sand filter media, 6 inches of drain media (with the distribution laterals), filter fabric, and 6 to 9 inches of backfill. The additional 6 to 7 inches of separation is intended to account for any potential mounding that may occur within the concrete container during an extreme weather event in conjunction with the highest predicted rise of the water table.

Deschutes County has noted that the results of the Nitrate Management Loading Model indicated that there was little to no surplus capacity within Management Area 1 to accommodate additional lots that were denied or otherwise not expected to be approved. More than a dozen parcels have been approved through the formal variance process in this area and concern has been expressed about the cumulative effects of the additional nutrient load on groundwater and surface water quality.

Brian Rabe will need to be involved during the construction of this system to install the lysimeter in the sand filter and oversee the installation of the RidNOx unit. Additional information regarding the installation of the RidNOx unit and the lysimeter, as well as sampling instructions, are described in Appendix F and shown in Figures 4, 5, and 6. The owner agrees to facilitate sampling of the RidNOx effluent in conjunction with routine service visits (twice per year for the first 2 years and annually thereafter) to monitor the performance. Samples will be collected from the pump basin between the RidNOx unit and the sand filter. When the media begins to show signs of depletion (as indicated by average nitrogen concentrations climbing to above 7 mg/L nitrate-nitrogen or 10 mg/L total nitrogen), the owner will schedule media replacement for the following summer when the water table is at least 30 inches below the top of the tank (to prevent displacement of the empty tank by buoyant forces). If this request is approved, a condition of approval will require access be allowed to the treatment system and sand filter by current and future property owners for periodic sampling.

Deschutes County's online property records (Dial) indicate that this parcel is only 0.49 acres. The actual area, based on the dimensions of the lot (100 feet by 220 feet), is 0.505 acres and therefore meets the minimum lot size for a 450 gallon per day design flow.

In addition to the high level of treatment achieved by the AdvanTex treatment system and post-anoxic denitrification process, further treatment of the effluent will occur with predominantly unsaturated flow within the imported sand and native sandy soil beneath the bottomless sand filter (minimum of 24 inches above the highest predicted level of the underlying fluctuating water table). Small doses, coupled with substantial resting periods achieved with pressure distribution (see recommended sand filter plan detail in Figure 4), will ensure unsaturated, thin-film flow through the soils above the water table. This will further reduce pathogens and other residual contaminants. The subsoil found beneath the sandy surface soils include evidence of both oxidation and reduction of iron. Conditions that support the reduction of iron will reduce nitrate-nitrogen to nitrogen gas since nitrate ions are used as electron acceptors preferentially over iron compounds. This will facilitate additional reduction of nitrate-nitrogen as the highly treated effluent is assimilated into the environment.

As described, the proposed combination of treatment components is expected to produce a final effluent with very high quality and a low potential to impact water quality, human health, or the environment. Given the unique circumstances at this Site, strict compliance with the rules is considered to be unreasonable.

It is acknowledged that detailed plans and specifications will need to be submitted and approved before any construction can take place. It is also understood that if this request is approved, there will be language included that allows the county to allow or require a prescriptive system that is demonstrated to perform equal to or better than what is described in this proposal.

Directions to the Site as well as a map showing the ownership of adjacent parcels along with a list of names and addresses are attached in Appendix G. If you have any questions or comments, please do not hesitate to contact me directly at (503) 881-1604.

Sincerely,
ELKHORN CONSULTING LLC

Brian T. Rabe, CPSS, WWS
Principal Soil Scientist

BTR/ddr
Enc: Figures 1-6, Appendices A-G
c: Brian Holland – Pineriver Homes LLC
Todd Cleveland, REHS – Deschutes County

CPSS
Certified Professional
Soil Scientist
BRIAN T. RABE
15239 Exp. 31DEC23
Registered Wastewater Specialist
No. EH-W-448430 Exp. 30SEP24

FIGURES

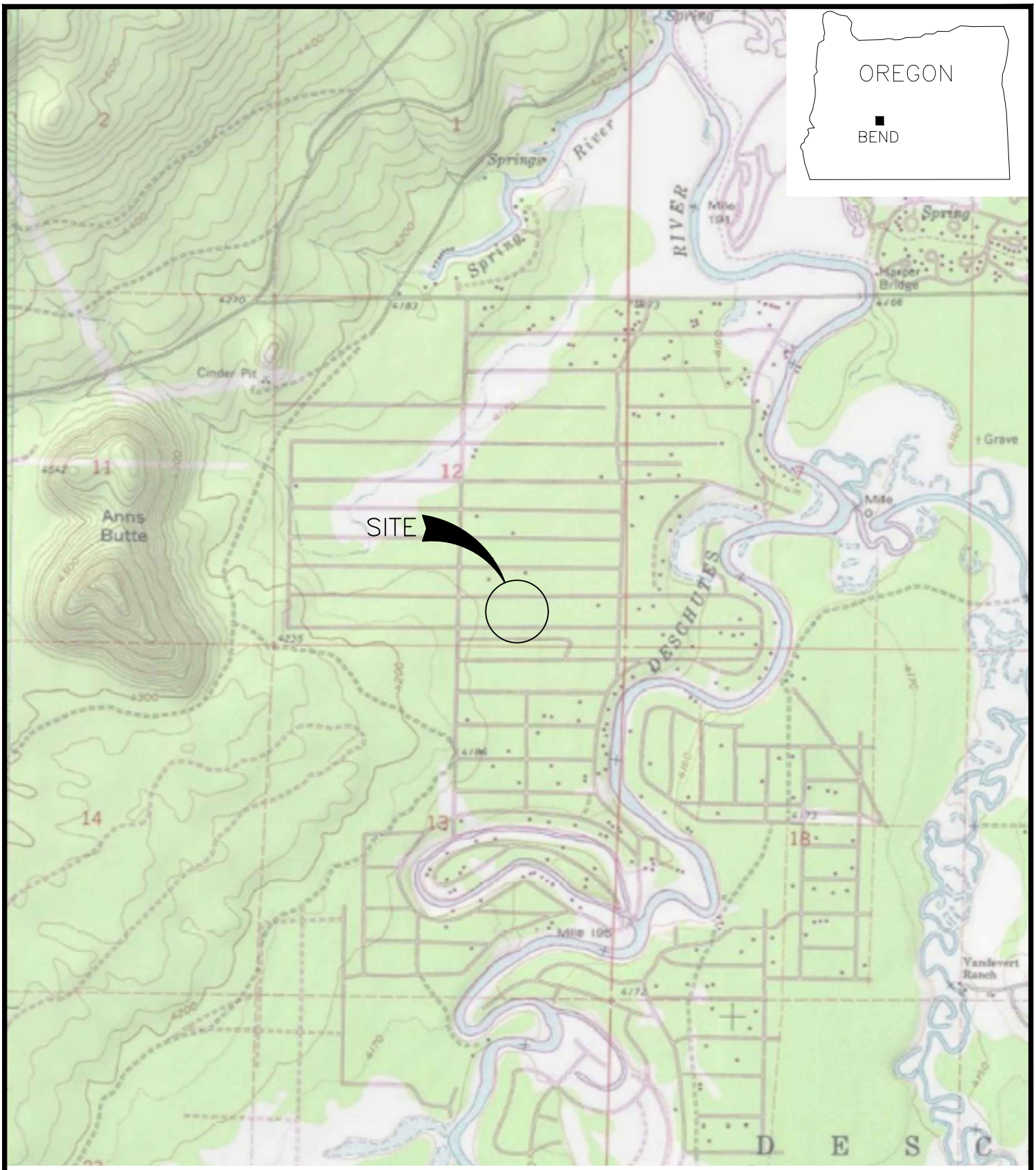

Figure 1. Vicinity Map

0 2,000'

1" = 2,000'

(LOCATIONS AND SCALE ARE APPROXIMATE)

(SOURCE: ©2013 National Geographic Society, i-cubed)

PROJECT NUMBER: 2023030	Formal Variance T20S, R10E, Section 12D, Tax Lot 16900
DATE: 11/7/2023	
DWG NO: 2023030 F1-6.DWG	Pineriver Homes LLC 17089 Indio Road Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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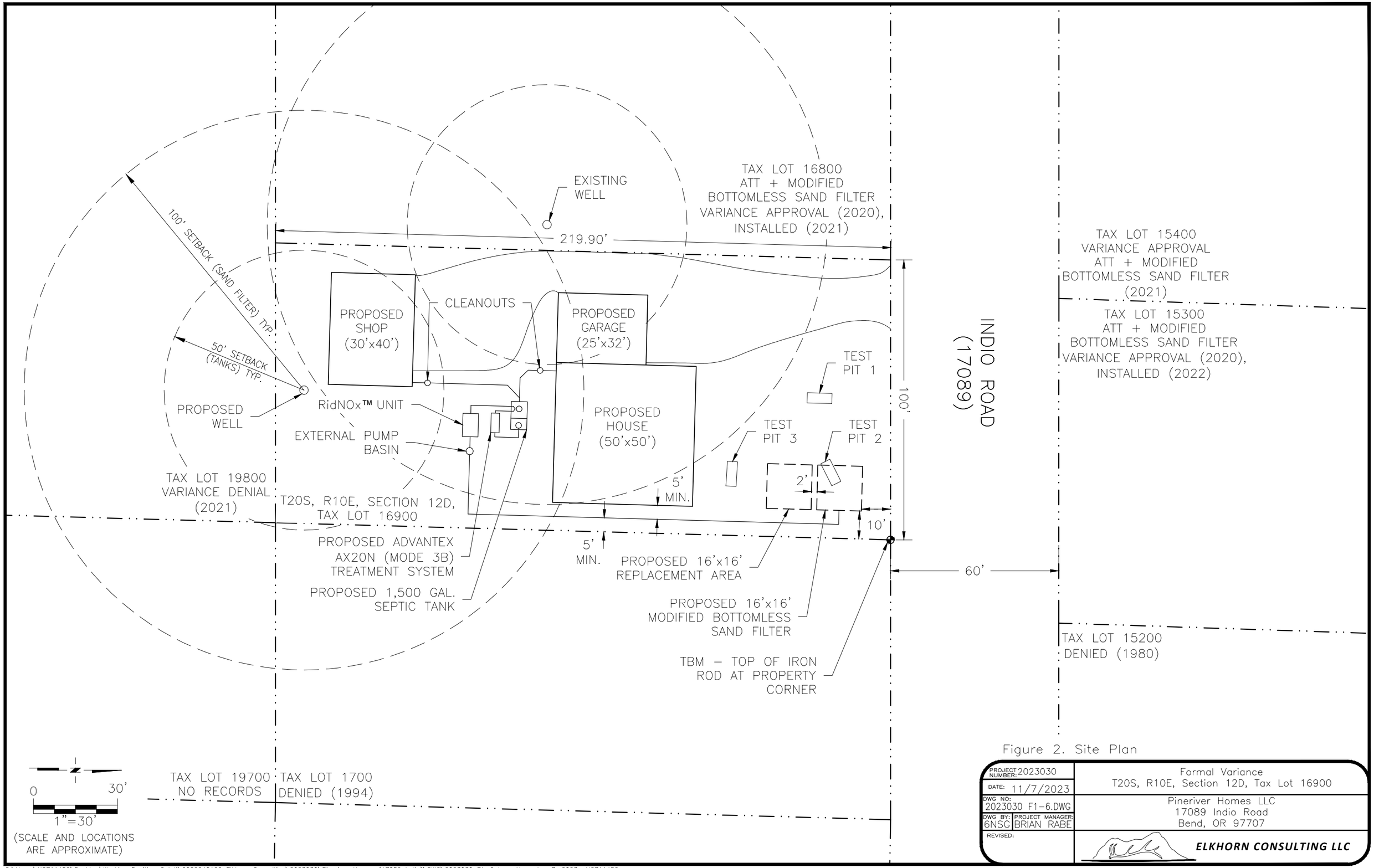

Figure 2. Site Plan

PROJECT NUMBER: 2023030	Formal Variance T20S, R10E, Section 12D, Tax Lot 16900
DATE: 11/7/2023	
DWG NO: 2023030 F1-6.DWG	Pineriver Homes LLC 17089 Indio Road Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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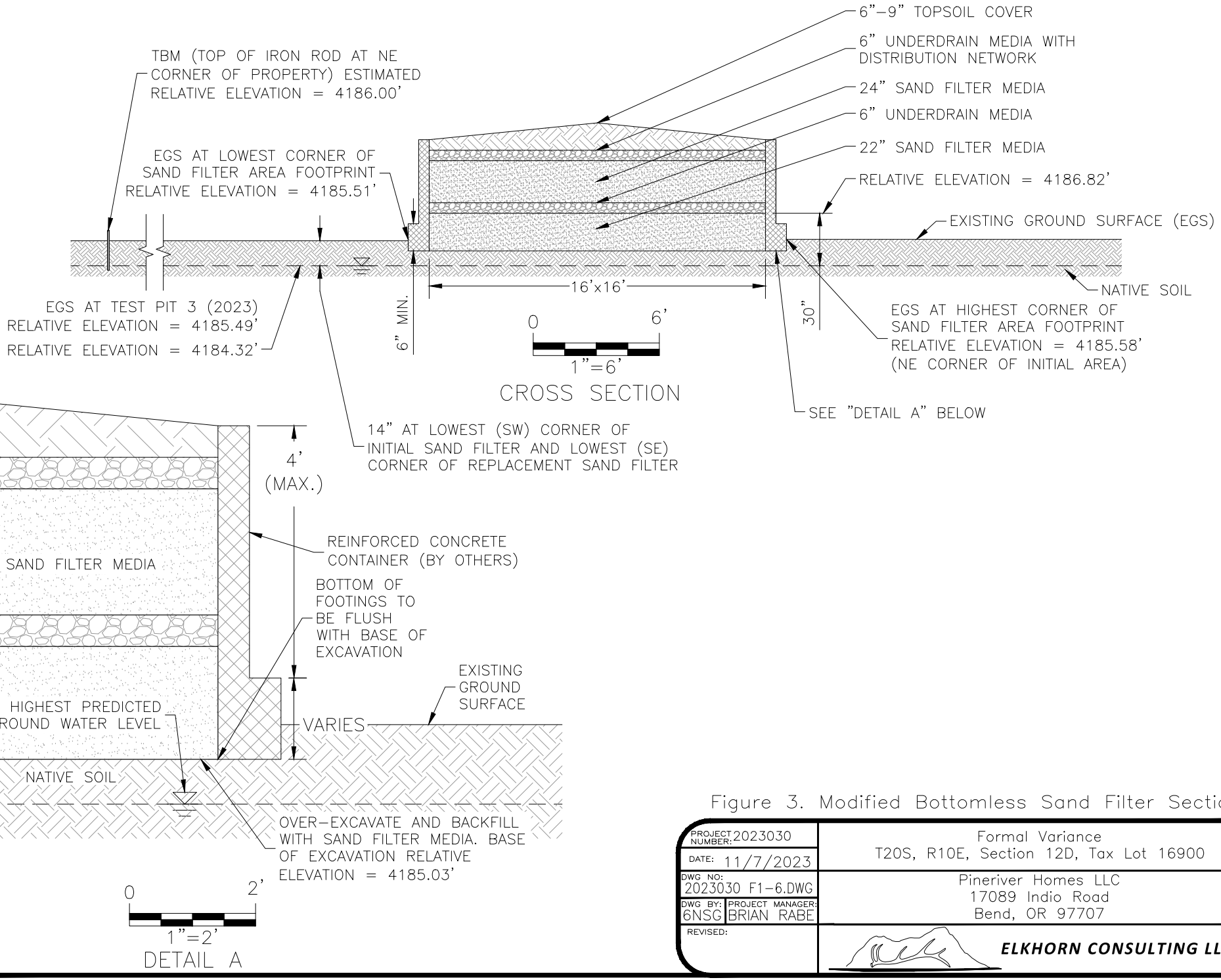


Figure 3. Modified Bottomless Sand Filter Section

PROJECT NUMBER: 2023030	Formal Variance
DATE: 11/7/2023	T20S, R10E, Section 12D, Tax Lot 16900
DWG NO: 2023030 F1–6.DWG	Pineriver Homes LLC
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	17089 Indio Road
REVISED:	Bend, OR 97707
	ELKHORN CONSULTING LLC

TOTAL OF 64 ORIFICES
0.52 GALLONS PER MINUTE
AT 7.1 FT RESIDUAL HEAD
(33.1 GPM AT 45.5 FT TDH)
RECOMMENDED PUMP PF3005

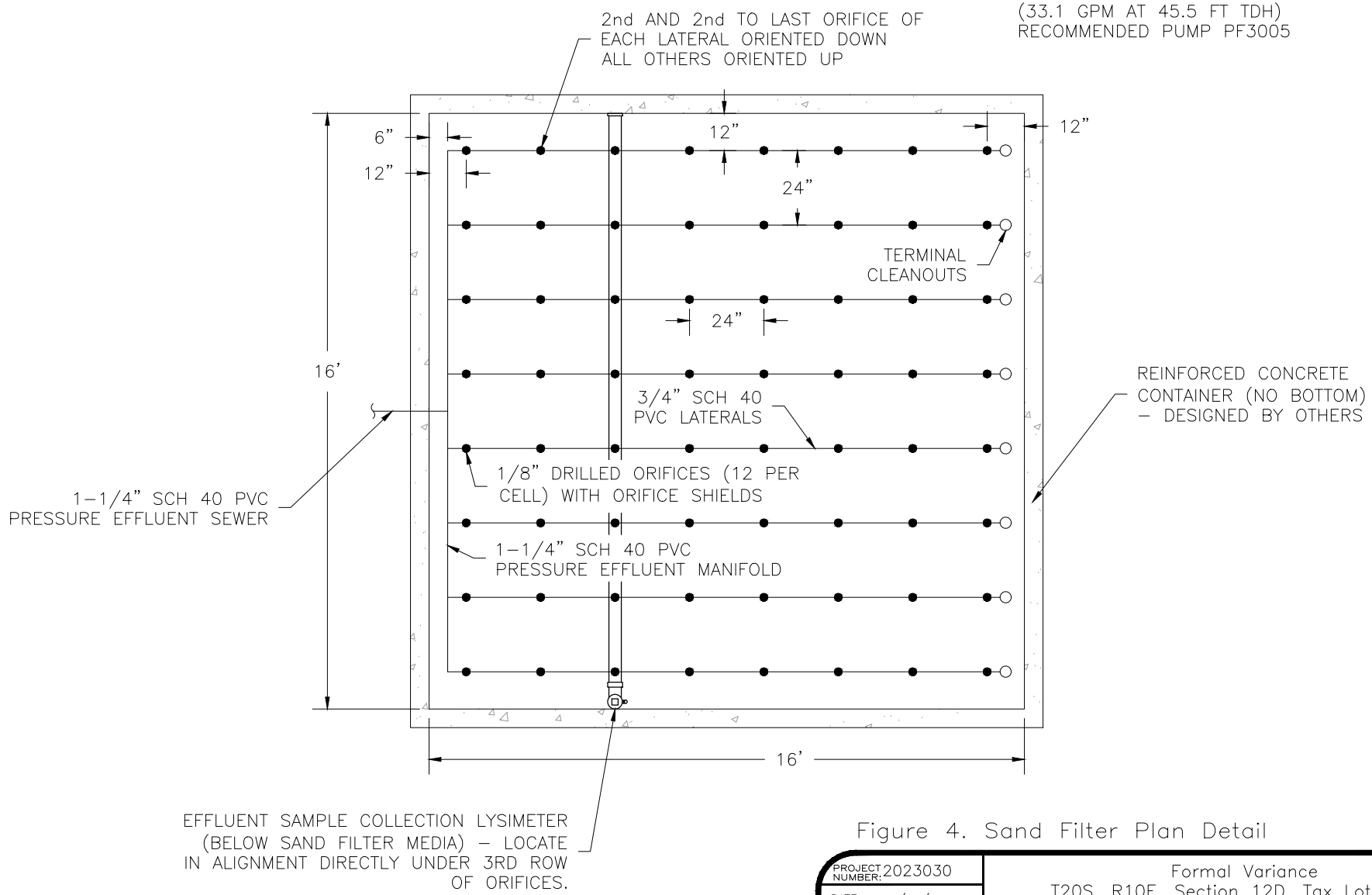
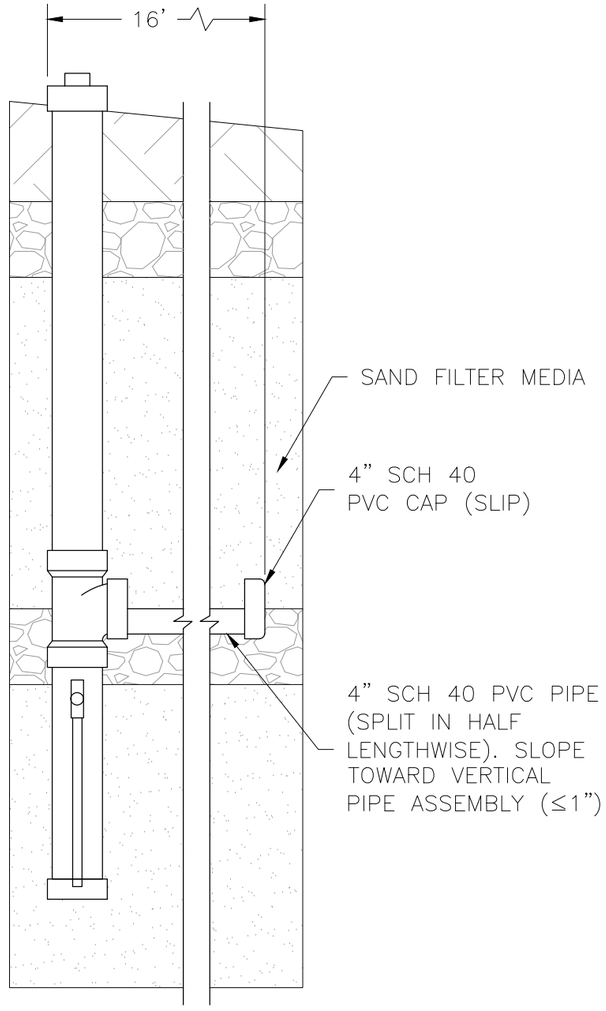


Figure 4. Sand Filter Plan Detail

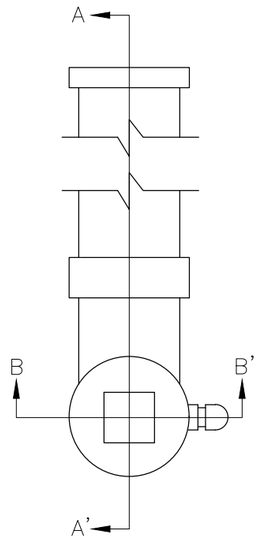
PROJECT NUMBER: 2023030	Formal Variance T20S, R10E, Section 12D, Tax Lot 16900
DATE: 11/7/2023	
DWG NO: 2023030 F1–6.DWG	Pineriver Homes LLC 17089 Indio Road Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC



VIEW A–A'

0 1'

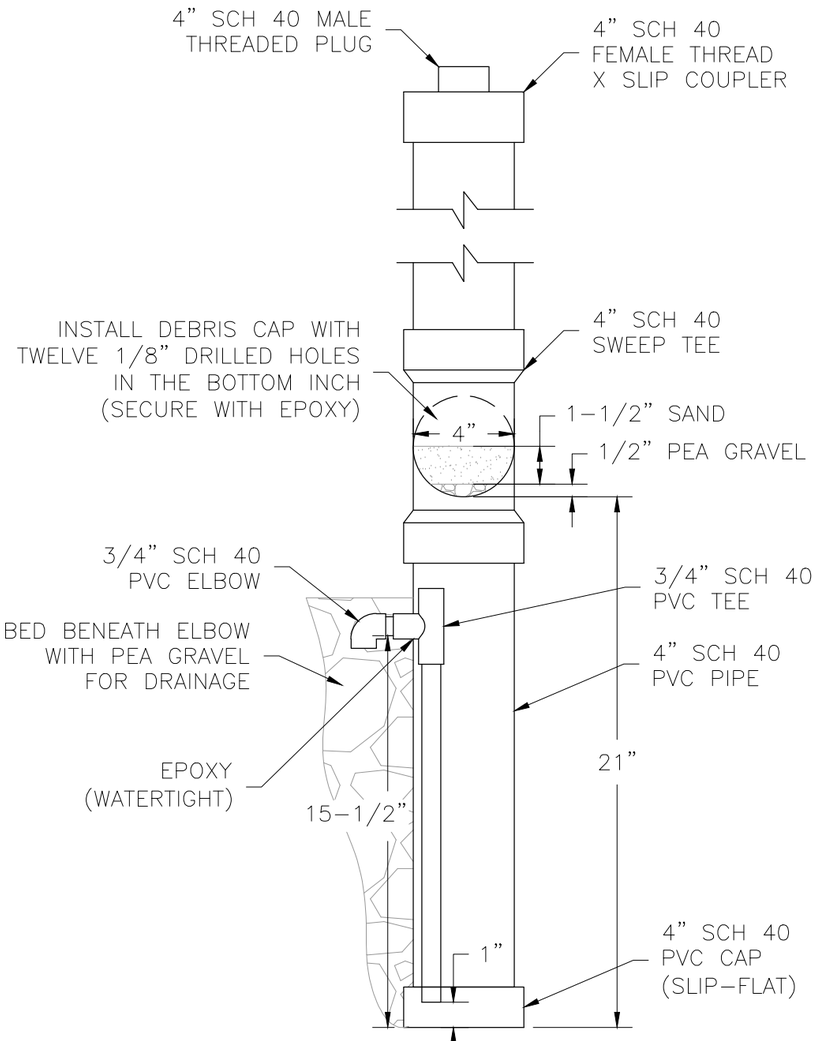
1"=1'



PLAN VIEW

0 0.5'

1"=0.5'



VIEW B–B'

0 0.5'

1"=0.5'

Figure 5. Lysimeter Details

PROJECT NUMBER: 2023030	Formal Variance T20S, R10E, Section 12D, Tax Lot 16900
DATE: 11/7/2023	
DWG NO: 2023030 F1–6.DWG	Pineriver Homes LLC 17089 Indio Road Bend, OR 97707
DWG BY: 6NSG PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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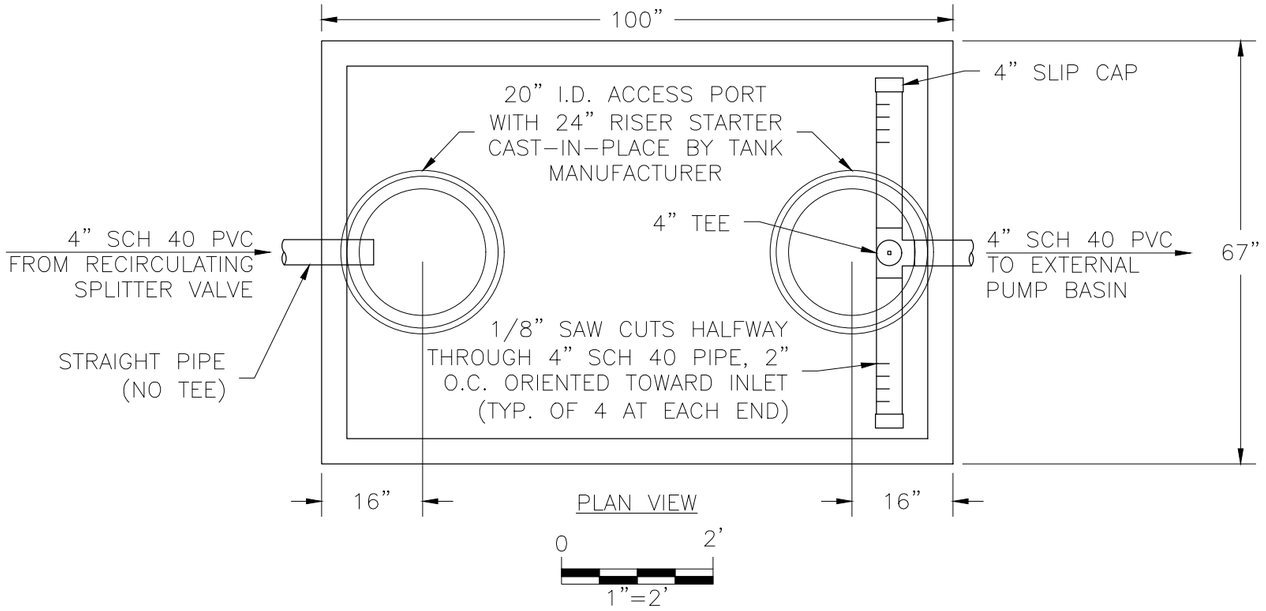

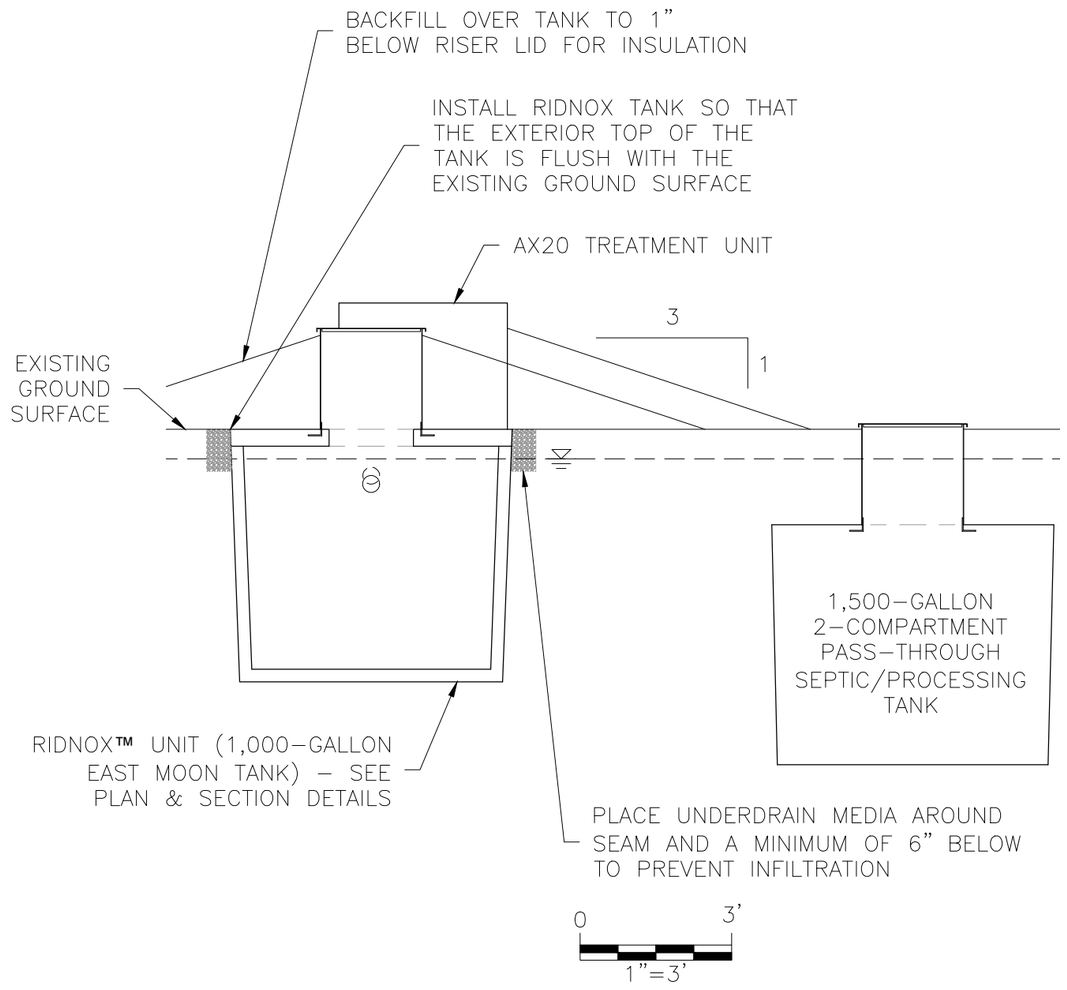

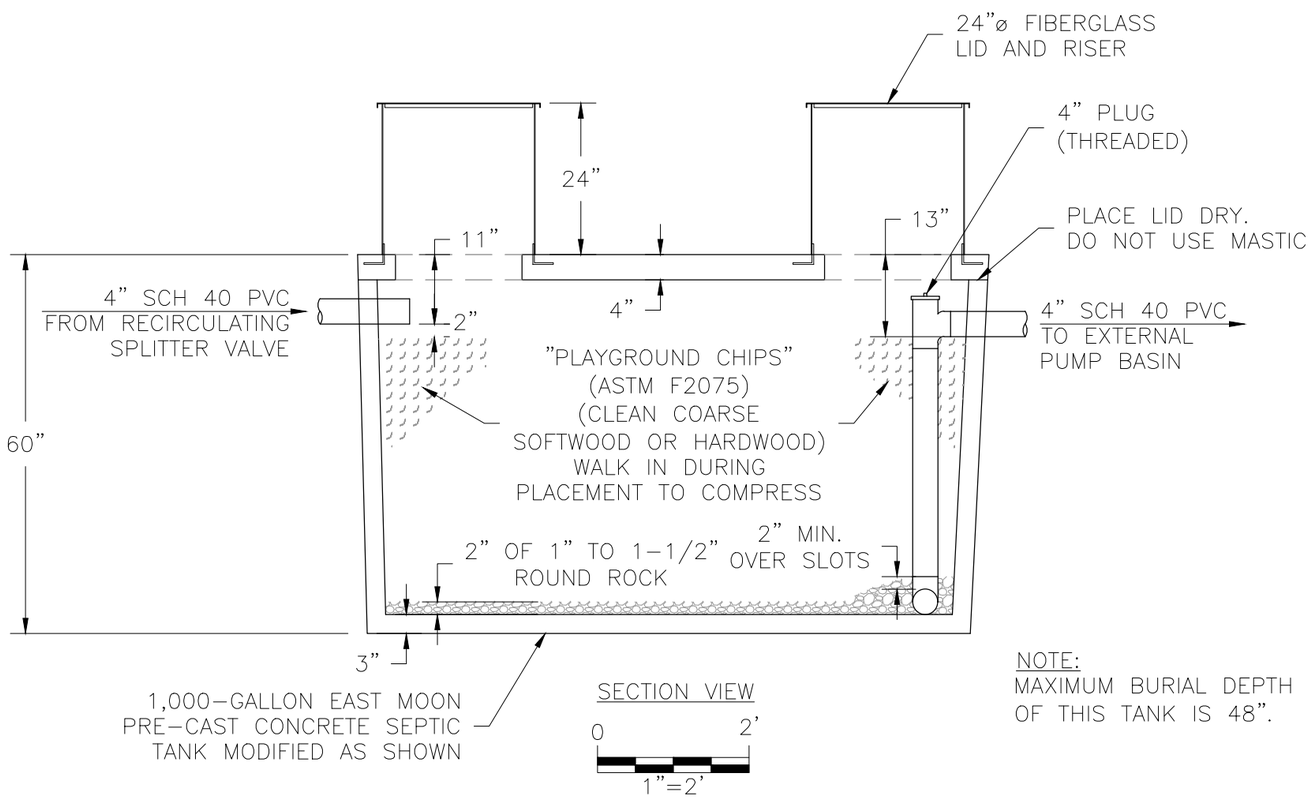

NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Figure 6. RidNOx™ Details

PROJECT NUMBER: 2023030	Formal Variance
DATE: 11/7/2023	T20S, R10E, Section 12D, Tax Lot 16900
DWG NO: 2023030 F1-6.DWG	Pineriver Homes LLC
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	17089 Indio Road
REVISED:	Bend, OR 97707
	ELKHORN CONSULTING LLC

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APPENDICES

Appendix A.

Tax Lot Map

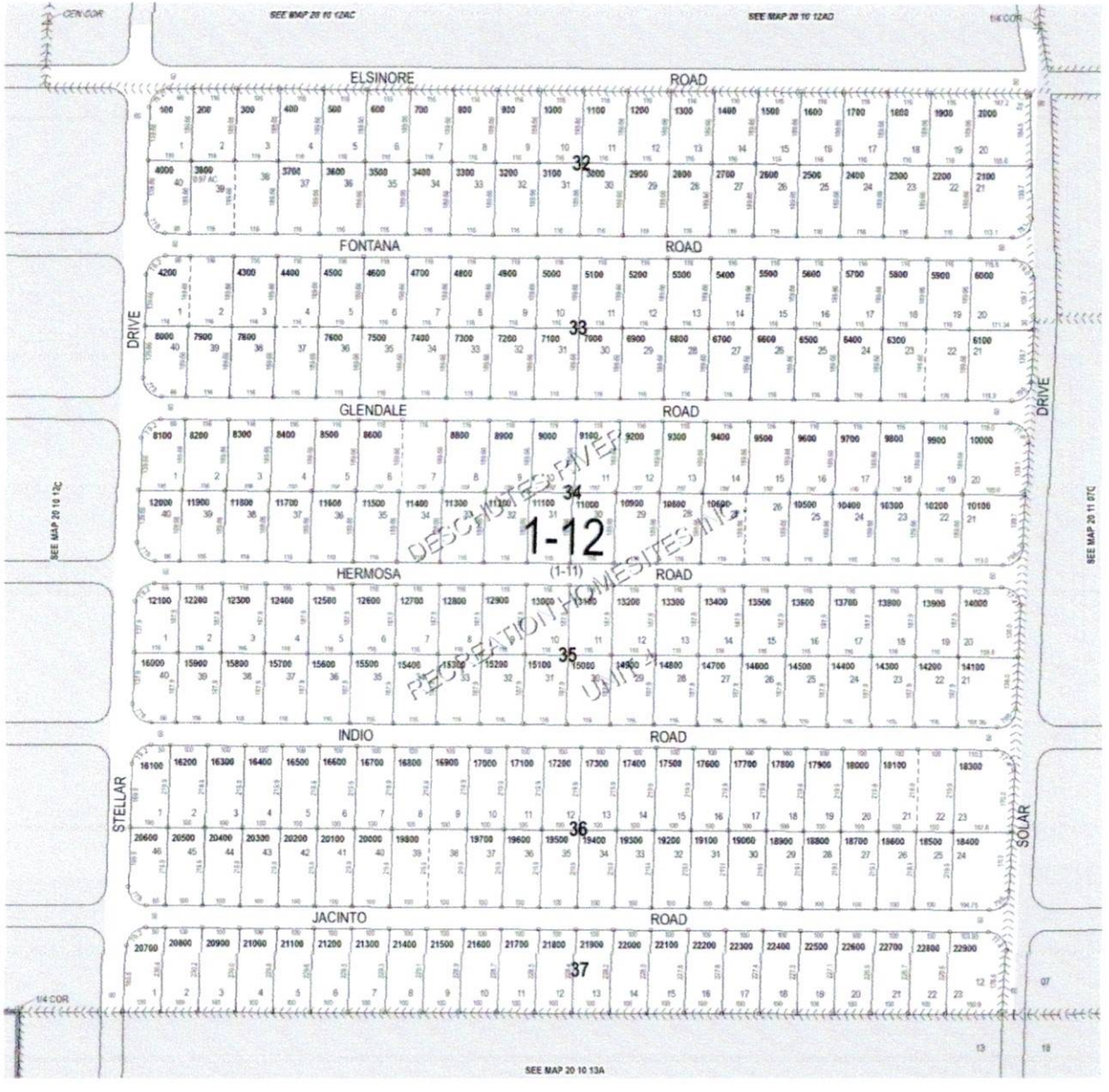
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

3/13/2023

S.E.1/4 SEC.12 T.20S. R.10E. W.M.
DESCHUTES COUNTY
1" = 200'

20 10 12D0

Cancelled Nos.
4100
6200
7700
8700
10700
18200
19900



20 10 12D0

Appendix B.

Deed

EA DEC#591120-11

Kevin Holland
PO Box 3033
Sunriver OR 97707
Grantor's Name and Address

PineRiver Homes, LLC
PO Box 3033
Sunriver, OR 97707
Grantee's Name and Address

After recording, return to (Name, Address, Zip):
PineRiver Homes, LLC
PO Box 3033
Sunriver, OR 97707

Until requested otherwise, send all tax statements to (Name, Address, Zip):
PineRiver Homes, LLC
PO Box 3033
Sunriver OR 97707

SPACE RESERVED FOR RECORDER'S USE

STATE OF OREGON, County of _____ } ss.

Deschutes County Official Records **2020-61074**
D-D **11/13/2020 10:41 AM**
Stn=1 BN **$93.00**
$5.00 $11.00 $10.00 $61.00 $6.00

I, Nancy Blankenship, County Clerk for Deschutes County, Oregon, certify that the instrument identified herein was recorded in the Clerk records.
Nancy Blankenship - County Clerk

NAME TITLE

By _____, Deputy.

BARGAIN AND SALE DEED

KNOW ALL BY THESE PRESENTS that Kevin Holland hereinafter called grantor, for the consideration hereinafter stated, does hereby grant, bargain, sell and convey unto PineRiver Homes, LLC an Oregon Limited Liability Company hereinafter called grantee, and unto grantee's heirs, successors and assigns, all of that certain real property, with the tenements, hereditaments and appurtenances thereunto belonging or in any way appertaining, situated in Deschutes County, State of Oregon, described as follows, to-wit:

Lot 9, Block 36, Deschutes River Recreation Homesites Inc, Unit 4, Deschutes County, Oregon

After recording return to:
First American Title
395 SW Bluff Drive, Suite 100
Bend, OR 97702

Recorded by First American Title as an accommodation only. No liability is accepted for the condition of title or validity, sufficiency, or effect of this document.

(IF SPACE INSUFFICIENT, CONTINUE DESCRIPTION ON REVERSE)

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

The true and actual consideration paid for this transfer, stated in terms of dollars, is $ 0.00 ① However, the actual consideration consists of or includes other property or value given or promised which is ☐ part of the ☒ the whole (indicate which) consideration.① (The sentence between the symbols ①, if not applicable, should be deleted. See ORS 93.030.)

In construing this deed, where the context so requires, the singular includes the plural, and all grammatical changes shall be made so that this deed shall apply equally to corporations and to individuals.

IN WITNESS WHEREOF, the grantor has executed this instrument on Nov 12, 2020; if grantor is a corporation, it has caused its name to be signed and its seal, if any, affixed by an officer or other person duly authorized to do so by order of its board of directors.

THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES AND TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES AS DEFINED IN ORS 30.930.

STATE OF OREGON, County of Deschutes) ss.
This instrument was acknowledged before me on Nov 12, 2020,
by Kevin Holland
This instrument was acknowledged before me on _____,
by _____
as _____
of _____.

OFFICIAL STAMP
SHARA NICOLE BAUMAN
NOTARY PUBLIC - OREGON
COMMISSION NO. 969751
MY COMMISSION EXPIRES DECEMBER 25, 2021

Notary Public for Oregon
My commission expires 12/25/21

Appendix C.

Site Evaluation Reports

September 19, 2023

PINERIVER HOMES LLC
23410 HIGHWAY 20
BEND, OR 97701

RE: 247-23-000863-EVAL
17089 INDIO RD, BEND

A site evaluation for an onsite wastewater treatment system for a single family dwelling was recently completed at the property noted above. Test pits were evaluated on 9/15/23. Part of the evaluation is to determine the level to which the groundwater rises during the wet season of a normal weather year. Permanent water tables are present throughout the year although they may fluctuate in elevation seasonally. The soil indicators used to determine the level to which the water table rises include gray soils and discoloration of the soil.

In the test pits on the property the indicators suggest the water table may rise to within 10 inches of the ground surface. Stripping and staining, observed as a splotchy pattern in the soil profile, was observed starting between 10 and 14 inches below ground surface, which is a condition associated with saturation. Past observations and site evaluations in the surrounding area also verify the presence of a high water table. Extensive study and modeling of the groundwater in south Deschutes County has demonstrated that this area is sensitive to added loading from areas that do not meet separation to groundwater. **This site is denied due to high permanent groundwater observed and conditions associated with saturation.**

The site is denied based on the following:

- Does not meet minimum separation from permanent water table (OAR 340-071-0220, 0260, 0265, 0275, 0280, 0285, 0290, 0302).
- Installation of an onsite wastewater system in the area evaluated will likely lead to nitrate pollution of public waters. The Nitrate Loading Management Model indicates this area, Management Area 1, cannot sustain added loading from high groundwater lots if nitrate levels are to remain below the action level in groundwater (Morgan, Hinkle, Weick. USGS. 2007). Groundwater shall be protected from pollution that could impair existing and future beneficial uses, including domestic drinking water from wells (OAR 340-040-0020).
- Deschutes County, may not authorize installation or use of a system that is likely to pollute public waters or create a public health hazard (OAR 340-071-0130(1)).

You have 90 days from the initial site visit to provide additional test pits for evaluation at no additional fee. However, it appears that other areas on the property would not be suitable because the remainder of the lot is at a similar landscape position.

REVIEW AVAILABLE

Pursuant to Oregon Administrative rules (OAR 340-071). You may request a site evaluation report review if you believe this report to be in violation of the rules. The Oregon DEQ conducts report reviews upon submission of the appropriate application materials including: a written request that includes all information you have received from Deschutes County, the reason the report is in error including the specific Oregon Administrative Rules that

conflict with the report, and the application fee. The DEQ will review the county's report and visit the site to determine the report's compliance with the appropriate rules.

Also pursuant to this rule, you may request a variance from these rules. The Oregon DEQ reviews variance requests upon application. This is not an automatic variance. You must provide technical justification that demonstrates your proposed system will operate over an extended period of time, will not degrade the environment, and will provide public health protection.

An application, application fee, justification and exhibits, including this report, a land use compatibility statement and detailed plans of your proposed system are required for the application. Technical advice from a knowledgeable consultant is recommended. A Variance Office from DEQ will review your application and the property and issue a written determination following an informational hearing.

Deschutes County recognizes your right to a variance request. This property, however, has severe limitations for onsite wastewater treatment as noted above. Unless public health and environmental protection can be assured, a variance request cannot be supported by the Deschutes County Onsite Wastewater Division and will not likely be approved by DEQ.

For further information regarding a report review for a variance request, please contact the Oregon Department of Environmental Quality at 471 NE Bellevue Dr., #110, Bend, OR 97701, phone 541-388-6146.

If you have any questions, please do not hesitate to call this office at 541-388-6519.

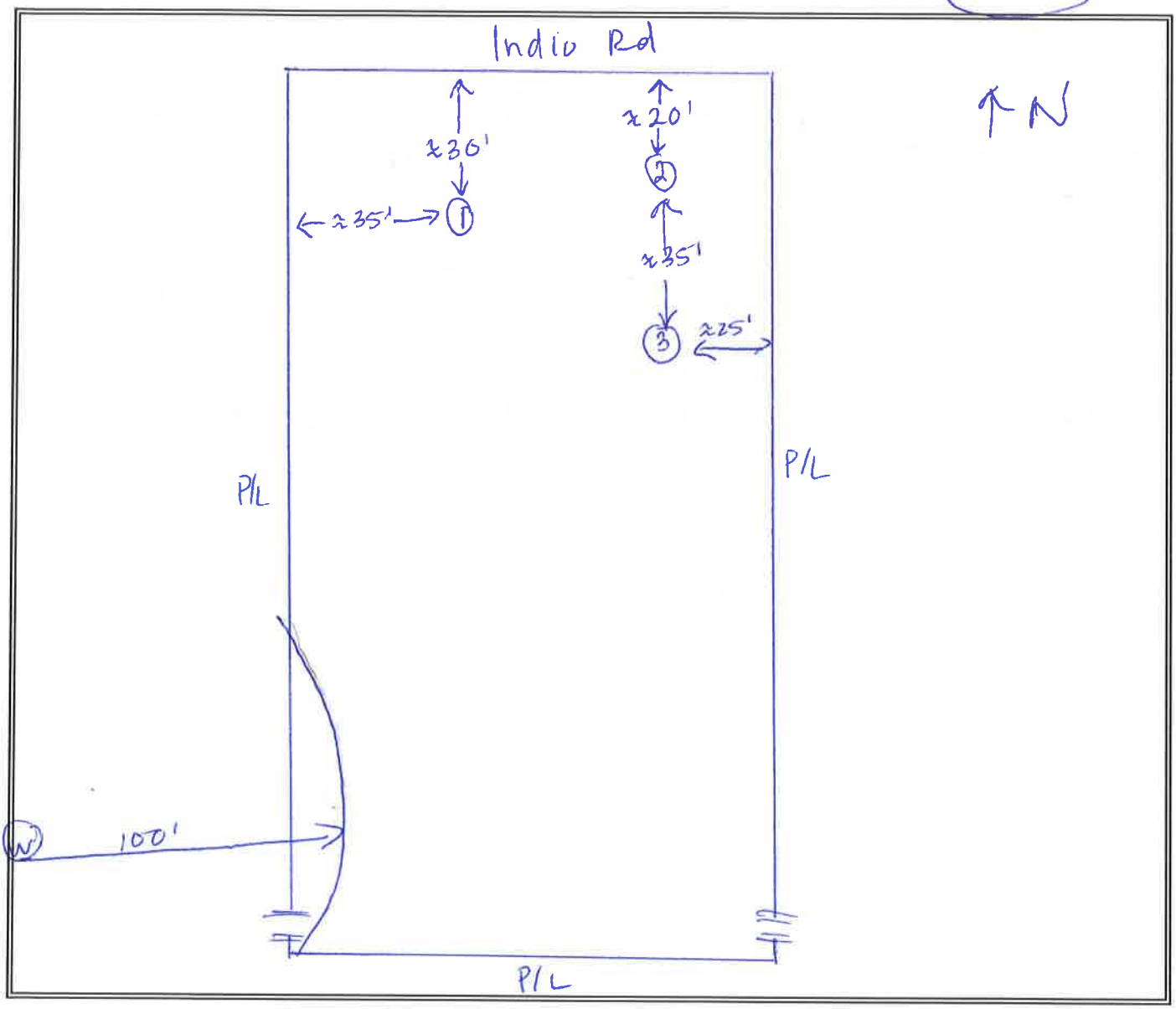
Sincerely,
Onsite Wastewater Division

KILEY RUCKER CLAMONS, REHS
Onsite Wastewater Specialist II

SITE EVALUATION FIELD INSPECTION FORM

Applicant: Brian Holland Site Evaluation # 247-23-000863-EVAL
Evaluator: K. Rucker Clamons Date: 9/15/2023 Parcel Size: 0.50 Acres
Subdivision: DRRH Unit 4 T 20 R 10 S 12 TL 16900 L 9 B 36

Suitable **Sketch/Not to Scale** **Unsuitable**



*systems approved are the **minimum** to meet current DEQ rules and are not design specifications*

System type approved: _____ Absorption facility:
Initial _____ Min. Size _____ Max. Depth _____ Min. Depth _____
Replacement _____ Min. Size _____ Max. Depth _____ Min. Depth _____
Tank Size _____ Sewage Flow _____
Special Conditions: _____ Denied

SITE EVALUATION FIELD INSPECTION FORM

Applicant: Brian Holland Site Evaluation # 247-23-000863-EVAL
Evaluator: K. Rucker Clamons Date: 9/15/2023 Parcel Size: 0.50 Acres
Subdivision: DRRit Unit 4 T 20 R 10 S 12 TL 16900 L 9 B 36

	DEPTH	TEXTURE	COLOR	Notes on roots, structure, rock frag, redox, limiting layer type & depth
1	0-14"	LCOS	10YR 3/1	+4/4; 2vf1f1m; 1m, csbk; FR; Stripping (10YR 4/2) + staining (10YR 4/6) @ 10"
	14-49"	fSl	10YR 4/2	few roots; 2csbk; VFI; C 2p Fe concentrations
2	0-23"			} similar to Pit #1; Stripping/staining @ 14"
	23-48"			
3	0-24"			} similar to Pit #1; Stripping/staining @ 14"
	24-47"			
4				
5				
6				
7				

Landscape Note: lodgepole; bitterbrush; Idaho fescue; Currant; Broadleaf strawberry;
Slope: +/- 1% Aspect: Groundwater: Permanent
Other site notes:

Comments: Conditions associated with saturation: Stripping and staining, depleted matrix with iron concentrations

Reason for Unsuitability: (Include Rule Reference)
See Site Evaluation Report letter dated 9/19/2023 for details.
OAR 340-071-0220, 0260, 0265, 0275, 0280, 0285, 0290, 0302
OAR 340-040-0020
OAR 340-071-0130 (1)

Appendix D.

NRCS Soil Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties

17089 Indio Road

November 6, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (17089 Indio Road)

Map Scale: 1:406 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 15 30 60 90

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties
Survey Area Data: Version 21, Sep 8, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 1, 2019—Nov 4, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (17089 Indio Road)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
144A	Sunriver sandy loam, 0 to 3 percent slopes	0.5	100.0%
Totals for Area of Interest		**0.5**	**100.0%**

Map Unit Descriptions (17089 Indio Road)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties

144A—Sunriver sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 241l
Elevation: 4,000 to 4,300 feet
Mean annual precipitation: 18 to 25 inches
Mean annual air temperature: 40 to 44 degrees F
Frost-free period: 10 to 50 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Sunriver and similar soils: 85 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sunriver

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash over old alluvium

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 20 inches: loamy coarse sand
H3 - 20 to 29 inches: coarse sand
H4 - 29 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: F006XE807OR - Cryic Aquic Pumice Basins
Hydric soil rating: No

Minor Components

Cryaquolls

Percent of map unit: 8 percent

Landform: Mountains
Ecological site: R006XB102OR - COLD WET MEADOW
Hydric soil rating: Yes

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Appendix E.

Water Well Reports

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

DESC 62902

9/14/2021

WELL I.D. LABEL# L 144549
START CARD # 1053801
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name Last Name
Company PINE RIVER HOMES
Address PO BOX 3033
City BEND State OR Zip 97707

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:						◯	◯	☐	☐

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 80.00 ft.

BORE HOLE

Dia	From	To
10	0	18
6	18	80

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	12	S
		Calculated	10	
		Calculated		

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other POURED
Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size
Explosives used: ☐ Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
◉	◯	6	☒	1	68	250	◉	◯	☒	☐
◯	◉	4	☐	7	68	480	◯	◉	☐	☒
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐

Shoe ☐ Inside ☐ Outside ☐ Other Location of shoe(s)
Temp casing ☐ Yes Dia From + ☐ To

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type slotted Material pvc

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size
Screen	Liner	4	68	80	.1		4280	

(8) WELL TESTS: Minimum testing time is 1 hour

◉ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
20	6	40	2

Temperature 51 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 42 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SE 1/4 of the SE 1/4 Tax Lot 16800
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ◯ Nearest address
17081 INDIO THREE RIVERS

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	9/13/2021		☐	18

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 68.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
9/13/2021	68	80	50		☐	18
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	3
clay and gravel	3	9
gray clay and green diatamite	9	58
soft black rock porous	58	68
sand and fine gravel	68	80

Date Started 9/8/2021 Completed 9/13/2021

(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.

License Number Date

Signed

(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 1528 Date 9/14/2021

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version:

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.545 & 537.765 and OAR 690-205-0210)

DESC 63723
10/13/2022

WELL I.D. LABEL# L 149495
START CARD # 1058521
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name ANGY Last Name STOKES
Company
Address 1536 4TH
City ASTORIA State OR Zip 97103

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 69.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	69

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	16	S
		Calculated	9.13	
		Calculated		

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other POURED
Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size
Explosives used: ☐ Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	67	.250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

Shoe ☐ Inside ☐ Outside ☐ Other Location of shoe(s)
Temp casing ☐ Yes Dia From + ☐ To

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour

● Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
20	6	35	1

Temperature 47 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 56 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SW 1/4 of the SE 1/4 Tax Lot 17100
Tax Map Number Lot
Lat ° ' " or 43.85028166 DMS or DD
Long ° ' " or -121.47157475 DMS or DD
● Street address of well ○ Nearest address
17101 INDIO THREE RIVERS

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	10/6/2022		☐	27

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 66.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
10/13/2022	66	69	35		☐	27
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
top soil and pumice	0	3
brown sand and pumice	3	8
brown clay	8	23
pink ash	23	30
grey clay and fine black sand	30	55
fine black sand	55	59
course cinders and fine black sand	59	66
mediun cinders	66	69

Date Started 9/26/2022 Completed 10/6/2022

(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.

License Number 2074 Date 10/13/2022
Signed BRIAN STEWART (E-filed)

(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 1528 Date 10/13/2022
Signed STEVE MATHERS (E-filed)
Contact Info (optional) 541-389-0743

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version:
New exempt use wells must be submitted with a map and recording fee.

WATER SUPPLY WELL REPORT - continuation page

DESC 63723

10/13/2022

WELL I.D. LABEL# L 149495

START CARD # 1058521

ORIGINAL LOG #

(2a) PRE-ALTERATION

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

Material	From	To	Amt	sacks/lbs

(5) BORE HOLE CONSTRUCTION

BORE HOLE

Dia	From	To

SEAL

Material	From	To	Amt	sacks/lbs
		Calculated		
		Calculated		
		Calculated		
		Calculated		

FILTER PACK

From	To	Material	Size

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

(7) PERFORATIONS/SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Water Quality Concerns

From	To	Description	Amount	Units

(10) STATIC WATER LEVEL

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

(11) WELL LOG

Material	From	To

Comments/Remarks

Neil Wright was the helper on this well.

WATER SUPPLY WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

DESC 63723

10/13/2022

Map of Hole

STATE OF OREGON
WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department
725 Summer St NE, Salem OR 97301
(503)986-0900

LOCATION OF WELL

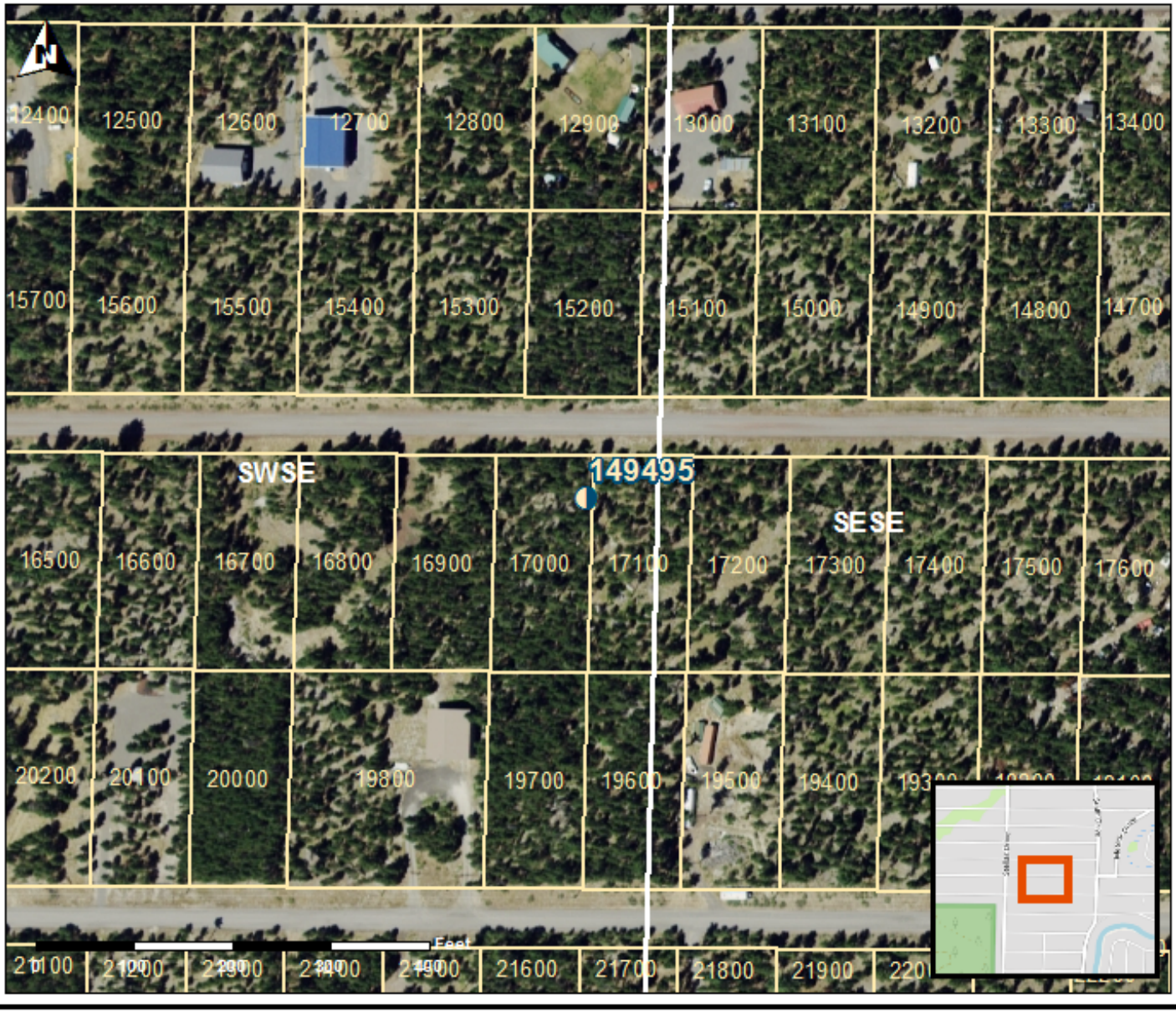
Latitude: 43.85028166 Datum: WGS84
Longitude: -121.47157475
Township/Range/Section/Quarter-Quarter Section:
WM20.00S10.00E12SWSE
Address of Well:
17101 INDIO THREE RIVERS

Well Label: 149495

Printed: October 13, 2022

DISCLAIMER: This map is intended to represent the approximate location the well. It is not intended to be construed as survey accurate in any manner.

Provided by well constructor



DESC 56480

DESC 56480

DRAFT

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

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

Desc 56480

WELL I.D. # L 46510
START CARD # 165475

(1) LAND OWNER Well Number
Name Anchetta Const.
Address P.O. Box 3711
City Sunriver State Ore Zip 97707

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

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

(4) PROPOSED USE:
☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 40 ft.
Explosives used ☐ Yes ☐ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12	0	40	Bent.	0	18	12

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other Poured
Backfill placed from ft. to ft. Material
Gravel placed from 30 ft. to 40 ft. Size of gravel 10-20

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1	19	250	☒	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	4"	-4	30	160	☐	☒	☒	☐
					☐	☐	☐	☐

Drive Shoe used ☐ Inside ☐ Outside ☒ None
Final location of shoe(s)

(7) PERFORATIONS/SCREENS:
☐ Perforations Method
☒ Screens Type Material PVC

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
30	40	010	350	4"		☐	☒
						☐	☐
						☐	☐
						☐	☐

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

Yield gal/min	Drawdown	Drill stem at	Time
20	2'		1 hr.

Temperature of water 50° Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County Desch Latitude Longitude
Township 20 N or S Range 10 E or W. WM.
Section 12 SW 1/4 SE 1/4
Tax Lot 16800 Lot Block Subdivision
Street Address of Well (or nearest address) 17081 Indio

(10) STATIC WATER LEVEL:
20 ft. below land surface. Date 11-23-04
Artesian pressure lb. per square inch Date

(11) WATER BEARING ZONES:
Depth at which water was first found

From	To	Estimated Flow Rate	SWL
25	40	40	20'

(12) WELL LOG:
Ground Elevation

Material	From	To	SWL
Soil + Pumice	0'	4'	
clay + Gravel	4'	12'	
clay	12	20	
Blk Sand	20	40	

RECEIVED
JAN 14 2005
WATER RESOURCES DEPT
SALEM, OREGON

RECEIVED
MAR 24 2005
WATER RESOURCES DEPT
SALEM OREGON

Date started 11-23-04 Completed 11-24-04

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, 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.
WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, 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.
WWC Number 1528
Signed Glenn Miller Date 12-2-04

ORIGINAL – WATER RESOURCES DEPARTMENT FIRST COPY – CONSTRUCTOR SECOND COPY – CUSTOMER

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

DESC 62185

8/19/2020

WELL I.D. LABEL# L 47039
START CARD # 1048619
ORIGINAL LOG # DESCHUTES 54002

(1) LAND OWNER

Owner Well I.D.
First Name DONALD Last Name COX
Company PINE RIVER HOMES
Address PO BOX 3033
City SUNRIVER State OR Zip 97707

(2) TYPE OF WORK

☐ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☒ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:	6	☒	1	85	250	◉	○	☒	☐

	Material	From	To	Amt	sacks/lbs
Seal:	Bentonite Chips	0	20	12	Sacks

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	85

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	12	S
		Calculated	12	
		Calculated		

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other POURED
Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size
Explosives used: ☐ Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount 40.00 Sacks Actual Amount 40.00 Sacks

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

Shoe ☐ Inside ☐ Outside ☐ Other Location of shoe(s)
Temp casing ☐ Yes Dia From + ☐ To

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour

◯ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Temperature °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 0 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SE 1/4 of the SW 1/4 Tax Lot 16800
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ◯ Nearest address
17081 INDIO

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well				

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

(11) WELL LOG

Ground Elevation

Material	From	To
well abandoned	0	85

Date Started 8/18/2020 Completed 8/19/2020

(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.

License Number Date

Signed

(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 1528 Date 8/19/2020

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version:

WATER SUPPLY WELL REPORT - continuation page

DESC 62185

8/19/2020

WELL I.D. LABEL# L 47039

START CARD # 1048619

ORIGINAL LOG # DESCHUTES 54002

(2a) PRE-ALTERATION

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

Material	From	To	Amt	sacks/lbs

(5) BORE HOLE CONSTRUCTION

BORE HOLE Dia	From	To

SEAL Material	From	To	Amt	sacks/lbs
		Calculated		
		Calculated		
		Calculated		
		Calculated		

FILTER PACK

From	To	Material	Size

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

(7) PERFORATIONS/SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Water Quality Concerns

From	To	Description	Amount	Units

(10) STATIC WATER LEVEL

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

(11) WELL LOG

Material	From	To

Comments/Remarks

pulled casing filled with bentonite

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

DESC 63038

11/22/2021

WELL I.D. LABEL# L 145497
START CARD # 1054706
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name Last Name
Company CASCADE LAKES PROPERTY
Address PO BOX 4872
City BEND State OR Zip 97707

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:						◯	◯	☐	☐

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 69.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	69

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	15	S
		Calculated	12	
		Calculated		

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other POURED
Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size
Explosives used: ☐ Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
◉	◯	6	☒	2	69	250	◉	◯	☒	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐

Shoe ☐ Inside ☐ Outside ☐ Other Location of shoe(s)
Temp casing ☐ Yes Dia From + ☐ To

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour

◉ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
20	7	35	1

Temperature 51 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 65 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SE 1/4 of the SW 1/4 Tax Lot 15300
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ◯ Nearest address
17084 INDIO THREE RIVERS

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	11/22/2021		☐	18

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 67.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
11/22/2021	67	69	40		☒	
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	3
clay and gravel	3	9
pink ash	9	15
green diatamite	15	67
medium fine gravel	67	69

Date Started 11/17/2021 Completed 11/22/2021

(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.

License Number Date

Signed

(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 1528 Date 11/22/2021

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

Amended 3/3/2023

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.545 & 537.765 and OAR 690-205-0210)

DESC 63911

12/21/2022

WELL I.D. LABEL# L 145612
START CARD # 1059177
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name MEGAN Last Name DELUCIA
Company
Address 12411 SE YOAKUM WAY
City HAPPY VALLEY State OR Zip 97086

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 68.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	68

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	13	S
		Calculated	9.13	
		Calculated		

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other BENTONITE CHIPS
Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size
Explosives used: ☐ Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	67.5	.250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

Shoe ☐ Inside ☐ Outside ☐ Other Location of shoe(s)
Temp casing ☐ Yes Dia From + ☐ To

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour

● Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
14	14	32	2

Temperature 42 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 80 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SW 1/4 of the SE 1/4 Tax Lot 15400
Tax Map Number Lot
Lat ° ' " or 43.85102000 DMS or DD
Long ° ' " or -121.47232000 DMS or DD
● Street address of well ○ Nearest address
17076 INDIO RD

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	11/19/2022			18

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 12.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
11/19/2022	12	13	14			10
11/19/2022	67	68	14			18

(11) WELL LOG

Ground Elevation

Material	From	To
pummy	0	3
brown sand clay mix	3	12
brown sand course	12	13
clay brown	13	16
clau gray	16	62
cinders black	62	68
Helper: Zane Naylor		

Date Started 11/11/2022 Completed 11/19/2022

(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.

License Number Date

Signed

(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 1614 Date 12/21/2022

Signed SAM OLSON (E-filed)

Contact Info (optional) 5415365339

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version:
New exempt use wells must be submitted with a map and recording fee.

WATER SUPPLY WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

DESC 63911

12/21/2022

Map of Hole

STATE OF OREGON
WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department
725 Summer St NE, Salem OR 97301
(503)986-0900

LOCATION OF WELL

Latitude: 43.85102000 Datum: WGS84
Longitude: -121.47232000
Township/Range/Section/Quarter-Quarter Section:
WM20.00S10.00E12SWSE
Address of Well:
17076 INDIO RD

Well Label: 145612

Printed: December 21, 2022

DISCLAIMER: This map is intended to represent the approximate location the well. It is not intended to be construed as survey accurate in any manner.

Provided by well constructor

WATER SUPPLY WELL REPORT - continuation page

DESC 63911

12/21/2022

Map of Hole

STATE OF OREGON
WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department
725 Summer St NE, Salem OR 97301
(503)986-0900

LOCATION OF WELL

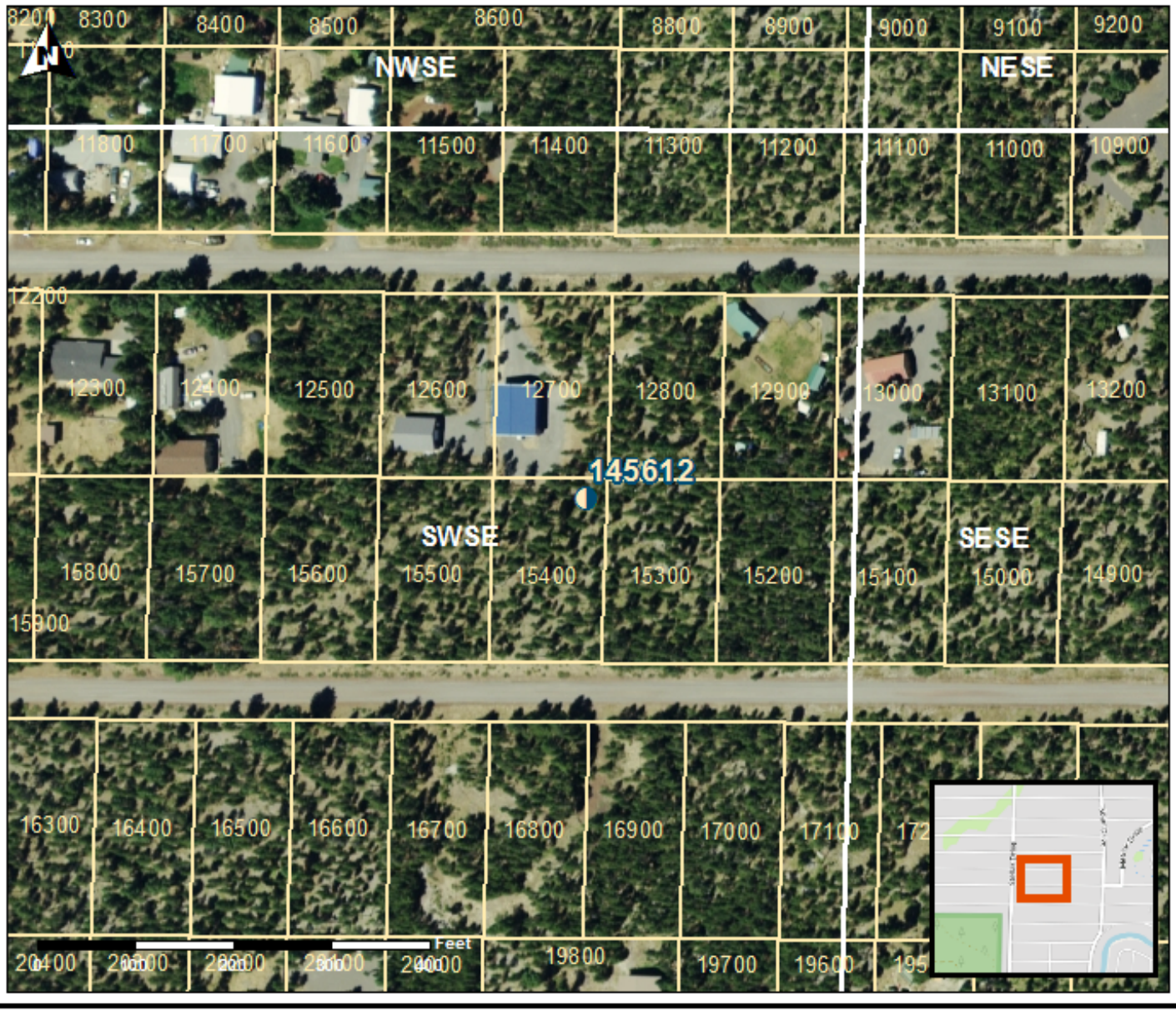
Latitude: 43.85102000 Datum: WGS84
Longitude: -121.47232000
Township/Range/Section/Quarter-Quarter Section:
WM20.00S10.00E12SWSE
Address of Well:
17076 INDIO RD

Well Label: 145612

Printed: December 21, 2022

DISCLAIMER: This map is intended to represent the approximate location the well. It is not intended to be construed as survey accurate in any manner.

Provided by well constructor



desc 52058

RECEIVED

NOV 2 0 1998

WATER RESOURCES DEPT.
SALEM, OREGON

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

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

WELL I.D. # L27641

START CARD # W119629

(1) OWNER: Well Number

Name PO LEUNG

Address 2400 HOLLY PL. NW.

City ALBANY State OR Zip 97321

(2) TYPE OF WORK

☑ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☐ Rotary Air ☐ Rotary Mud ☑ Cable ☐ Auger

☐ Other

(4) PROPOSED USE:

☑ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☑ No Depth of Completed Well 85 ft.

Explosives used ☐ Yes ☑ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
10	0	18	Hole Plug	0	18	350 LB
6	18	85				

How was seal placed: Method ☐ A ☐ B ☑ C ☐ D ☐ E

☐ Other

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6	+1	85	250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☑ Perforations Method torch cut

☐ Screens Type 250 Material Steel

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
80	85	1/4	12	6		☑	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☑ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
25	3		1 hr.

Temperature of water 43 Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other No

Depth of strata:

(9) LOCATION OF WELL by legal description:

County DESCHUTES Latitude Longitude

Township 20 N or S Range 10 E or W. WM.

Section 12D SE 1/4 SE 1/4

Tax Lot 13000 Lot Block Subdivision

Street Address of Well (or nearest address) 17107 HERMOSA BEND, OR. 97707

(10) STATIC WATER LEVEL:

12 ft. below land surface. Date 10-26-98

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 7

From	To	Estimated Flow Rate	SWL
60	85	25+	12

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Pumice Soil	0	3	12
Clay	3	7	
Sand Gravel	7	11	
Brown Clay	11	40	
Green clay	40	60	
Sand gravel	60	70	
Worm Hole Lava - Basalt	70	85	

Date started 10-26-98 Completed 10-26-98

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, 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.

WWC Number

Signed Date

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, 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.

WWC Number 1559

Signed Date 11-18-98

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

DESC 58260

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL I.D. # L 92232
START CARD # W 195391

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

(1) LAND OWNER — Well Number
Name MORGAN Reed
Address P.O. Box 4304
City Sun River State OR Zip 97707

(2) TYPE OF WORK
[X] New Well [ ] Deepening [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD:
[ ] Rotary Air [ ] Rotary Mud [X] Cable [ ] Auger
[ ] Other

(4) PROPOSED USE:
[X] Domestic [ ] Community [ ] Industrial [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Livestock [ ] Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval [ ] Yes [X] No Depth of Completed Well 71 ft.
Explosives used [ ] Yes [X] No Type Amount

BORE HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
10"	0'	26'	Bentonite	0'	26'	100 Sacks
6"	26'	73'				

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E
[X] Other poured Dry
Backfill placed from ft. to ft. Material
Gravel placed from 70' ft. to 73' ft. Size of gravel 3/8 X 12

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1'	71'	.250	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]
Liner:					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Drive Shoe used [ ] Inside [ ] Outside [X] None
Final location of shoe(s)

(7) PERFORATIONS/SCREENS:
[X] Perforations Method Torch cut
[ ] Screens Type Material

From	To	Slot size	Number	Diameter	Telelpipe size	Casing	Liner
66'	71'	6"	18	1/8"	6"	[X]	[ ]
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]

(8) WELL TESTS: Minimum testing time is 1 hour
[X] Pump [ ] Bailer [ ] Air [ ] Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
10	10 FT		1 hr.

Temperature of water 43° Depth Artesian Flow Found
Was a water analysis done? [ ] Yes By whom
Did any strata contain water not suitable for intended use? [ ] Too Little
[ ] Salty [ ] Muddy [ ] Odor [ ] Colored [ ] Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County Deschutes Latitude Longitude
Township 20 N or S Range 10 E or W WM
Section 12 D 1/4 SW 1/4 SE
Tax Lot 1900 Lot Block Subdivision
Street Address of Well (or nearest address) 17085 Jacinto

(10) STATIC WATER LEVEL:
14 ft. below land surface. Date 10-2-07
Artesian pressure lb. per square inch Date

(11) WATER BEARING ZONES:
Depth at which water was first found 21 FT.

From	To	Estimated Flow Rate	SWL
21 Ft.	73'	10 GPM	14'

(12) WELL LOG:
Ground Elevation 4,000'

Material	From	To	SWL
granite top Soil	0	3'	
Ash & Brn sand	3'	5'	
clay & Brn sand	8'	13'	
Gravel clay & Brn sand	13'	18'	14'
Green Diatomite	18'	54'	
Black sand	54'	65'	14'
Cinders & Black sand	65'	73'	14'

RECEIVED
OCT 12 2007
WATER RESOURCES DEPT
SALEM OREGON

Date started 9-25-07 Completed 10-2-07

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, 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.
WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, 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.
WWC Number 1761
Signed Richard J Brayshaw Date 10-3-07

STATE OF OREGON
REVISIONS REQUESTED
(as required by ORS 537.765 & OAR 690-205-0210)

DESC 61265

7/29/2018

WELL I.D. LABEL# L 129512
START CARD # 1039262
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name BOYLES Last Name LIVING TRUST
Company
Address PMB 256
City SUNRIVER State OR Zip 97707

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 77.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	77

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	14	S
		Calculated	9.4	
		Calculated		

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other 3 MINUTE POUR PER
Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size
Explosives used: ☐ Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	70	.250	●	○	☒	☐
○	●	4.5	☐	17	77	sdr26	○	●	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

Shoe ☐ Inside ☐ Outside ☐ Other Location of shoe(s)
Temp casing ☐ Yes Dia From + ☐ To

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type saw cut Material pvc

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size
Screen	Liner	4.5	70	77	.1	2	1950	4.5

(8) WELL TESTS: Minimum testing time is 1 hour

● Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
16	4	20	2
16	4	20	2

Temperature 42 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 52 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SW 1/4 of the SE 1/4 Tax Lot 2700
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
● Street address of well ○ Nearest address
17073 HERMOSA, BEND

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	6/22/2018		☐	16

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 68.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
6/22/2018	68	77	16		☐	16
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
pummie	0	2
brown sand and gravel	2	6
brown sand course	6	13
gray clay	13	68
gray sand course	68	77

Date Started 6/20/2018 Completed 6/22/2018

(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.

License Number Date

Signed

(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 1614 Date 7/29/2018

Signed SAM OLSON (E-filed)

Contact Info (optional) 541-536-5339

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version:

DESC 54928

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

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

Desc 54928

WELL I.D. # L 50959
START CARD # 142812

(1) OWNER: Well Number _____
Name Frank Blyeth
Address 5084 Keen Rd. NE
City Salem State Ore Zip 97026

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

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

(4) PROPOSED USE:
☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other _____

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 89 ft.
Explosives used ☐ Yes ☐ No Type _____ Amount _____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
~~12~~	~~0~~	~~18~~	Bent	0	18	8
12	0	20	"	"	"	
6	20	89				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other Poured
Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1	89	250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:
☒ Perforations Method Torch
☐ Screens Type _____ Material _____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
85	89	1/8	14			☒	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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

Yield gal/min	Drawdown	Drill stem at	Time
15	7'		1 hr.

Temperature of water 48 Depth Artesian Flow Found _____
Was a water analysis done? ☐ Yes By whom _____
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____
Depth of strata: _____

(9) LOCATION OF WELL by legal description:
County Desch. Latitude _____ Longitude _____
Township 20 (N) or S Range 10 (E) or W. WM.
Section 120 SE 1/4 SW 1/4
Tax Lot 13203 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 17123 Hermosa

(10) STATIC WATER LEVEL:
21 ft. below land surface. Date 6-15-02
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:
Depth at which water was first found 10

From	To	Estimated Flow Rate	SWL
10	15	20	10
85	89	40	21

(12) WELL LOG:
Ground Elevation _____

Material	From	To	SWL
Soil + Pumice	0	2	
Brown clay	2	6	
Gravel + Sand	6	15	12
Pink q & H	15	22	
Green Diatomite	22	80	
Lite Sand & Gravel	80	89	21

RECEIVED
SEP 09 2002
WATER RESOURCES DEPT
SALEM, OREGON

RECEIVED
FEB 04 2004
WATER RESOURCES
SALEM, OREGON

Date started 6-15-02 Completed 6-22-02

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, 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.
WWC Number _____
Signed _____ Date _____

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, 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.
WWC Number 1528
Signed Steve Mallory Date 6-30-02

ORIGINAL – WATER RESOURCES DEPARTMENT FIRST COPY – CONSTRUCTOR SECOND COPY – CUSTOMER

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.545 & 537.765 and OAR 690-205-0210)

DESC 63368
5/18/2022

WELL I.D. LABEL# L 146297
START CARD # 1056450
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name IAROSLAVA Last Name PEARSON
Company
Address 17033 JACINTO
City THREE RIVERS State OR Zip 97707

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 78.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	78

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	14	S
		Calculated	9.13	
		Calculated		

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other POURED
Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size
Explosives used: ☐ Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	78	.250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

Shoe ☐ Inside ☐ Outside ☐ Other Location of shoe(s)
Temp casing ☐ Yes Dia From + ☐ To

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour

● Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
20	10	45	1.5

Temperature 46 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 57 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SW 1/4 of the SE 1/4 Tax Lot 21400
Tax Map Number Lot
Lat ° ' " or 43.84871801 DMS or DD
Long ° ' " or -121.47250470 DMS or DD
● Street address of well ○ Nearest address
17083 JACINTO

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	5/17/2022		☐	18

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 73.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
5/17/2022	73	78	35		☐	10
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
top soil	0	4
clay and fine brown sand	4	10
grey clay	10	24
clay and fine black sand	24	34
grey clay	34	57
fine black sand	57	64
medium black sand	64	73
medium black sand and fine gravel	73	78

Date Started 4/29/2022 Completed 5/17/2022

(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.

License Number 2074 Date 5/18/2022

Signed BRIAN STEWART (E-filed)

(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 1528 Date 5/18/2022

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541-389-0743

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version:
New exempt use wells must be submitted with a map and recording fee.

WATER SUPPLY WELL REPORT - continuation page

DESC 63368

5/18/2022

WELL I.D. LABEL# L 146297

START CARD # 1056450

ORIGINAL LOG #

(2a) PRE-ALTERATION

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

Material	From	To	Amt	sacks/lbs

(5) BORE HOLE CONSTRUCTION

BORE HOLE Dia	From	To

SEAL Material	From	To	Amt	sacks/lbs
		Calculated		
		Calculated		
		Calculated		
		Calculated		

FILTER PACK

From	To	Material	Size

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

(7) PERFORATIONS/SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Water Quality Concerns

From	To	Description	Amount	Units

(10) STATIC WATER LEVEL

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

(11) WELL LOG

Material	From	To

Comments/Remarks

Neil Wright was the helper on this job

WATER SUPPLY WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

DESC 63368

5/18/2022

Map of Hole

STATE OF OREGON
WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department
725 Summer St NE, Salem OR 97301
(503)986-0900

LOCATION OF WELL

Latitude: 43.84871801 Datum: WGS84
Longitude: -121.47250470
Township/Range/Section/Quarter-Quarter Section:
WM20.00S10.00E12SWSE
Address of Well:
17083 JACINTO

Well Label: 146297

Printed: May 18, 2022

DISCLAIMER: This map is intended to represent the approximate location the well. It is not intended to be construed as survey accurate in any manner.

Provided by well constructor

DESC 50418

RECEIVED

JUL 26 1996

WATER RESOURCES DEPT.
SALEM, OREGON

Lo. 3340

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

(START CARD) # 46627

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

(1) OWNER: Well Number

Name Rob Lowe

Address 17051 Hermosa

City Bend State Ore Zip 97709

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger

☐ Other

(4) PROPOSED USE:

☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 38 ft.

Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
11 7/8	0	25	Bentonite	0	20	12 Sacks
6"	25	38				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E

☐ Other Poured

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1	35	.250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☒ Perforations Method Torch

☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
31	35	1/8	16	6"		☒	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
20 GPM	16'		1 hr.

Temperature of water 51 Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Desch Latitude Longitude

Township 20 N or S Range 10 E or W. WM.

Section 12D NW 1/4 SW 1/4

Tax Lot 12400 Lot Block Subdivision

Street Address of Well (or nearest address)

(10) STATIC WATER LEVEL:

12 ft. below land surface. Date 7-20-96

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found

From	To	Estimated Flow Rate	SWL
30	39	40 GPM	12'

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Soil + Pumice	0	6	
Brown clay	6'	15'	
Pink Ash	15'	21'	
Green Pigtamite	21	30	
Sand + Gravel	30	38	12'

Date started 7-18-96 Completed 7-19-96

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, 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.

WWC Number

Signed Date

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, 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.

WWC Number 1528

Signed Glen Mathis Date 7-24-96

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

DESC 1372

DESC 1372

JUL 14 1992

20s/10E/12dd

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

WATER RESOURCES DEPT. (START CARD) # 33193

SALEM, OREGON

(1) OWNER:

Well Number: 24

Name JIM SELERS & VIVIAN WALTERN

Address 34388 CHRISTMAS TREE LANE

City CRESWELL State OR. Zip 97426

(2) TYPE OF WORK:

☑ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD

☑ Rotary Air ☐ Rotary Mud ☐ Cable

☐ Other

(4) PROPOSED USE:

☑ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval Yes ☐ No ☑ Depth of Completed Well 84 ft.

Explosives used Yes ☐ No ☑ Type ____ Amount ____

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
12"	0'	38½'	CEMENT	0	38½'	3 TONS
5"	41½	84'				

How was seal placed: Method ☐ A ☐ B ☑ C ☐ D ☐ E

☐ Other

Backfill placed from ____ ft. to ____ ft. Material ____

Gravel placed from ____ ft. to ____ ft. Size of gravel ____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+1½	38½	250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	6"	-4	84	160	☐	☑	☑	☐

Final location of shoe(s) ____

(7) PERFORATIONS/SCREENS:

☑ Perforations Method SKILL SAW

☐ Screens Type ____ Material ____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
64'	84'	1/16"	80	6"		☐	☑
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
100 G.P.M.		84'	1 hr.

Temperature of water 49° F. Depth Artesian Flow Found ____

Was a water analysis done? ☐ Yes By whom ____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other ____

Depth of strata: ____

(9) LOCATION OF WELL by legal description:

County DESCHUTES Latitude ____ Longitude ____

Township 20 N or S Range 10 E or W. WM.

Section 12 D. NW ¼ SE ¼

Tax Lot 11600 Lot ____ Block ____ Subdivision ____

Street Address of Well (or nearest address) 17064 HERMOSA BEND, OR. 97702

(10) STATIC WATER LEVEL:

20 ft. below land surface. Date 3-13-92

Artesian pressure ____ lb. per square inch. Date ____

(11) WATER BEARING ZONES:

Depth at which water was first found 8'

From	To	Estimated Flow Rate	SWL
8'	30'	30 G.P.M.	8'
45'	84'	100 G.P.M.	20

(12) WELL LOG:

Ground elevation ____

Material	From	To	SWL
BRN. SOIL	0	3	
BLACK SAND	3	18	8
BLACK SAND & MED GRAVEL	18	30	8
GREEN CLAY CONGLOM.	30	45	
BLACK SAND & MED GRAVEL	45	84	20

RECEIVED

OCT 26 1992

WATER RESOURCES DEPT

SALEM, OREGON

Date started 3-11-92 Completed 3-13-92

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

WWC Number ____

Signed ____ Date ____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, 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 well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1536

Signed Larry M. Raley Date 3-16-92

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 3/88

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

Application for Well ID Number

RECEIVED
MAY 10 2016
WATER RESOURCES DEPT
SALEM, OREGON

Do not complete if the well already has a Well Identification Number.

I. OWNER INFORMATION

Current Owner Name *(please print)*: Jerry & Betty Rockow

Mailing Address: 17064 Hermosa Road

City, State, Zip: Bend, OR 97707

Mail Well ID Tag to: ☒ SAME AS ABOVE ☐ In Care Of (C/O)

Name & Address: _____

City, State, Zip: _____

II. WELL LOCATION INFORMATION *(Please fill out as completely as possible)*

Township: 20 (North / South) Range: 10 (East / West) Section: 12 _____ 1/4 of the D 1/4

Tax Lot (usually last 3-5 numbers of Tax Map #): 201012D11600 County Deschutes

GPS Coordinates: _____

Street Address of Well, City: 17064 Hermosa Road, Bend OR 97707

If the property had a different street address in the past: _____

III. GENERAL WELL INFORMATION *(Please fill out as completely as possible, AND attach copy of Well Log, if available)*

Use of Well (domestic, irrigation, commercial, industrial, monitoring): Domestic

Date Well Constructed (or property built): 03/11/1992 Total Well Depth: 84 Casing Diameter: 8"

Owner at time the well was constructed (if known): Selers Well Log # (if known): DESC1372

Other Information: _____

SUBMITTED BY *(please print)*: Brad Driggers

PHONE: 541-977-2611 **EMAIL &/or FAX:** bdriggers@windermere.com

Send application to: Oregon Water Resources Department 725 Summer St NE, Suite A, Salem, Oregon 97301; or fax to (503) 986-0902. Applications are processed in the order they are received, and Well ID Numbers are mailed within 4-5 business days.

For Official Use Only by the Oregon Water Resources Department:

Received Date:	Well Log Number:	Well Identification #:
5-10-16	DESC 1372	L-122906

RECEIVED DESC 54765

JAN 13 2004

WATER RESOURCES DEPT.
SALEM, OREGON

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

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

desc 54765

WELL I.D. # L 55424
START CARD # W146650

(1) LAND OWNER Well Number
Name Joe Frye
Address 1753 Aerial way SE,
City Salem State OR. Zip 97302

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

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

(4) PROPOSED USE:
☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 72' ft.
Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
10"	0'	20'	Bentonite	0'	20'	9 sacks
6"	20'	75'				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other poured Dry
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+15"	72'	.250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Drive Shoe used ☐ Inside ☐ Outside ☒ None
Final location of shoe(s)

(7) PERFORATIONS/SCREENS:
☒ Perforations Method Torch
☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
67'	72'	5"	14	1/8"	6"	☒	☐
						☐	☐
						☐	☐
						☐	☐

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

Yield gal/min	Drawdown	Drill stem at	Time
15	25 PSI		1 hr.

Temperature of water 43° Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☒ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other Surface water
Depth of strata: 8' to 14'

(9) LOCATION OF WELL by legal description:
County Deschutes Latitude Longitude
Township 20 N or (S) Range 10 (E) or W. WM.
Section 12d 1/4 NW 1/4 SE
Tax Lot 1400 Lot Block Subdivision
Street Address of Well (or nearest address) 17076 Hermosa Bend. OR,

(10) STATIC WATER LEVEL:
15 ft. below land surface. Date 6-18-02
Artesian pressure lb. per square inch Date

(11) WATER BEARING ZONES:
Depth at which water was first found 8'

From	To	Estimated Flow Rate	SWL
8'	14'	3 GPM	8'
67'	75'	1.5 GPM	15'

(12) WELL LOG:
Ground Elevation APROX 4300'

Material	From	To	SWL
Pumice Top Soil	0'	4'	
Brn sand & Gravel	4'	14'	
clay & Gravel mix	14'	23'	
Fine Black sand & Ash	23'	67'	
red & Black cinders	67'	75'	15'

RECEIVED
JUN 24 2002
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 6-14-02 Completed 6-18-02

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, 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.
WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, 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.
WWC Number 1761
Signed Richard Brogdon Date 6-21-02

ORIGINAL – WATER RESOURCES DEPARTMENT FIRST COPY – CONSTRUCTOR SECOND COPY – CUSTOMER

Appendix F.

RidNOx™ and Lysimeter Installation, and Sampling Instructions

ELKHORN CONSULTING LLC

14833 Goodrich Creek Lane
Baker City, OR 97814 • 503-881-1604
elkhornconsultingllc@gmail.com

RidNOx Installation Instructions

RidNOx Installation

1. Excavate to a depth that will result in the top of the RidNOx tank being at the same elevation as the existing ground surface.
2. Prepare a level, stable base.
3. Set the body of the tank in the hole.
4. Prepare and install inlet and outlet fittings as shown on the approved plans.
5. Place a 2-inch layer of ½ to ¾-inch round rock on the floor of the tank.
6. Cover the slotted outlet pipe with the same rock to a minimum depth of 2 inches.
7. Install the clean wood media (playground chips meeting ASTM F2075) in 6 inch lifts, walking in each lift to compress the media, to the bottom of the outlet fitting.
8. Set the lid on the tank. **Do not use mastic.**
9. Backfill the tank to 6 inches below the seam between the body and the lid.
10. Place underdrain media to the top of the tank.
11. Backfill over the tank with native soil after the risers are attached.

Media Replacement

- Pothole near tank to make sure the water table is at least 30” below the top of the tank to prevent buoyancy during replacement operations.
- Carefully remove the soil cover from over and around the tank to a level below the seam.
- Carefully remove the lid from the tank.
- Use a sump pump to transfer free water from the media to the pump basin.
- Scoop the media from the tank being careful not to damage the inlet and outlet piping or the underdrain media.
- After the excess moisture drains from the spent media, it can be loaded into a dump truck and hauled to a sanitary landfill.
- Install fresh media and re-install the lid as described in steps 7 through 11 above.

ELKHORN CONSULTING LLC

14833 Goodrich Creek Lane
Baker City, OR 97814 • 503-881-1604
elkhornconsultingllc@gmail.com

Lysimeter Installation Instructions

Lysimeter Installation in a Bottomless Sand Filter

- Remove duff and surface soil layer (typically 6 inches) to provide an infiltrative surface free of roots.
- When installing sampling devices (trough lysimeters), carefully mark the location of the orifice positions on each side of the sand filter container.
- Also mark the target elevations for each layer on the walls.
- Install the lower layer of medium sand and the underdrain media.
- Remove enough underdrain media from a 4-inch wide strip (trough) across the bottom aligned with a row of orifices (typically the 4th row from either end).
- With an auger or a tile spade, dig a hole at one end of the trough large enough and deep enough to set the vertical part of the lysimeter against the wall.
- Fine-grade the placement of the body of the lysimeter with the horizontal fitting of the sanitary tee aligned with the trough.
- Bed the half pipe with a slight slope (no more than 1 inch in 10 feet) toward the body of the lysimeter.
- Glue one end of the half pipe into the coupler extending from the sanitary tee with a cap glued at the opposite end.
- Place about one-half inch of underdrain media (pea gravel) in the bottom of the trough with enough ramped up inside the sanitary tee to cover the drilled holes in the debris cap.
- Backfill around the lysimeter with pea gravel to provide drainage from the self-emptying port.
- Secure the body of the lysimeter to the wall with a metal strap or other device to stabilize it during the placement of the various layers of media.
- The rest of the sand filter will be constructed in a customary fashion.

ELKHORN CONSULTING LLC

14833 Goodrich Creek Lane
Baker City, OR 97814 • 503-881-1604
elkhornconsultingllc@gmail.com

RidNOx and Bottomless Sand Filter Sampling Instructions

General

- Contact the laboratory to coordinate scheduling and acquire sample containers,
- Target parameters are total Kjeldahl nitrogen (TKN) and nitrate-nitrogen (NO_3-N).
- Make sure you have the proper sampling equipment, chain-of-custody forms, and a cooler with ice.
- Label all sample bottles in advance.

RidNOx Sampling Procedures

- Remove the lid from the pump basin.
- Use a bailer, peristaltic pump, or other appropriate sampler, to carefully collect a sample from the pump basin without disturbing and attached growth on the surfaces of pipes, floats, etc.
- Transfer sample into sample bottles.
- Repeat as necessary until all bottles are filled.
- Secure the caps on each bottle and place them immediately in a cooler with ice.
- Deliver samples to the laboratory (nitrate-nitrogen samples need to be analyzed within **48 hours** of sample collection).

Lysimeter Sampling Procedures (if/when desired)

- Loosen the square nut plug on the lysimeter.
- Shine a flashlight down the pipe to confirm the presence of filtrate.
- Use a bailer (disposable or cleaned) on a string to collect sample from the body of the lysimeter.
- Transfer sample into sample bottles.
- Repeat as necessary until all bottles are filled.
- Secure the caps on each bottle and place them immediately in a cooler with ice.
- Replace the square nut plug.
- If funding allows, collect sample of the AdvanTex-treated effluent as it flows into the RidNOx unit at the inlet of the tank.
- Deliver samples to the laboratory (nitrate-nitrogen samples need to be analyzed within **48 hours** of sample collection).

Appendix G.

Directions to Site, List of Names and Addresses for Neighboring Property Owners

Google Maps 475 NE Bellevue Dr, Bend, OR 97701 to 17089 Indio Rd, Bend, OR 97707

You can enter notes here.

475 NE Bellevue Dr
Bend, OR 97701

Take NE Dalton St to US-20

26 sec (361 ft)

1. Head east toward NE Dalton St

125 ft

2. Turn right onto NE Dalton St

236 ft

Take SE 27th St, Knott Rd and US-97 S to Stellar Dr

28 min (21.4 mi)

3. Turn right onto US-20

0.2 mi

4. Turn left onto SE 27th St

3.3 mi

5. Continue onto Knott Rd

4.2 mi

6. Slight right

0.3 mi

7. Merge onto US-97 S

9.4 mi

8. Take exit 153 for S Century Dr toward Sunriver

0.2 mi

9. Turn right onto S Century Dr/Lava Cast Forest Rd/NF-9720 (signs for Sunriver/Mt Bachelor)
   Continue to follow S Century Dr

1.5 mi

10. At the traffic circle, take the 2nd exit and stay on S Century Dr

0.6 mi

11. Continue onto Spring River Rd

1.7 mi

Continue on Stellar Dr. Drive to Indio Rd in Three Rivers

2 min (1.0 mi)

12. Turn left onto Stellar Dr

0.9 mi

13. Turn left onto Indio Rd
    Destination will be on the right

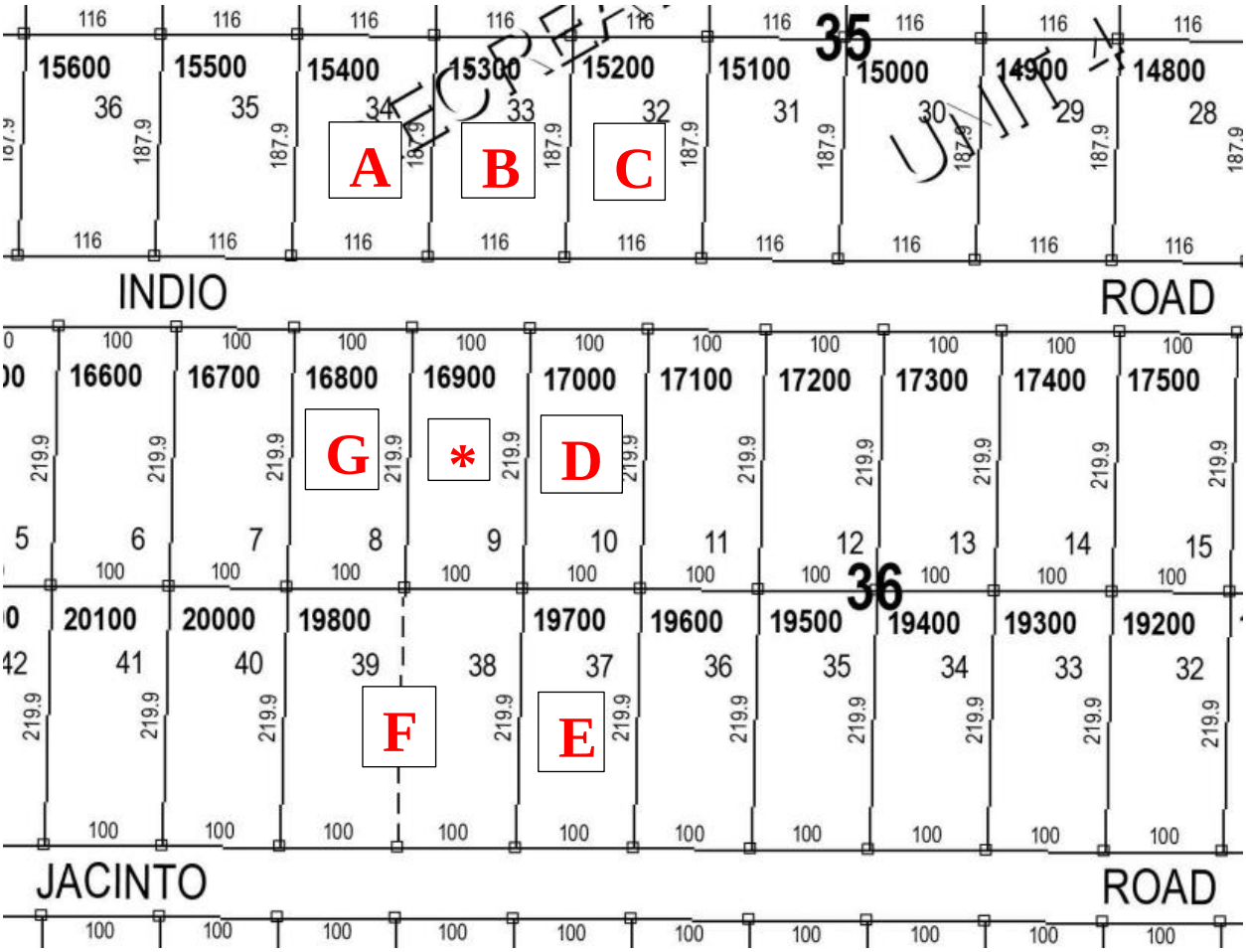
0.2 mi

17089 Indio Rd
Bend, OR 97707

Adjacent Parcels Property Owners

17089 Indio Road, Bend, Oregon
(T20S, R10E, Section 12D, Tax Lot 16900, 0.49 acres

*	Tax Lot	16900	Pineriver Homes 23410 Highway 20 Bend, OR 97701
A.	Tax Lot	15400	Delucia, Megan Madeline 12411 SE Yoakam Ln Happy Valley, OR 97086
B.	Tax Lot	15300	Garcia Family Trust 1205 Country Club Dr Ojai, CA 93023
C.	Tax Lot	15200	Moore, Eric Leon 620 Thimbleberry Ln Sandpoint, ID 83864
D.	Tax Lot	17000	Lynn, Justin W & Cheryl A PO Box 301523 Portland, OR 97294
E.	Tax Lot	19700	Hager, Larry D 307 SE Elliott Ave Gresham, OR 97080
F.	Tax Lot	19800	Fulcher, Todd A PO Box 546 Philomath, OR 97370
G.	Tax Lot	16800	Westall, Gary A & Laura H 17081 Indio Road Bend, OR 97707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Business Name Search

New Search | Printer Friendly

Business Entity Data

11-27-2023
11:22

Registry Nbr	Entity Type	Entity Status	Jurisdiction	Registry Date	Next Renewal Date	Renewal Due?
188381-93	DLLC	ACT	OREGON	12-09-2003	12-09-2024	
Entity Name	PINERIVER HOMES LLC					
Foreign Name						

New Search | Printer Friendly

Associated Names

Type	PPB	PRINCIPAL PLACE OF BUSINESS				
Addr 1	23410 HWY 20					
Addr 2						
CSZ	BEND	OR	97701		Country	UNITED STATES OF AMERICA

Please click here for general information about registered agents and service of process.

Type	AGT	REGISTERED AGENT		Start Date	11-21-2022	Resign Date
Name	KEVIN	DOUGLAS	HOLLAND			
Addr 1	23410 HWY 20					
Addr 2						
CSZ	BEND	OR	97701		Country	UNITED STATES OF AMERICA

Type	MAL	MAILING ADDRESS			
Addr 1	23410 HWY 20				
Addr 2					
CSZ	BEND	OR	97701	Country	UNITED STATES OF AMERICA

Type	MEM	MEMBER				Resign Date
Name	DANIELLE		HOLLAND			
Addr 1	23410 HWY 20					
Addr 2						
CSZ	BEND	OR	97701		Country	UNITED STATES OF AMERICA

Type	MGR	MANAGER				Resign Date
Name	KEVIN		HOLLAND			
Addr 1	23410 HWY 20					
Addr 2						

CSZ	BEND	OR	97701		Country	UNITED STATES OF AMERICA

Type	MGR	MANAGER			Resign Date	
Name	BRIAN		HOLLAND			
Addr 1	16970 PITCH CT					
Addr 2						
CSZ	BEND	OR	97707		Country	UNITED STATES OF AMERICA

Type	MGR	MANAGER			Resign Date	
Name	SUMMER		HOLLAND			
Addr 1	16970 PITCH CT					
Addr 2						
CSZ	BEND	OR	97707		Country	UNITED STATES OF AMERICA

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Name History

Business Entity Name	Name Type	Name Status	Start Date	End Date
PINERIVER HOMES LLC	EN	CUR	12-09-2003	

Please read before ordering Copies.

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Summary History

Image Available	Action	Transaction Date	Effective Date	Status	Name/Agent Change	Dissolved By
	AMENDED ANNUAL REPORT	11-14-2023		FI		
	AMENDED ANNUAL REPORT	11-21-2022		FI	Agent	
	AMENDED ANNUAL REPORT	10-22-2021		FI		
	AMENDED ANNUAL REPORT	10-28-2020		FI		
	AMENDED ANNUAL REPORT	11-12-2019		FI	Agent	
	AMNDMT TO ANNUAL RPT/INFO STATEMENT	07-24-2019		FI		
	AMNDMT TO ANNUAL RPT/INFO STATEMENT	04-29-2019		FI		
	AMENDED ANNUAL REPORT	10-29-2018		FI	Agent	
	ANNUAL REPORT	11-15-2017		FI		
	ANNUAL REPORT	11-18-2016		FI		
	ANNUAL REPORT	12-02-2015		FI		
	ANNUAL REPORT PAYMENT	11-25-2014		SYS		
	ANNUAL REPORT	11-20-2013		FI		
	ANNUAL REPORT	11-27-2012		FI		

	ANNUAL REPORT	12-16-2011		FI		
	ANNUAL REPORT PAYMENT	12-22-2010	12-21-2010	SYS		
	ANNUAL REPORT PAYMENT	11-10-2009		SYS		
	ANNUAL REPORT PAYMENT	12-16-2008		SYS		
	ANNUAL REPORT PAYMENT	11-20-2007		SYS		
	ANNUAL REPORT	01-19-2007		FI		
	ANNUAL REPORT	11-21-2005		FI		
	AMENDED ANNUAL REPORT	11-17-2004		FI		
	ARTICLES OF ORGANIZATION	12-09-2003		FI	Agent	

Variance Application from Oregon Administrative Rules Regulating Onsite Wastewater Treatment Systems

DEQ
State of Oregon Department of Environmental Quality

Western and Northwest Regions:

Oregon Department of Environmental Quality
Onsite Program
165 East Seventh Ave, Ste 100
Eugene, Oregon 97401

Eastern Region:

Oregon Department of Environmental Quality
Onsite Program
475 NE Bellevue Dr, Ste 110
Bend, OR 97701

Please complete this application form and submit it with the fee and required attachments to one of the addresses above. The fees can be found in the current rule tables on DEQ's website here: https://ordeq.org/variancefees

Please note: Variance approval is not guaranteed, and fees are non-refundable. Learn more about the variance process at https://ordeq.org/septicvariance

Owner Information - Please Print:

Owner Name(s) (Last, First) Pineriver Homes LLC

Mailing Address 23410 Highway 20

City, State, Zip Bend, OR 97701

Phone (541) 598-7773 Email pineriverhomesllc@gmail.com

Property Information:

County Deschutes

Township, Range, Section, Tax Lot T20S R10E S12D Tax Lot 16900

Lot and Block Number Lot 9, Block 36 Subdivision Name Deschutes River Recreation Homesites Inc Unit 4

Provide the Following Attachments:

1. A locator map showing accurate directions to the property. List the property's street address if the street address is known.

2. **Two copies** of the parcel's legal description (metes and bounds, warranty deed, sales contract or approved subdivision plat). Include copies of the protective covenants, deed restrictions and easements applicable to the property.

3. **Two copies** of the assessor's tax lot map showing the property or a surveyor's plat map.

4. **Two copies** of a land use compatibility statement from the appropriate land use authority that your proposed land use is compatible with the Land Conservation and Development Commission's acknowledged comprehensive plan or statewide planning goals.

5. **One copy** of the DEQ (or county agent) site evaluation report, field notes, and other correspondence relating to past evaluations for septic system development.

RECEIVED
NOV 17 2023
DEQ
Eastern Region Bend

6. **Two copies** of a narrative description for your variance proposal, including system construction specifications and the step-by-step procedures you propose to follow when installing the system. You must clearly describe how your proposal will overcome the limitations cited by DEQ or the county in the original denial.

7. **Two copies** of a plot plan drawn with the location and dimensions of all components of the proposed system. Use a defined scale that is not smaller than one-inch equals 30 feet. Also, be sure to include the replacement absorption facility in the plot plan drawing. Indicate separation distances between disposal trenches, springs, water courses, agricultural drainage tile, ditches, drainage ways, water lines, buildings, roads, embankments, and other identifying features, which help demonstrate parcel-to-drainfield relationships. Locate all wells within 200 feet of the proposed system and the replacement system.

8. The names and mailing addresses of all adjacent property owners and other known interested persons, for hearing notice.

9. The variance officer will request additional items be provided, if found necessary for the variance. The application will be deemed incomplete until the requested items are provided.

A minimum of two test pits must be provided within the specific area where the variance system is proposed, and should be approximately two feet wide, four feet long, and excavated to either bedrock or to a depth of five feet. Similar pits must be provided in the area of the repair system. The variance officer may require the proposed drainfield and the future replacement drainfield to be staked out.

Hardship Variances:

Hardship variances may be considered in cases of extreme and unusual hardship. The following factors may be considered: advanced age or bad health of applicant, need of applicant to care for aged, incapacitated or disabled relative, and the hardship variance will have relative, insignificant environmental impact. Documentation of hardship must be provided.

☐ MARK THIS BOX FOR HARDSHIP CONSIDERATION

By my (our) signature(s), I (we) request DEQ act on this application and hereby grant permission to enter onto the above-described property. I (we) also acknowledge that I (we) have read the Variance Process Fact Sheet found here: https://ordeq.org/septicvariance

11-8-23 Bin Hon

Date Owner Signature

Date Owner Signature

NOTE: All owners must sign this application form. If there are more than two owners, have them sign additional duplicate applications and include them with submittal.

* Pursuant to ORS 454.662, the applicant is not required to submit the application fee if, at the time of filing the application, the applicant is 65 years of age or older, is a resident of the State of Oregon, and has an annual household income, as defined in ORS 310.630, of $15,000 or less. Appropriate documentation must be submitted with the application.