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

August 29, 2024

EJ Enterprises LLC
22307 SE Sharon Drive
Damascus, OR 97089

Re: WQ: Variance Approval: 248-24-000241-VAR: 16745 Winchester Drive; T.20S; R.10E; Sec. 23A; Tax Lot 400; Lot 24, Swarens Fancher Robinson Tracts, 5.18 Acres; Deschutes County.

Dear EJ Enterprises LLC,

This correspondence verifies that a variance hearing provided for under Oregon Administrative Rules 340-071-0430, was held on the site at 9:00 am on August 14, 2024, for the subject property referenced above on Winchester Drive in 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:
Based on review and evaluation of the variance record and observations made during the variance hearing, I am pleased to inform you that the variance from the rules cited above is hereby granted. In my opinion, it would be unreasonable to prohibit this method of wastewater treatment by strictly following the administrative rules at this specific location at this time. It is my judgement that the proposed system is not likely to present a public health hazard risk or have any significant adverse impacts to groundwater or surface water quality if properly operated and maintained.

Justification for this decision:

- The proposed Orenco® AdvanTex AX20N-Mode 3B system is currently approved as a system meeting DEQ's Treatment Standard 2; OAR 340-071-0100(168) "Treatment Standard 2".
- On average, the AX20N-Mode 3B system is one of the best available technologies for Total Nitrogen treatment that has been approved for use in Oregon and is expected to treat residential wastewater to 20 mg/L Total Nitrogen, which is about two thirds of a reduction from that of a standard system and about half from a sand filter system in this climate.
- Treatment Standard 2, for the reduction of fecal coliform, will be met or exceeded with pre-treated effluent from the AX20N-Mode 3B unit (proposed w/o UV disinfection) and the 250 square foot bottomless sand filter with an additional 12-inches of sand filter media mixed with carbon enhancement (embedded 6-inches below ground surface) placed below the filter to meet or exceed the minimum 24-inch separation requirement to groundwater below. Note:

The bottomless sand filter is assumed to meet Treatment Standard 2 criteria independently of the ATT, which is why UV disinfection is not included in the proposal.

- Overall Treatment: Treatment first occurs within the AX20N-Mode 3B system (w/o UV) for reductions in TSS, BOD_5 and Total Nitrogen (TN). Final discharge will occur through the elevated bottomless sand filter with enhanced carbon layer, which may provide some additional reduction/treatment of BOD_5, TSS, Fecal Coliform and TN. The final effluent Nitrate concentration is expected to be under the EPA drinking water standard of 10 mg/L as well as local action levels set at 7 mg/L.
- The proposed system, with innovative technology, shall be required to be maintained by a certified maintenance provider for the life of the system. Additionally, the system shall be monitored and sampled at regular intervals to ensure that the system is performing as expected. The sampling, monitoring, and maintenance of the system shall be reported to Deschutes County on an annual basis.

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 standards noted above are granted. In my opinion, your proposal adequately addresses the limitations present at the site.

Other Considerations:
The effluent from the ATT that then discharging through a bottomless sand filter with a carbon enhanced layer, will have a significant reduction in BOD, TSS, TN, and Fecal Coliform. In this proposal, treated ATT effluent will be discharged into a 250 square foot bottomless sand filter with an additional 12- inches of sand filter media with carbon enhancement embedded 6 - inches into the native soil that will be used to exceed the 24-inch separation from the shallowest water table depth standard by providing a total separation of 29- inches, as the highest water level observed in area of the system was 17 inches below ground surface. The additional media will mitigate the lack of vertical separation from the bottom of the sand filter to the highest level of groundwater on site. The carbon enhanced sand filter media is expected to provide a significant reduction of Total Nitrogen (and Nitrate) before the treated effluent enters the bottomless sand filter with a basal area intersecting the native soil and ultimately the groundwater below.

This variance approval is being granted on the condition that requirements contained in the enclosed schedules are met. Schedules A and B (attached) include requirements and specifications for the design and location of the system approved through this variance. Failure to meet these conditions may cause the variance approval to become null & void.

Site History & Variance Proposal:
Deschutes County conducted a site evaluation with 6 test pits within the subject property on April 30, 2020, where a denial was issued for the use of an onsite wastewater system on May 5, 2020. 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 between 8- inches and 17-inches below ground surface (bgs), respectively. The initial and replacement sand filters with

carbon enhanced layers will be situated around the test pit that was found to have a water table 17 inches below the ground surface.

The proposal to overcome the site limitations is by installing an Orenco® AdvanTex AX20N-Mode 3B Alternative Treatment Technology System followed by a 250 sq. ft. elevated Bottomless Sand Filter system with a carbon enhanced layer of sand filter media constructed on a 12-inch bed of sand filter media embedded 6 inches into the native soil. It is expected that the highest level of groundwater within the lowest point of the sand filter areas will come to 21- inches bgs. The proposal overcomes this limitation by providing additional sand filter media with 3- inches of extra vertical separation and providing a total 27-inch separation to the shallowest predicted groundwater depth. 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 t- 9 inches deep of final backfill on top. The sand filter will be contained within a supporting berm with a slope no steeper than 3:1.

You are seeking a variance from the following Oregon Administrative Rules (OAR):

340-071-0135(1) – which addresses DEQ approval of new or innovative technologies, materials, or designs for onsite systems. **This rule is being varied from due to deviating from the approved design for the AX20N in Mode 3B by not requiring UV disinfection. Treatment Standard 2 will still be met or exceeded without the UV disinfection by discharging the treated effluent through a bottomless sand filter.**

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

340-071-0290(4)(d) which states: Bottomless Sand Filter. Sites may use a conventional bottomless sand filter 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.

Should future ATT technologies for treatment of Total Nitrogen be approved for use in Oregon before issuance of a construction-installation permit for this site, Deschutes County may allow installation of equal or better technology instead of the type noted in this approval.

Conclusion:

The decision to grant your variance request is a Final Order of DEQ. Any person who is adversely affected or aggrieved by this Order is entitled to a contested case hearing before the Environmental Quality Commission. A request for a hearing must be received by DEQ within twenty days from the date of certified mailing of this Order. The request must specifically describe how the Order fails to meet the requirements of Oregon Revised Statutes 454.657 and 454.660, and include the technical basis that supports the petition. The appeal must be directed to the Environmental Quality Commission, in care of Lindsay Trapp, EQC Assistant, Department of Environmental Quality, 700 NE Multnomah St., Suite 600, Portland, OR 97232-4100.

Deschutes County onsite staff is hereby authorized to issue a construction-installation permit, subject to all the conditions, upon their receipt of a complete permit application. The application must include a favorable land use compatibility statement issued by Deschutes County, a set of detailed plans and specifications for the onsite wastewater treatment system, a current maintenance service agreement and the appropriate application fee.

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 – Onsite Wastewater Program

Encl: Schedule A- Special Conditions
Schedule B- Approved Plans
Approved Drawings / Schematics

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
Arthur E & Rebecca S Sharkey, 22307 SE Sharon Dr, Damascus, OR 97089
Jane V Devlin Revocable Trust, PO Box 3713, Bend, OR 97701
Hartley Family Trust, PO Box 4743, Sunriver OR 97707
Shauntae Piva et al, 5121 W Cove St, Garden City, ID 83714
Timothy R & Sherrie Sue Phillips, PO Box 4712, Sunriver, OR 97707
Stead Family Trust, PO Box 3957, Sunriver, OR 97707
Olsen Trust, 239 El Cajon Way, Los Gatos, CA 95032
Van Der Nat Family Trust, PO Box 2257, Bend, OR 97707

Schedule A – EJ Enterprises LLC
Variance Report - Special Conditions
T 20S, R 10E, Sec: 23A, TL 400

Special Conditions and requirements for the Orenco® AX20N-Mode 3B Alternative Treatment Technology unit followed by an elevated 250 square foot Bottomless Sand Filter with a carbon enhanced sand filter media layer at 16745 Winchester Drive; T.20S; R.10E; Sec. 23A; Tax Lot 400; Lot 24, Swarens Fancher Robinson Tracts, 5.18 Acres; Deschutes County.

1. A person or business licensed by the Department of Environmental Quality in accordance with Oregon Revised Statutes, Chapter 454.695, must perform all work construction of this onsite wastewater treatment system.

2. Before starting with the actual construction of this system, the system installer shall submit, through a written statement to the Deschutes County Community Development Department, Onsite Wastewater Division (hereafter referred to as "County") that acknowledges that they have thoroughly reviewed the conditions of this variance approval with technical staff in that office, and they understand and will comply with all conditions associated with this variance approval.

3. This system incorporates the use of Sand Filter Media and Underdrain media, as defined in Oregon Administrative Rules (OAR) 340-071-0100(124) and OAR 340-071-0100(170). Prior to delivery to the site, a current sieve analysis, using testing requirements required in rule for the respective material, must be submitted for review and approval to the County. Special handling of the respective media is to occur, during transport, site storage, and construction of the sand filter.

4. The carbon enhanced sand filter media must be evaluated and approved by Elkhorn Consulting LLC or an equivalent.

5. This onsite wastewater treatment system shall serve a single-family residence with up to four bedrooms. The projected daily sewage flow must not exceed 450 gallons per day, and the average daily flow must not exceed 225 gallons per day. Where practical, low water-use plumbing fixtures and appliances should be used within the dwelling in conjunction with water conservation practices. **Use of a garbage disposal is not recommended.**

6. All construction of this system shall only occur under optimum soil moisture conditions. The soils must be nearly dry and not frozen. Typically, the ideal construction period begins at the end of spring run-off season and ends prior to the onset of winter weather.

7. The setback to all wells from the initial or replacement bottomless sand filters is to be at least 100 feet.

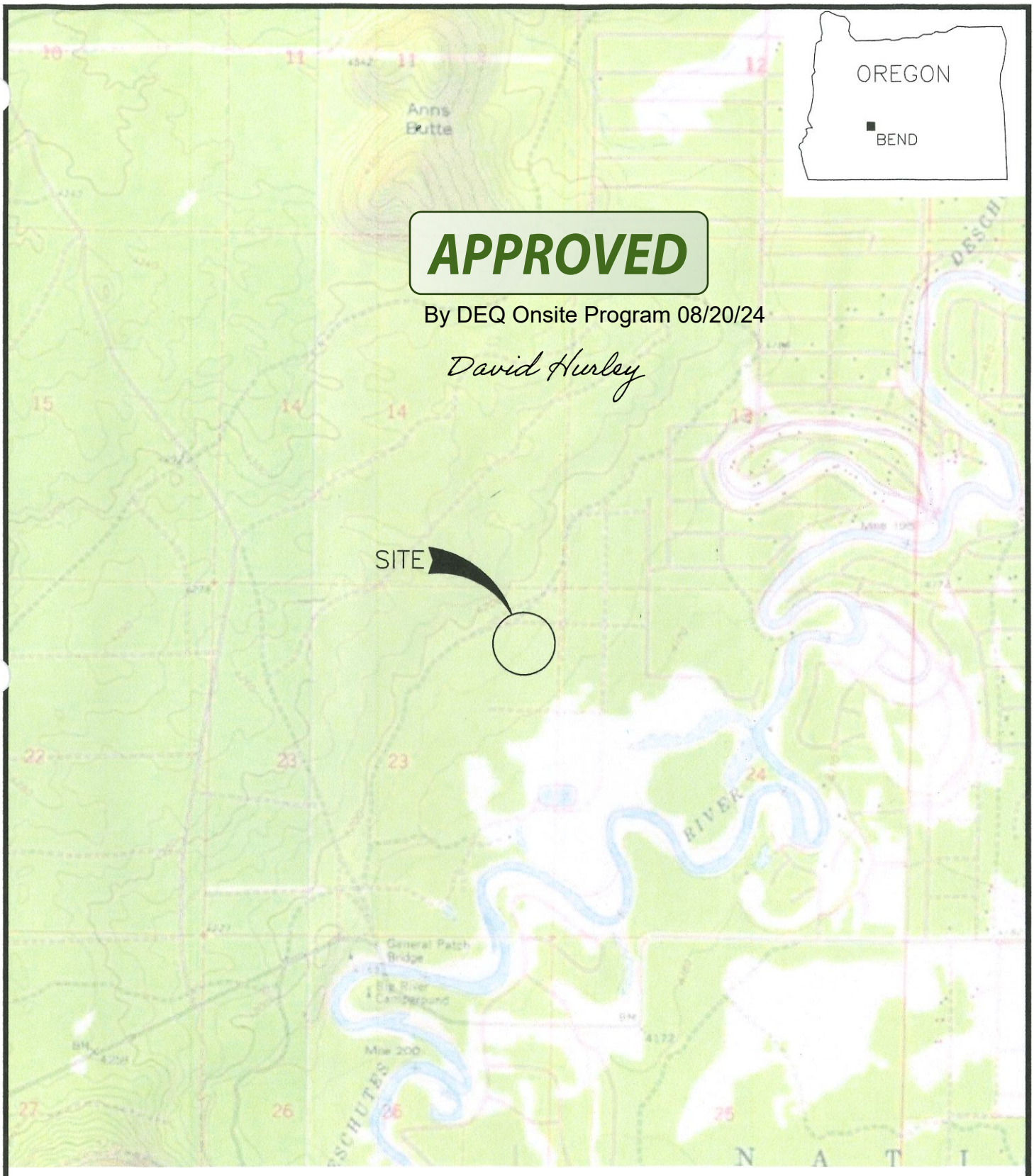
8. The County shall inspect the installation of this system at those stages of construction they identify as appropriate to ensure proper construction.

9. Except as specifically authorized, all requirements of the Oregon Administrative Rules (Chapter 340, Rules 071-0100 through 071-0650) must be met.

10. The permittee shall comply with all local planning, zoning and building ordinances.

11. A Certificate of Satisfactory Completion shall be issued for the completed installation only if all conditions of this variance approval are met.

12. Should the onsite wastewater treatment and disposal system, authorized through this variance fail, County staff may exercise professional discretion in effecting a repair, based upon an analysis of the possible causes of failure. An area next to the initial sand filter is to be designated for future repair or replacement and must be reserved for this use. The replacement system considered in this variance procedure is the installation of another sand filter.



APPROVED

By DEQ Onsite Program 08/20/24

David Hurley

Figure 1. Vicinity Map

0 2,000'

1" = 2,000'

(LOCATIONS AND SCALE ARE APPROXIMATE)

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

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1-5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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TAX LOT 600
NO RECORDS

TAX LOT 500
STANDARD SYSTEM (1994)
AUTHORIZATION NOTICE (2017)

660'

RIGHT
-OF
-WAY

30'

TAX LOT 100
STANDARD SYSTEM
(1999/2000)

30'

TAX LOT 103
ATT + BSF
(2017)

TAX LOT 700
STANDARD SYSTEM
(1992)

330'

PROPOSED
HOUSE
(60'x60')

PROPOSED
GARAGE
(35'x25')

PROPOSED
WELL

CLEANOUTS

50' SETBACK
(TANKS) TYP.

100' SETBACK
(SAND FILTER) TYP.

PROPOSED
SHOP
(40'x60')

PROPOSED ADVANTEX
AX20N (MODE 3B)
TREATMENT SYSTEM

TEST
PIT 1
(2020)

PROPOSED 10'x25'
REPLACEMENT AREA

10'

PROPOSED 10'x25' MODIFIED
BOTTOMLESS SAND FILTER

15'

WINCHESTER DRIVE
(16745)

T20S, R10E, SECTION 23A, TAX LOT 400

TAX LOT 800
SAND FILTER
(2006)

TAX LOT 300
STANDARD SYSTEM
(1979)

TBM – TOP OF IRON ROD
AT PROPERTY CORNER

TAX LOT 101
STANDARD SYSTEM
(1991)

0 60'

1"=60'

(SCALE AND LOCATIONS
ARE APPROXIMATE)

Figure 2. Site Plan

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1-5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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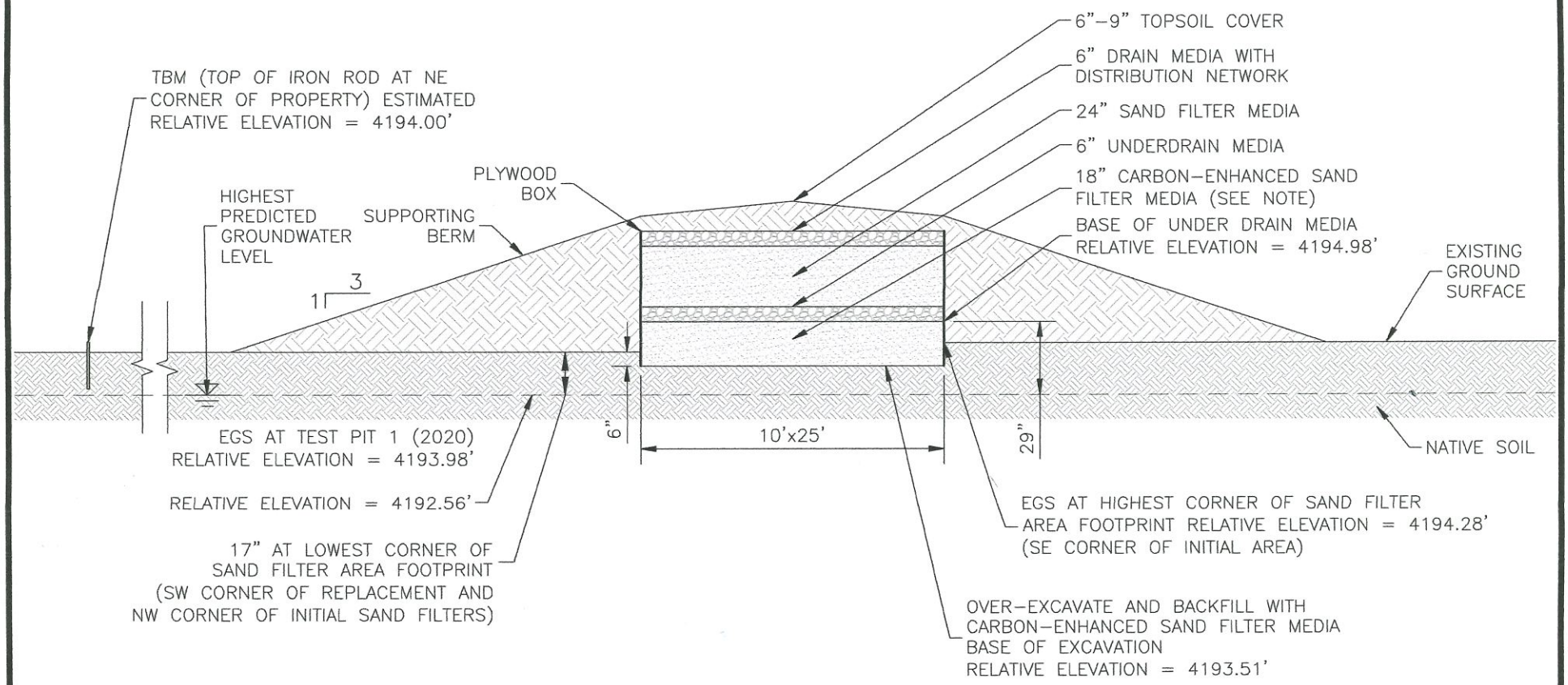

NOTE: CONSTRUCT THE BASEMENT LAYER WITH A CAREFULLY PLACED AND COMPRESSED BLEND OF 75% SAND FILTER MEDIA AND 25% SOLID–PHASE CARBON (50/50 MIX OF COARSE AND FINE WOOD–PLAYGROUND CHIPS AND SAWDUST). THE PURPOSE OF THIS LAYER IS TO ENHANCE NITROGEN REMOVAL.

Figure 3. Modified Bottomless Sand Filter Section

0 5'

1"=5'

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1–5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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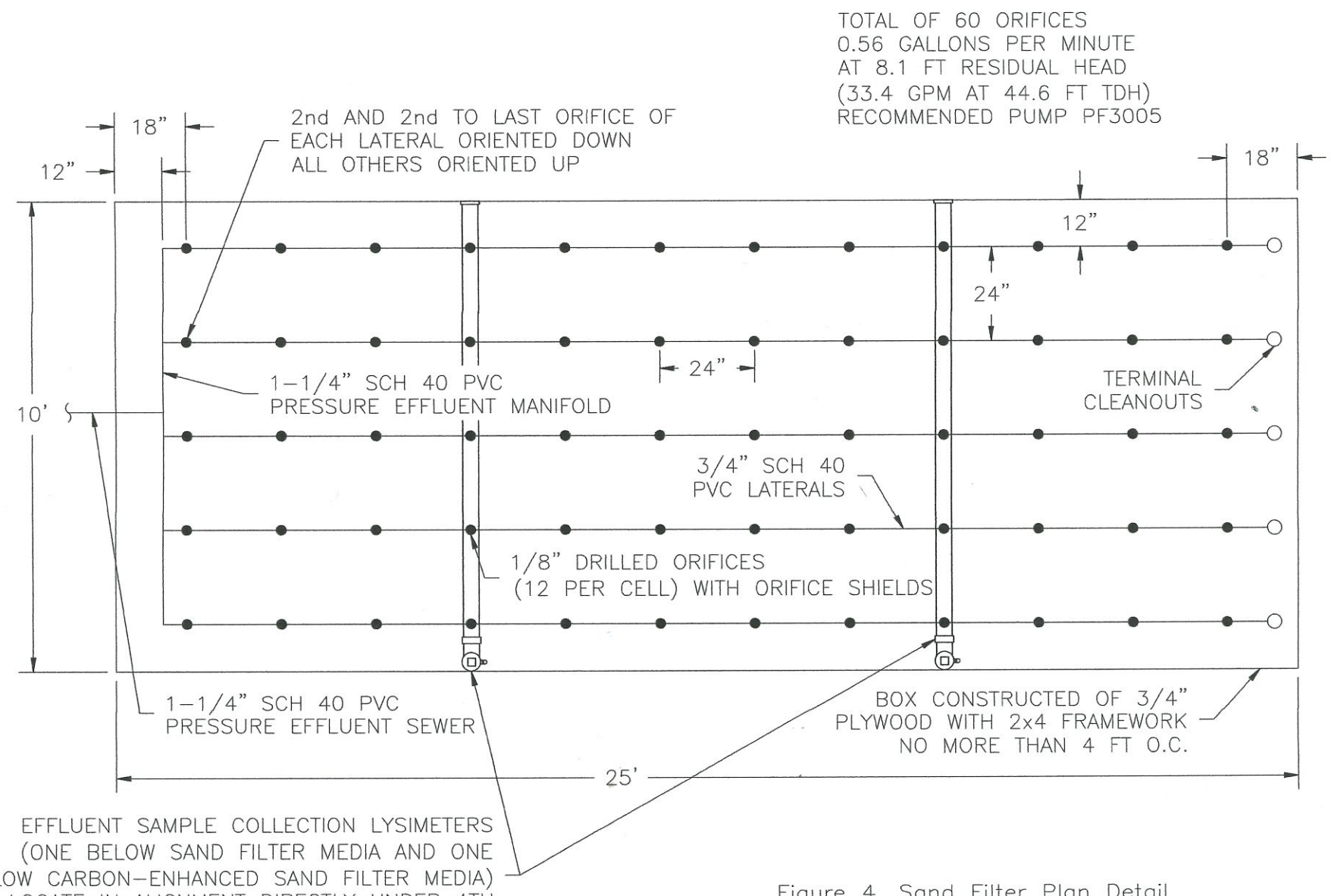

Figure 4. Sand Filter Plan Detail

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1-5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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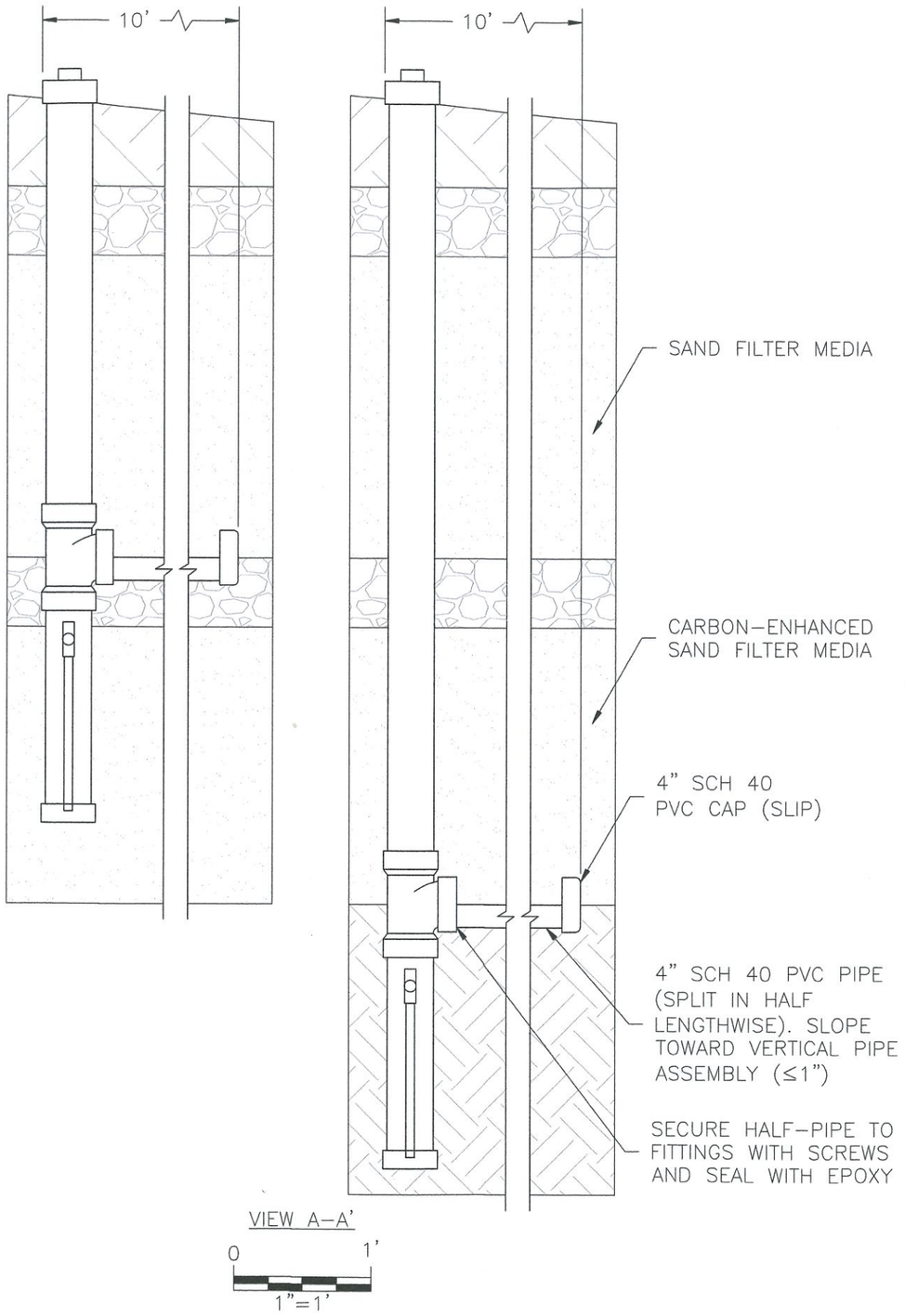

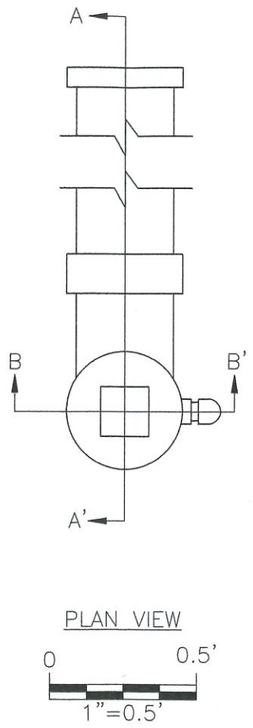

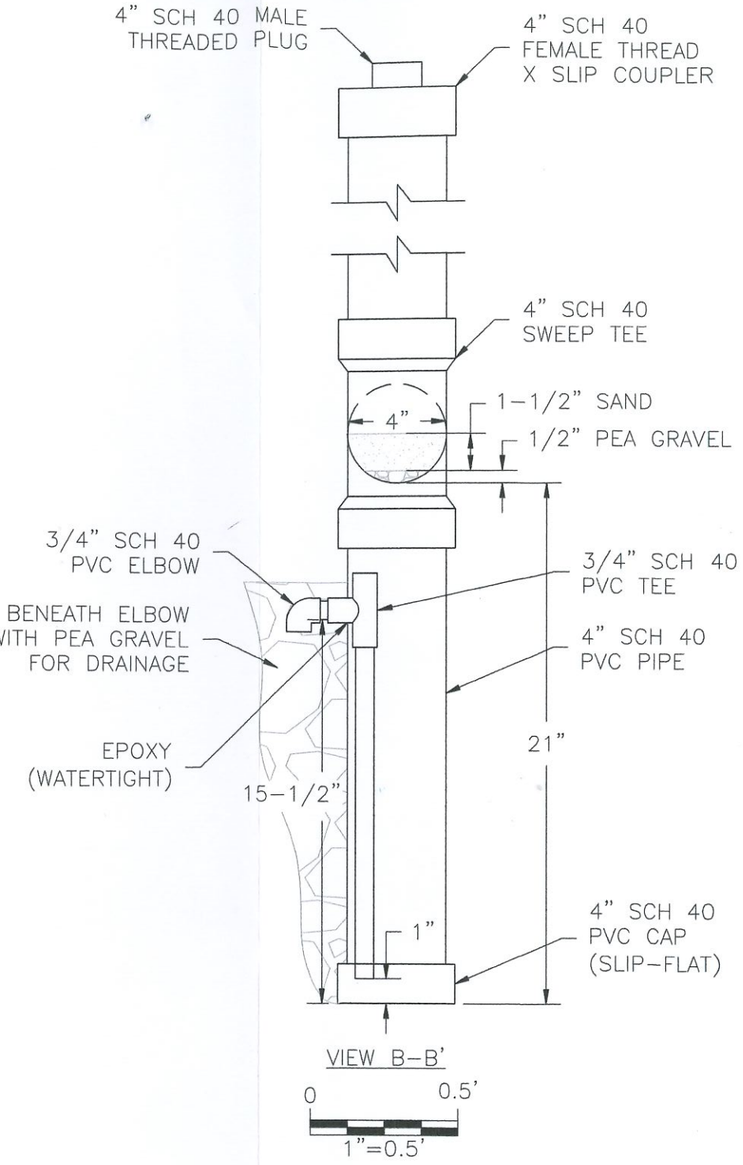

Figure 5. Lysimeter Details

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1–5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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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

August 7, 2024

Hearing Date/Time is 9:00 AM on August 14, 2024

Re: WQ: CAS: Variance Assignment: 248-24-000241-VAR: 16745 Winchester Drive; T.20; R.10E; Sec. 23A; Tax Lot 400; Lot 24, Swarens Francher Robinson Tracts, 5.18 Acres; Deschutes County

Dear Resident:

Neighbors of yours, EJ Enterprises 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 carbon enhanced media layer 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 Pineriver Homes, 23410 Highway 20, Bend, OR 97701

In Addition, To The Following Adjacent Property Owners:

Arthur E & Rebecca S Sharkey, 22307 SE Sharon Dr, Damascus, OR 97089
Jane V Devlin Revocable Trust, PO Box 3713, Bend, OR 97701
Hartley Family Trust, PO Box 4743, Sunriver OR 97707
Shauntae Piva et al, 5121 W Cove St, Garden City, ID 83714
Timothy R & Sherrie Sue Phillips, PO Box 4712, Sunriver, OR 97707
Stead Family Trust, PO Box 3957, Sunriver, OR 97707
Olsen Trust, 239 El Cajon Way, Los Gatos, CA 95032
Van Der Nat Family Trust, PO Box 2257, Bend, OR 97707

Encl. Variance Hearing Notice

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

Certificate of Mailing

Concerning the matter of a notice of variance hearing for property owned by EJ Enterprises LLC in Deschutes County, Oregon. Re: WQ: CAS: Variance Assignment: 248-24-000241-VAR: 16745 Winchester Drive; T.20; R.10E; Sec. 23A; Tax Lot 400; Lot 24, Swarens Francher Robinson Tracts, 5.18 Acres.

I certify that I mailed the attached letters containing the notice of variance hearing about this matter to each of the following persons on the date shown below:

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:
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Van Der Nat Family Trust, PO Box 2257, Bend, OR 97707

Mark Lannigan
Signature

Mark Lannigan
Name

8/7/24
Date

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Tina Kotek, Governor

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Eastern Region Bend Office
475 NE Bellevue Dr., Suite 110
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August 7, 2024

EJ Enterprises LLC
22307 SE Sharon Drive
Damascus, OR 97089

Re: WQ: CAS: Variance Assignment: 248-24-000241-VAR: 16745 Winchester Drive; T.20; R.10E; Sec. 23A; Tax Lot 400; Lot 24, Swarens Francher Robinson Tracts, 5.18 Acres; Deschutes County

Dear EJ Enterprises 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, August 14, 2024, at 9:00 am** 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 six test pits at the subject property on April 30, 2020, where a denial was issued for the use of an onsite wastewater system on May 5, 2020. 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 18 and 19 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 carbon enhanced media layer to reduce nitrate-nitrogen. 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:

Encl. Neighbor Notice
Arthur E & Rebecca S Sharkey, 22307 SE Sharon Dr, Damascus, OR 97089
Jane V Devlin Revocable Trust, PO Box 3713, Bend, OR 97701
Hartley Family Trust, PO Box 4743, Sunriver OR 97707
Shauntae Piva et al, 5121 W Cove St, Garden City, ID 83714
Timothy R & Sherrie Sue Phillips, PO Box 4712, Sunriver, OR 97707
Stead Family Trust, PO Box 3957, Sunriver, OR 97707
Olsen Trust, 239 El Cajon Way, Los Gatos, CA 95032
Van Der Nat Family Trust, PO Box 2257, Bend, OR 97707

Business Name Search

New Search | Printer Friendly

Business Entity Data

07-15-2024
09:19

Registry Nbr	Entity Type	Entity Status	Jurisdiction	Registry Date	Next Renewal Date	Renewal Due?
1576805-97	DLLC	ACT	OREGON	07-16-2019	07-16-2025	
Entity Name	EJ ENTERPRISES, LLC					
Foreign Name						

New Search | Printer Friendly

Associated Names

Type	PPB	PRINCIPAL PLACE OF BUSINESS		
Addr 1	22307 SE SHARON DR			
Addr 2				
CSZ	DAMASCUS	OR	97089	Country: UNITED STATES OF AMERICA

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

Type	AGT	REGISTERED AGENT	Start Date	07-15-2020	Resign Date	
Name	JED		JENSEN			
Addr 1	22307 SE SHARON DR					
Addr 2						
CSZ	DAMASCUS	OR	97089	Country	UNITED STATES OF AMERICA	

Type	MAL	MAILING ADDRESS		
Addr 1	22307 SE SHARON DR			
Addr 2				
CSZ	DAMASCUS	OR	97089	Country: UNITED STATES OF AMERICA

Type	MEM	MEMBER		Resign Date	
Name	JED		JENSEN		
Addr 1	22307 SE SHARON DR				
Addr 2					
CSZ	DAMASCUS	OR	97089	Country	UNITED STATES OF AMERICA

Type	MEM	MEMBER		Resign Date	
Name	TREVOR		SARAZIN		
Addr 1	228 S SEYMOUR CT				
Addr 2					

CSZ	PORTLAND	OR	97239		Country	UNITED STATES OF AMERICA

Type	MEM	MEMBER				Resign Date	
Name	RYAN			EMERY			
Addr 1	34551 SE COLORADO RD						
Addr 2							
CSZ	SANDY	OR	97055		Country	UNITED STATES OF AMERICA	

New Search Printer Friendly

Name History

Business Entity Name	Name Type	Name Status	Start Date	End Date
EJ ENTERPRISES, LLC	EN	CUR	07-16-2019	

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Summary History

Image Available	Action	Transaction Date	Effective Date	Status	Name/Agent Change	Dissolved By
	AMENDED ANNUAL REPORT	07-09-2024		FI		
	AMENDED ANNUAL REPORT	09-12-2023		FI		
	AMENDED ANNUAL REPORT	06-28-2022		FI		
	AMENDED ANNUAL REPORT	06-15-2021		FI		
	AMENDED ANNUAL REPORT	07-15-2020		FI	Agent	
	AMNDMT TO ANNUAL RPT/INFO STATEMENT	06-23-2020		FI		
	ARTICLES OF ORGANIZATION	07-16-2019		FI	Agent	

ELKHORN CONSULTING LLC

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

July 3, 2024

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

SUBJECT: Formal Variance Request – EJ Enterprises LLC – T20S, R10E, Section 23A, Tax Lot 400 (5.18 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 16745 Winchester Drive, south of Bend in Deschutes County, Oregon (Site) (Figure 1) and consists of 5.18 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 April 30, 2020, and a denial was issued by Deschutes County on May 5, 2020. The evaluation included a total of 6 test pits; one near each of the 4 corners of the lot and the other 2 about midway along the east and west property boundaries. The test pits were described with indications of a seasonally high permanent water table at 17, 10, 14, 14, 11, and 8 inches below the existing ground surface (bgs), respectively. 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.

Soils

There is no published soil survey information for the Site or surrounding area. The nearest available survey information is about 700 feet east of the Site. Based on the similarity of elevation and landscape position, it is assumed that the Site would have been delineated within Map Unit 144A, Sunriver sandy loam 0 to 3% 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:

- 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,

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

- 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 approximately 2 to 4 feet bgs from April to June.

The characteristics observed at the Site are reasonably similar to the Sunriver series. The primary differences between the conditions noted in the 2020 soil notes and the conditions typical for the Sunriver series are related primarily to coloration (browner colors) in the surface horizons that are more indicative of the Shanahan series.

Preliminary Assessment

The Site was reviewed by Brian Rabe, CPSS, WWS, on May 22, 2024. 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 Pit 1 in the 2020 site evaluation (northeast corner of the lot - see Figure 2 and Appendix C).

Local Groundwater Information

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 23 of Township 20 South, Range 10 East of the Willamette Meridian). There are about 30 records on file for this section. A total of 9 water well records (well logs) were identified in Section 23 that could be tied to 7 specific parcels within about one-quarter of a mile of the subject property (Appendix D). A summary of each of the well logs is provided below.

The nearest well that could be identified is on Tax Lot 101 about 320 feet north-northeast of the proposed bottomless sand filter area, and was completed on October 18, 1990, to a depth of 100 feet. Water was described as being first found at a depth of 12 feet in a layer described as “cinders”. However, that layer was sealed off and the next water bearing zone was found at a depth of 90 feet in a layer described as “sand med coarse” and had a static level of 18 feet below ground surface (bgs) on the date of completion with a reported yield of 24 gallons per minute (gpm) with 14 feet of drawdown after 2 hours with a pump.

The next closest well is for Tax Lot 100, about 370 feet northwest of the proposed bottomless sand filter area. This well was completed on April 18, 2023, to a depth of 115 feet. Water was described as being first found at a depth of 75 feet in a layer of “diatomite and sand” and had a static water level of 68 feet bgs on the date of completion with a reported yield of 25 gpm with 8 feet of drawdown after 2.5 hours with a pump. There are 2 other well logs for Tax Lot 100; one for a well completed on June 1, 2004, which is presumed to be the original well; and one drilled earlier in April 2023 that was dry.

The well for Tax Lot 500 is about 450 feet southwest of the proposed bottomless sand filter area. This well was completed on September 22, 1994 to a depth of 100 feet. Water was described as being first

found at a depth of 16 feet at the top of a layer described as "clay." That layer was sealed off and water was next described as being found at a depth of 95 feet in a layer described as "clay and gravel" and had a static water level of 16 feet bgs on the date of completion with a reported yield of 20 gpm with 55 feet of drawdown after 4 hours with a pump.

The well for Tax Lot 103 is about 680 feet north-northwest of the proposed bottomless sand filter area. This well was completed on September 27, 2017 to a depth of 52 feet. Water was described as being first found at a depth of 30 feet in a layer of "brown sand/lava" and had a static water level of 14 feet bgs on the date of completion with a reported yield of 22 gpm with 4 feet of drawdown after 2 hours with a pump.

The well for Tax Lot 102 is about 900 feet northeast of the proposed bottomless sand filter area. This well was completed on July 20, 2006 to a depth of 100 feet. Water was described as being first found at a depth of 11 feet at the top of a layer described as "gravel." That layer was sealed off and water was next described as being found at a depth of 98 feet in a layer described as "pummice coarse" and had a static water level of 15 feet bgs on the date of completion with a reported yield of 25 gpm with 22 feet of drawdown after 1 hour with a pump.

The well for Tax Lot 800 is about 1,020 feet south-southeast of the proposed bottomless sand filter area. This well was completed on May 24, 1993 to a depth of 130 feet. Water was described as being first found at a depth of 117 feet in a layer of "pumice gravel" and had a static water level of 20 feet bgs on the date of completion with a reported yield of 18 gpm with 10 feet of drawdown after 4 hours with a pump.

The well for Tax Lot 900 is about 1,200 feet southeast of the proposed bottomless sand filter area. This well was completed on September 28, 1994 to a depth of 130 feet. Water was described as being first found at a depth of 126 feet in a layer of "worm hole lava" and had a static water level of 20 feet bgs on the date of completion with a reported yield of 21 gpm with 2 feet of drawdown after 4 hours with a pump.

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 10, which recommends a 0% to 10% reduction from the base scenario loading (standard systems) for existing homes and a 0% to 10% reduction for future homes. The results of the Nitrate Loading Management Model within the study (Figures 25 and 26) suggest that this area represents a low to moderate 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 June 5, 2024).[3]

[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 June 5, 2024, from ARC GIS Online: https://www.arcgis.com/apps/MapSeries/index.html?appid=c0d7daea497049c1a686d07dab7106e5

Formal Variance Request

Variance is requested from the following rules:

1. OAR 340-071-0130(1) – which requires protection of public waters from public health hazards.
2. 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]
3. OAR 340-071-0150(4)(a)(B) – which requires all criteria for approval shall be met.[1]
4. 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 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.

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 (2020) was described as:

- Dark yellowish brown (10YR 3/4) loamy sand from 0 to 17 inches with weak fine subangular blocky structure; many very fine, fine, medium, and coarse roots; underlain by
- Yellowish brown (10YR 5/4) coarse sand from 17 to 27 inches with single grain (structureless) structure; common very fine, fine, and medium, and few coarse roots; with redoximorphic features beginning at 17 inches; underlain by
- Dark brown (10YR 3/3) gravelly sandy loam from 27 to 44 inches with moderate fine subangular blocky structure; few very fine and medium roots; with redoximorphic features throughout; underlain by
- Black (10YR 2/1) coarse gravelly sand from 44 to 60 inches with single grain (structureless) structure; and few very fine roots. An auger was used to extend the test hole and very wet conditions were noted at 72 inches with free water noted at a depth of 76 inches.

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 the edge Test Pit 1 (2020). The highest level of the water table is expected to be 17 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 1 (2020).

The proposed system seeks to overcome this limitation by elevating the modified bottomless sand filter in a manner that provides an additional 5 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 carbon-enhanced sand filter media. An additional 12 inches of carbon-enhanced sand filter media (total of 18 inches) will be used to exceed the 24-inch separation from shallowest water table depth standard by providing a total separation of 29 inches.

As shown on Figure 3, the lower layer of sand will be installed with 25% solid-phase carbon (50/50 mix of playground chips and sawdust) thoroughly mixed with the medium sand and carefully placed and compressed (limited compaction). The placement of this layer will need to be supervised by Brian Rabe who will also install monitoring devices to allow the collection of samples to document the degree of nitrogen reduction through this layer. Additional information regarding the installation of the carbon-enhanced layer and the monitoring devices are included in Figures 4 and 5 and Appendix E. If this request is approved, a condition of approval will require access be allowed to the sand filter by current and future property owners for periodic sampling.

Research on similar amendments demonstrate that additional nitrogen removal will occur. Early results from a similar installation in southern Deschutes County indicate additional removal of over 50% compared to what is leaving the conventional part of the sand filter. Future sampling of this and similar installations in southern Deschutes County will document the amount of additional removal using this approach. The reduction from the base scenario loading using this approach is expected to be approximately 87 percent.

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.

In addition to the high level of treatment achieved by the AdvanTex treatment system, 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.

Additional Considerations for No Net Impact to Groundwater Nitrate Contribution

A letter from the Deputy Director of the Oregon Department of Environmental Quality dated December 19, 2023, to the Deschutes County Commissioners formally focused additional attention on the potential impacts to water quality in southern Deschutes County from onsite sewage treatment systems. It is important to consider a number of very conservative assumptions that were made in the USGS groundwater modeling effort that likely overestimated the potential impacts. The following addresses a few specific examples.

Plant Uptake of Nitrogen

The model specifically assumes no nitrogen removal from plant uptake. This may be appropriate for shallow rooted grasses, forbes, and other understory vegetation (e.g., bitterbrush). However, this is not appropriate for the overstory vegetation which is primarily lodgepole and ponderosa pine. These tree species have deeper root systems that can withstand periodic saturation. The model accounted for the impact of transpiration in the water balance but did not account for the impact of nutrient removal and storage in the nitrogen balance. The study concluded that there would be a concentration effect as a result. However, this is not realistic. Plants do not take up water without taking up nutrients that they need, if they are present.

Although studies of nutrient removal by lodgepole pine are limited, there are data available from peer-reviewed journal articles. One such article titled *The Nitrogen Cycle in Lodgepole Pine Forests, Southeast Wyoming* by T.J. Fahey, et al, published in *Biogeochemistry* in September 1985 documented total nitrogen uptake of 1.25 grams per square meter (g/m^2) with root turnover of 0.37 g/m^2 for a net uptake of 0.88 g/m^2. This is corresponds to 7.85 pounds of nitrogen uptake per acre per year.

Another data source is a chapter from a 1992 publication by the United States Forest Service (USFS) titled *Distribution of Biomass and Nutrients in Lodgepole Pine/Bitterbrush Ecosystems in Central Oregon* by Susan N. Little and Laurl J. Shainsky. They stated that the pumice soils in the area are "very severely deficient" in nitrogen. Table 4 of that publication lists the average nitrogen concentrations for several components of the tree. Since yield estimates for in the published soil survey are focused on the volume of merchantable wood produced over the typical rotation of a stand of timber, only the concentrations of the bolewood (0.06% N) and bark (0.25% N) are accounted for (the parts removed during harvest). The crowns, stumps, and roots are not removed during harvest and would contribute to nutrient cycling on site. The estimated yield of lodgepole pine for Shanahan soils in the published soil survey is 65 cubic feet per acre per year ($ft^3/ac/yr$). The dry density of lodgepole pine ranges from 22 to 53 pounds per cubic foot (lb/ft^3). For the purpose of calculation, an average of 37.5 lb/ft^3 will be used.

The smallest lots eligible for development in southern Deschutes County are about 0.5 acres in size. Assuming half the lot is developed (home, outbuildings, driveway, yard, etc.) the other half is typically maintained with native trees (lodgepole and/or ponderosa pine). Assuming half the average annual growth (32.5 $ft^3/ac/yr$), an average density of 37.5 lb/ft^3, and the nitrogen content described previously, the annual amount of N taken up and stored in standing wood biomass on 0.25 acres (half of a half-acre lot) is 1.2 pounds. On larger parcels such as this, an assumption of 1 acre for development and 4 acres left in a forested condition, the N taken up and stored in standing wood biomass would be about 9.6 pounds.

As described in the variance proposal, the proposed system represents the one of the best currently available technologies (AdvanTex + Carbon-Enhanced MBSF), which is expected to be better than all but the best system studied in the La Pine Demonstration Project (Sand Filter + Nitrex + Drainfield). Using expected average total nitrogen concentrations in the effluent leaving the carbon-enhanced layer and the data presented in the USGS groundwater loading and modeling study, the

annual mass load to groundwater would be 2.8 lb N/yr (8 mg/L x 2.55 people per home x 45 gallons per person per day x 365 days per year). Even the conservative nitrogen uptake and retention from residual trees on this lot is greater than the contribution from the proposed system. Therefore, approval of this lot utilizing this treatment approach is not likely to make an additive contribution of nitrogen to groundwater.

Hydraulic Loading

The annual hydraulic contribution to groundwater (precipitation minus evapotranspiration) is based on the natural condition. As development occurs, the transpiration component is reduced by the amount of area covered in roofs, driveways, and other impervious or non-vegetated areas. Runoff is limited in these soils so a higher proportion of precipitation contributes to recharge on developed lots than was assumed in the model. This would have a slight positive impact on resulting concentrations.

The letter from the Deputy Director states that the credibility of the state and county could be called into question regarding protection of water quality if more variances are approved. I respectfully disagree, based on the data provided in the previous paragraphs. Use of systems that further reduce the contribution to groundwater, with some systems under certain conditions representing a net zero contribution in most situations, and a net negative contribution in areas with slightly elevated (or higher) nitrate concentrations, are protective of groundwater quality and public health. These systems are only currently available through the variance process.

Conclusions

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 F. 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 1-5, Appendices A-F
c: Trevor Sarazin
Todd Cleveland, REHS – Deschutes County

Certified Professional
Soil Scientist
Brian T. Rabe
15239 Exp. 31DEC24
Registered Wastewater Specialist
No. EH-W-448430 Exp. 30SEP24

FIGURES

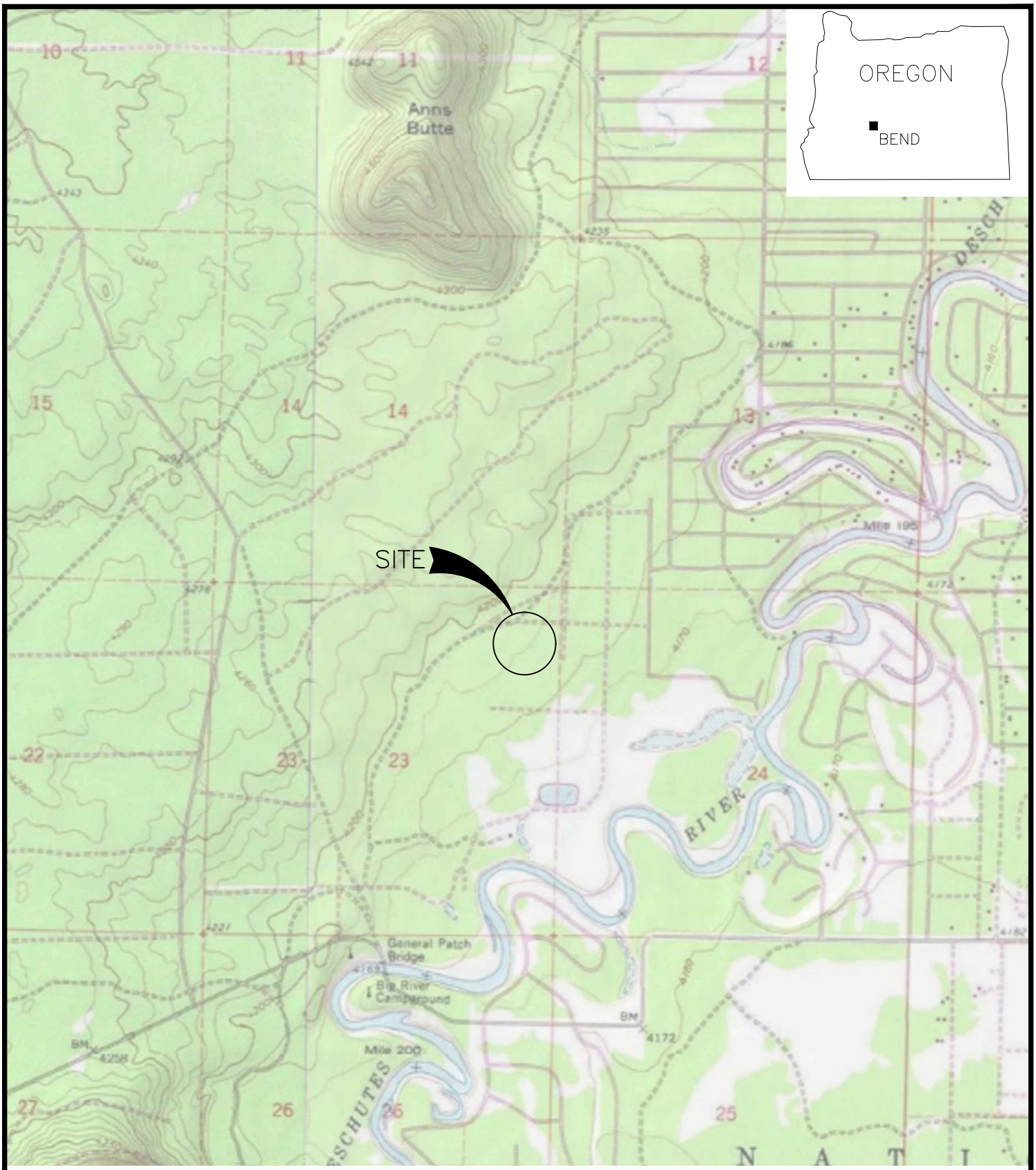

Figure 1. Vicinity Map

0 2,000'

1" = 2,000'

(LOCATIONS AND SCALE ARE APPROXIMATE)

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

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1-5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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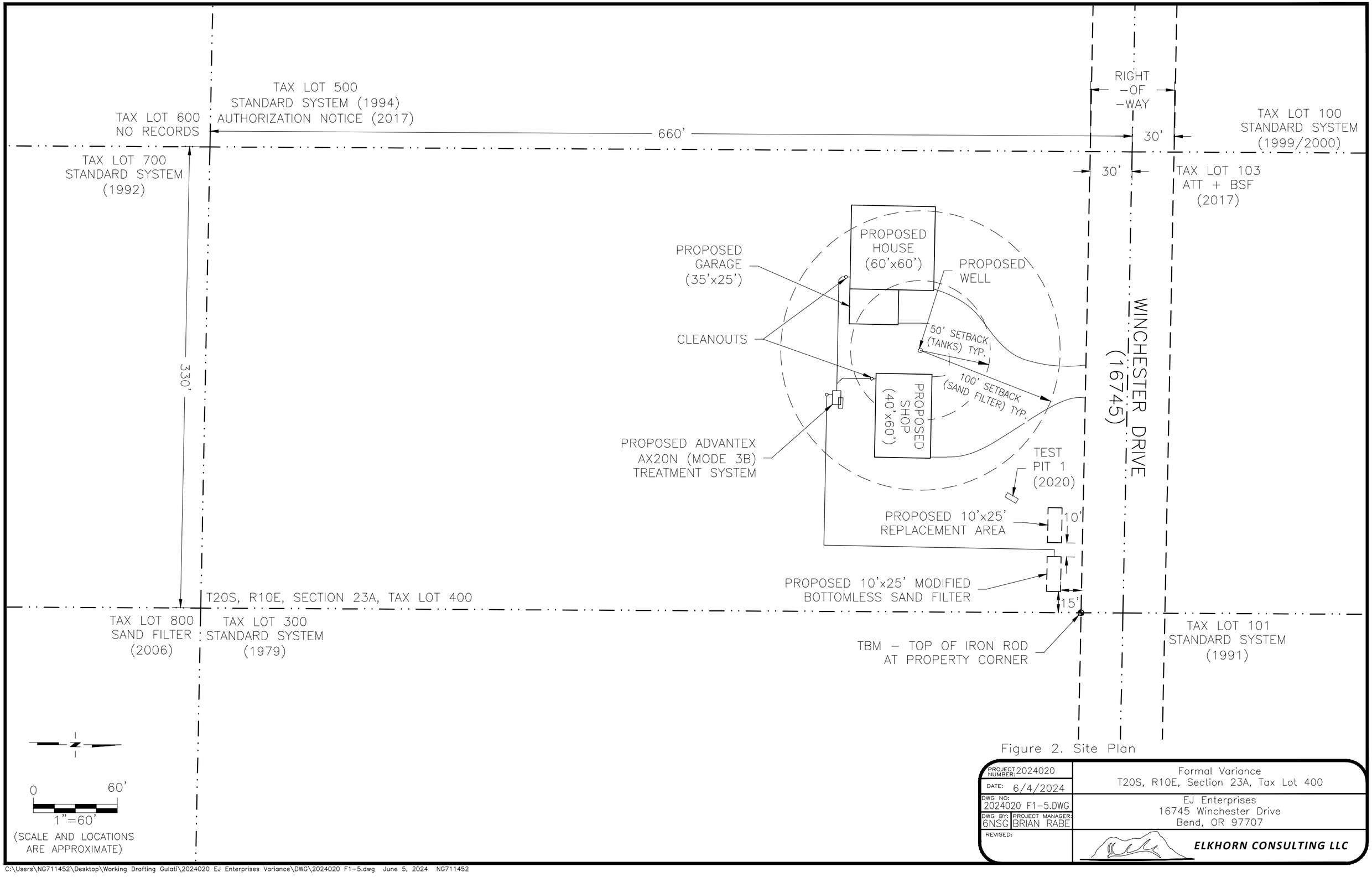

Figure 2. Site Plan

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1-5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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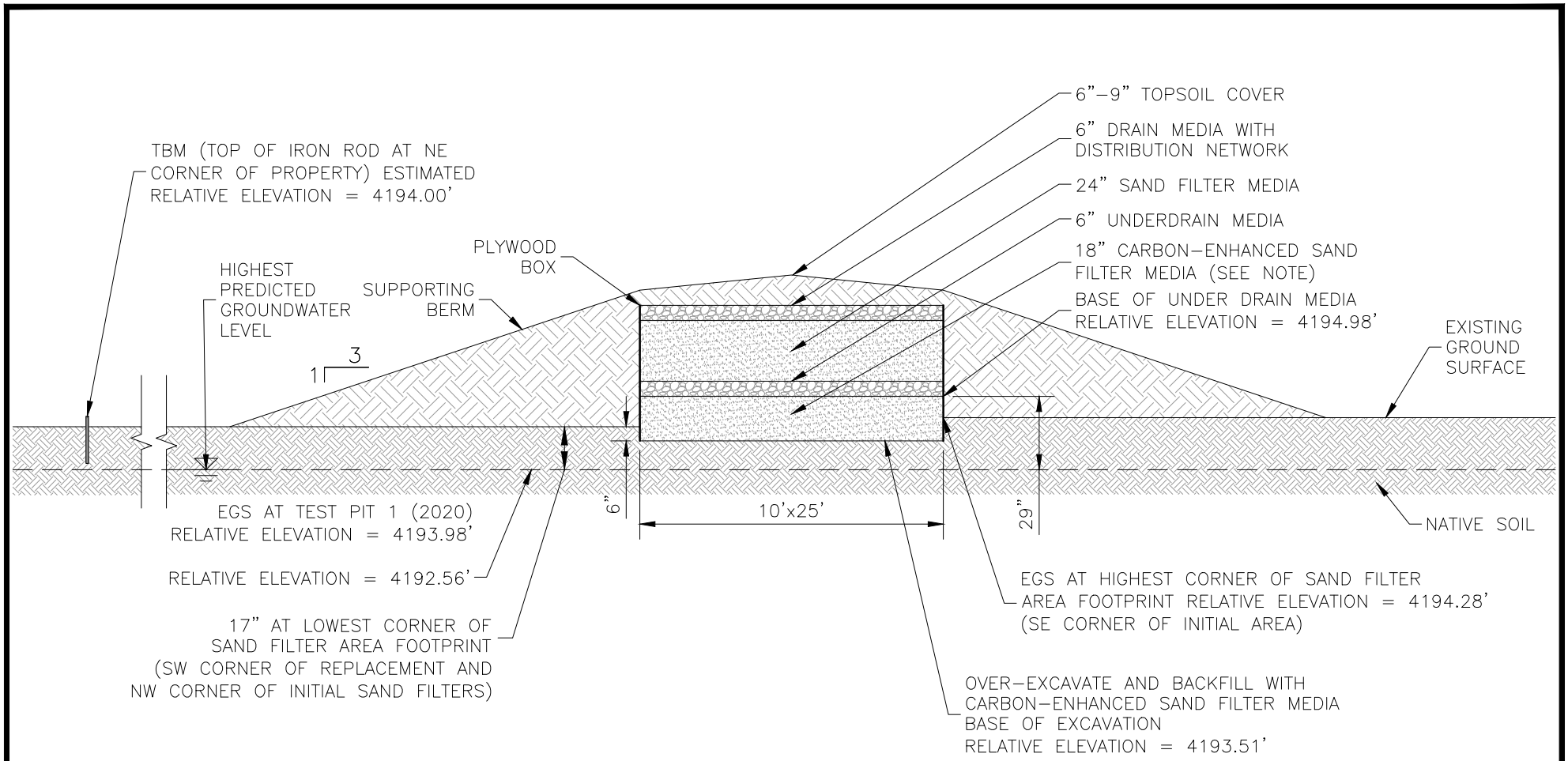

NOTE: CONSTRUCT THE BASEMENT LAYER WITH A CAREFULLY PLACED AND COMPRESSED BLEND OF 75% SAND FILTER MEDIA AND 25% SOLID–PHASE CARBON (50/50 MIX OF COARSE AND FINE WOOD–PLAYGROUND CHIPS AND SAWDUST). THE PURPOSE OF THIS LAYER IS TO ENHANCE NITROGEN REMOVAL.

Figure 3. Modified Bottomless Sand Filter Section

0 5'

1"=5'

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1–5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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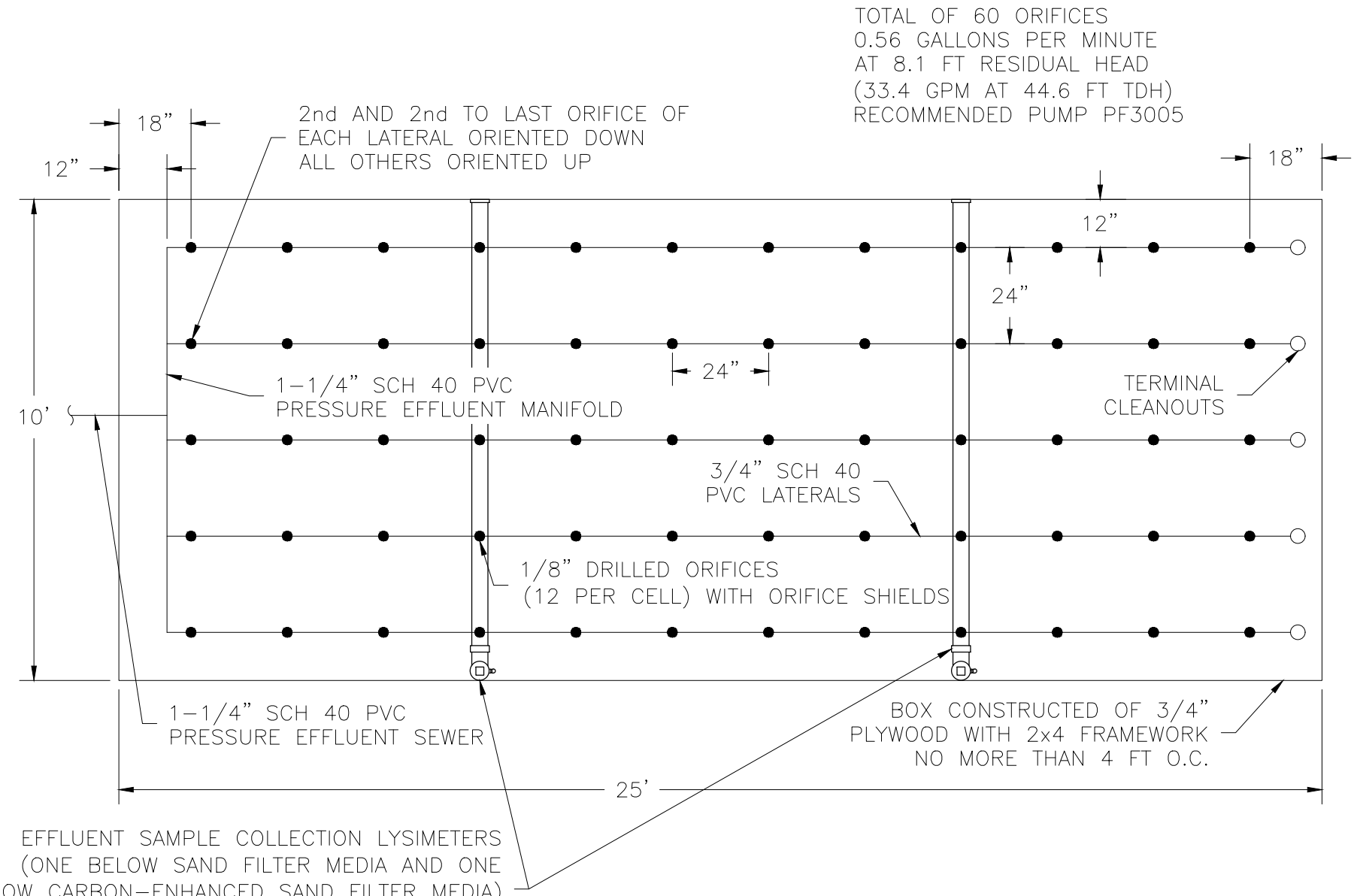

Figure 4. Sand Filter Plan Detail

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1-5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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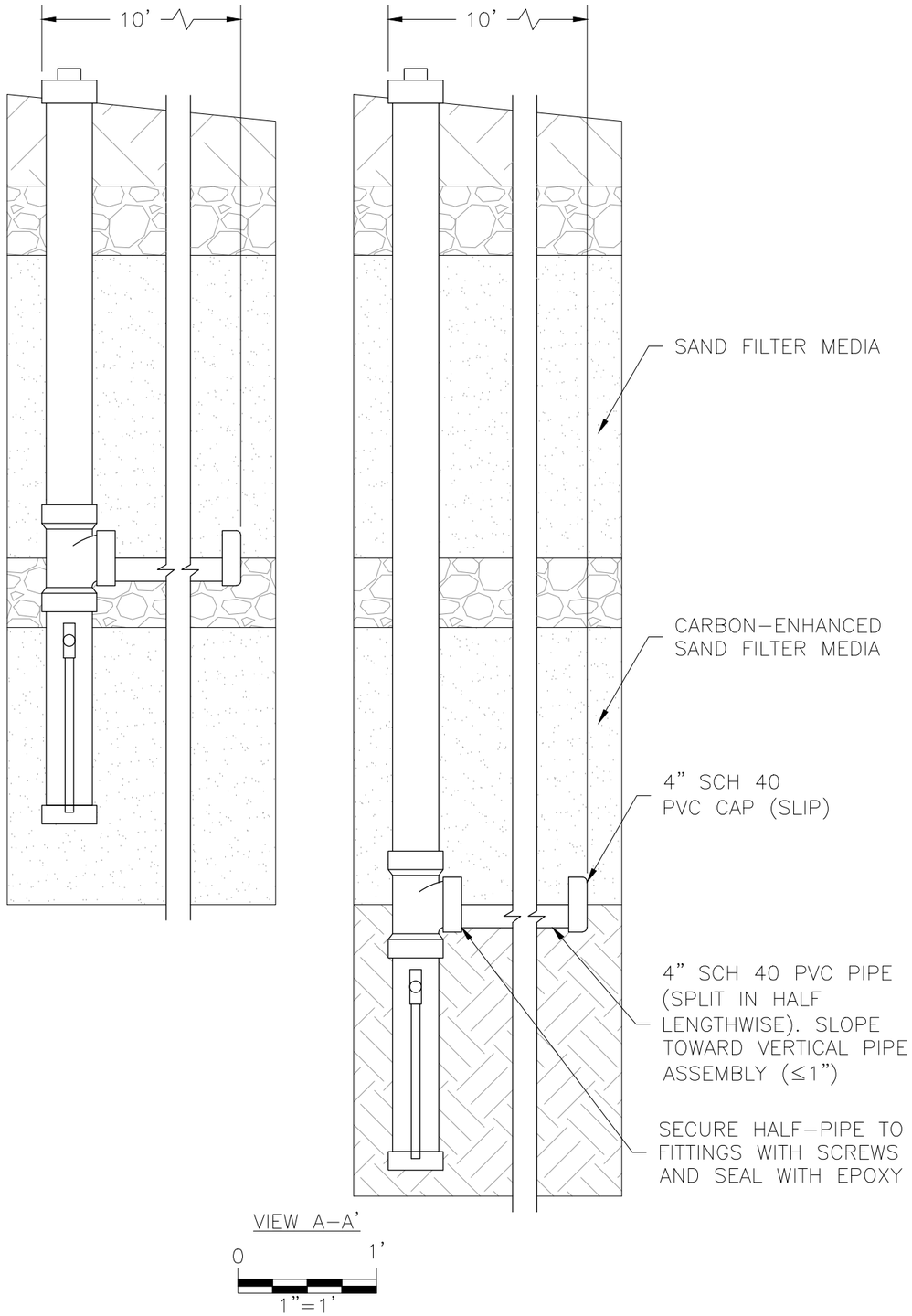

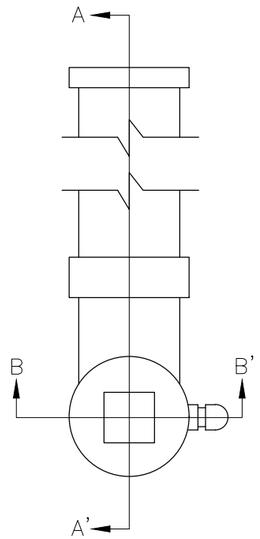

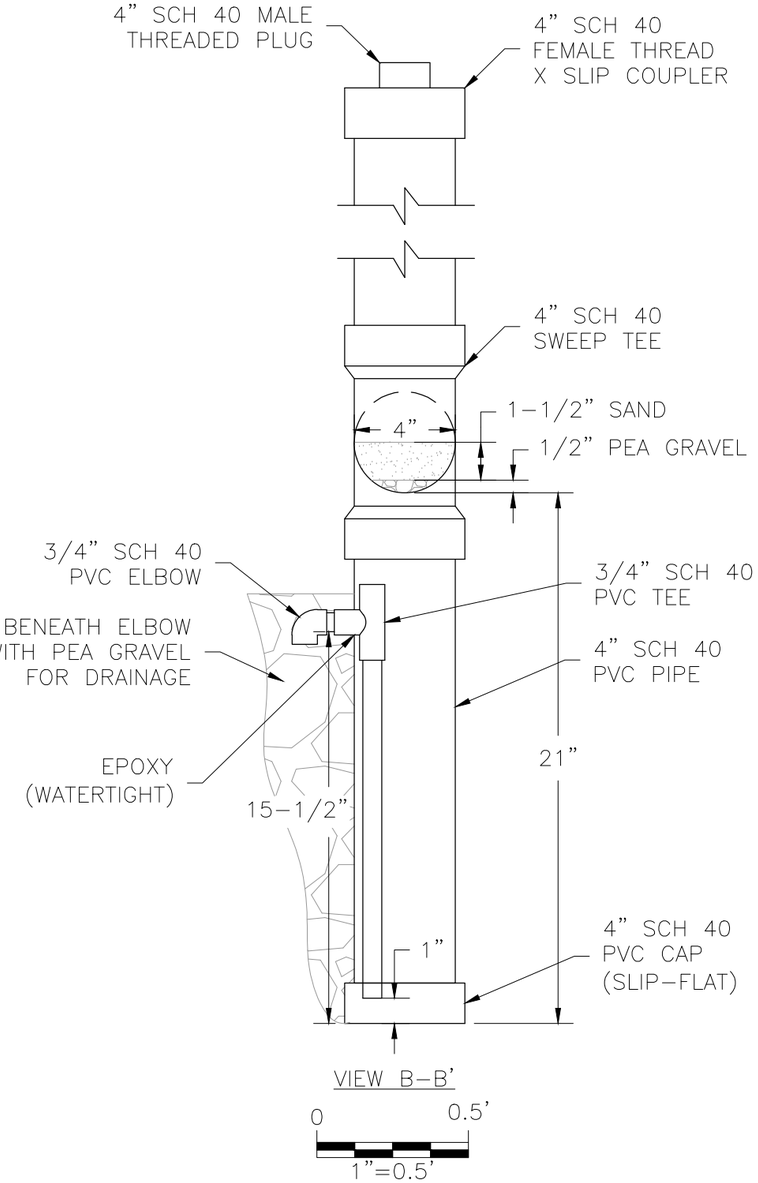

Figure 5. Lysimeter Details

PROJECT NUMBER: 2024020	Formal Variance T20S, R10E, Section 23A, Tax Lot 400
DATE: 6/4/2024	
DWG NO: 2024020 F1–5.DWG	EJ Enterprises 16745 Winchester Drive Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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APPENDICES

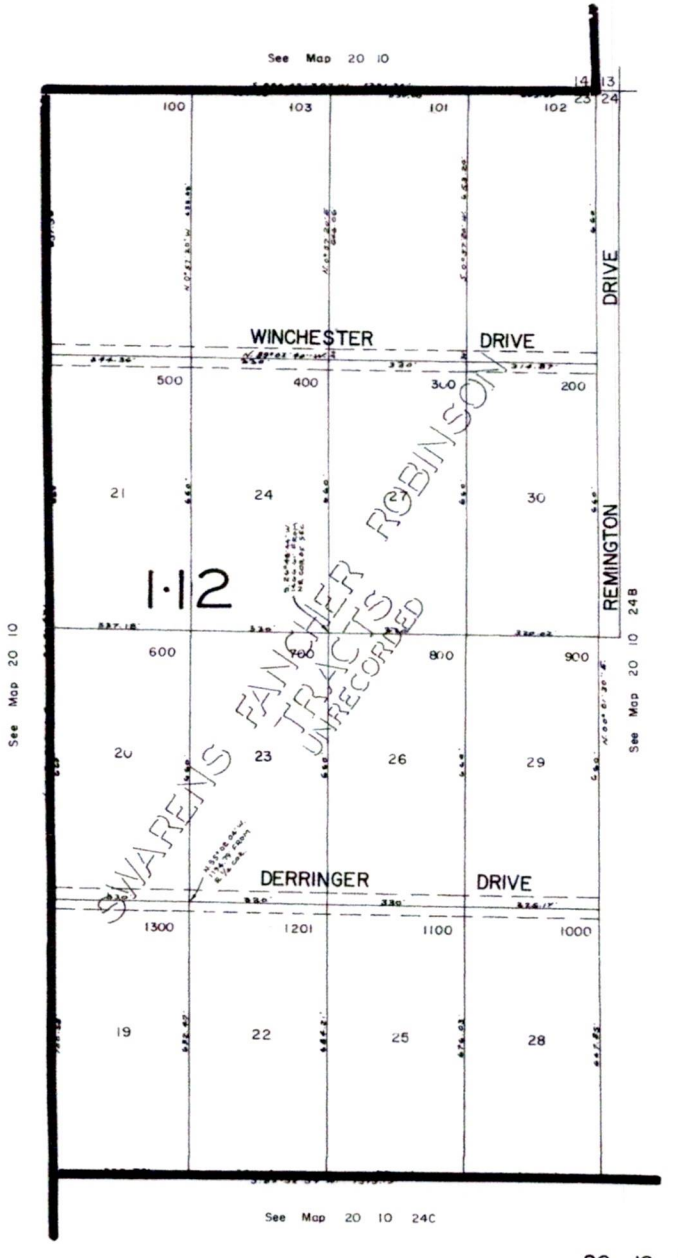
Appendix A.

Tax Lot Map

NE1/4 SEC. 23 T.20S. R.10E.W.M.
DESCHUTES COUNTY
1"=200'

Cancelled numbers:1200,

20 10 23A



20 10 23A

Appendix B.

Deed

After recording return to:
Trevor Sarazin and Adriana Fournier
22307 SE Sharon Drive
Damascus, OR 97089

Until a change is requested all tax statements shall be sent to the following address:
Trevor Sarazin and Adriana Fournier
22307 SE Sharon Drive
Damascus, OR 97089

File No.: 7064-3499958 (SNB)
Date: June 22, 2020

THIS SPACE RESERVED FOR RECORDER'S USE

Deschutes County Official Records **2020-30972**
D-D
Stn=1 BN **06/30/2020 12:59 PM**
$20.00 $11.00 $10.00 $61.00 $6.00 **$108.00**

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

STATUTORY WARRANTY DEED

Linda K. Hansen, Sole Trustee of the Living Trust of Larry J. Hansen and Linda K. Hansen dated 12/22/98, Grantor, conveys and warrants to **EJ Enterprises LLC an Oregon Limited Liability Company** , Grantee, the following described real property free of liens and encumbrances, except as specifically set forth herein:

LEGAL DESCRIPTION: Real property in the County of Deschutes, State of Oregon, described as follows:

TRACT #24: A TRACT OF LAND LOCATED IN THE EAST HALF OF THE NORTHEAST QUARTER OF SECTION 23, TOWNSHIP 20 SOUTH, RANGE 10 EAST, WILLAMETTE MERIDIAN, DESCHUTES COUNTY, OREGON, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT WHENCE THE NORTHEAST CORNER OF SAID SECTION 23 BEARS NORTH 26°48'44" EAST, 1466.81 FEET; THENCE NORTH 89°02'40" WEST, 330 FEET; THENCE NORTH 00°57'20" EAST, 660 FEET; THENCE SOUTH 89°02'40" EAST, 330 FEET; THENCE SOUTH 00°57'20" WEST, 660 FEET TO THE POINT OF BEGINNING.

EXCEPTING THEREFROM THE NORTHERLY 25 FEET WHICH IS RESERVED FOR ROADWAY PURPOSES.

NOTE: THIS LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 01, 2008.

Subject to:
1. Covenants, conditions, restrictions and/or easements, if any, affecting title, which may appear in the public record, including those shown on any recorded plat or survey.

The true consideration for this conveyance is **$132,000.00**. (Here comply with requirements of ORS 93.030)

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

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES 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 THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Dated this 26 day of June, 2020.

Linda K. Hansen, Trustee of the Living Trust of
Larry J. Hansen and Linda K. Hansen

Linda K Hansen
Linda K. Hansen, Trustee

STATE OF ~~Oregon~~ Washington)ss.
County of ~~Deschutes~~ King)

This instrument was acknowledged before me on this 26 day of June, 2020 by ~~as of~~ Linda K. Hansen, Trustee of the Living Trust of Larry J. Hansen and Linda K. Hansen, on behalf of the trust.

Erin Jennifer Bluett
Notary Public for ~~Oregon~~ Washington
My commission expires: 12-25-2021

Erin Jennifer Bluett Commission Expires 12/25/2021 Notary Public Commission No. 196109 State of Washington

STATE OF WASHINGTON
DEPARTMENT OF HEALTH

Public Health - Seattle & King County Vital Statistics

CERTIFIED COPY OF DEATH CERTIFICATE

Date Issued : 3/12/2015

Local File Number 02339 **Washington State Certificate of Death** State File Number

Part 1: completed by Funeral Director

1. Legal Name (include AKA's if any) First	Middle	LAST	Suffix	2. Death Date
Larry	James	Hansen		March 4, 2015

3. Sex (M/F)	4a. Age – Last Birthday	4b. Under 1 Year Months / Days	4c. Under 1 Day Hours / Minutes	5. Social Security Number	6. County of Death
Male	75				King

7. Birthdate	8a. Birthplace (City, Town, or County)	8b. (State or Foreign Country)	9. Decedent's Education
June 19, 1939	Bigfork	Minnesota	Bachelor's Degree

10. Was Decedent of Hispanic Origin? (Yes or No) If yes, specify.	11. Decedent's Race(s)	12. Was Decedent ever in U.S. Armed Forces?
No	White	No

13a. Residence: Number and Street (e.g., 624 SE 5th St.) (Include Apt. No.)	13b. City or Town
23220 SE 47th Way	Sammamish

13c. Residence: County	13d. Tribal Reservation Name (if applicable)	13e. State or Foreign Country	13f. Zip Code + 4	13g. Inside City Limits?
King		Washington	98075	☒ Yes ☐ No ☐ Unk

14. Estimated length of time at residence.	15. Marital Status at Time of Death	16. Surviving Spouse's or Domestic Partner's Name (Give name prior to first marriage)
10 Years	Married	Linda Kae Van Camp

17. Usual Occupation (Indicate type of work done during most of working life. (DO NOT USE RETIRED).	18. Kind of Business/Industry (Do not use Company Name)
Mechanical Engineer	Nuclear Waste

19. Father's Name (First, Middle, Last, Suffix)	20. Mother's Name Before First Marriage (First, Middle, Last)
Marvin Gustav Hansen	Gladys Hensel

21. Informant's Name	22. Relationship to Decedent	23. Mailing Address: Number and Street or RFD No. / City or Town / State / Zip
Linda Kae Hansen	Spouse	23220 SE 47th Way Sammamish, WA 98075

24. Place of Death, If Death Occurred in a Hospital:	Place of Death, If Death Occurred Somewhere Other than a Hospital:
Inpatient	

25. Facility Name (If not a facility, give number & street or location)	26a. City, Town, or Location of Death	26b. State	27. Zip Code
Swedish Medical Center / Issaquah	Issaquah	WA	98029

28. Method of Disposition	29. Place of Final Disposition (Name of cemetery, crematory, other place)	30. Location-City/Town, and State
Burial	Washington Memorial Cemetery	Seatac, Washington

31. Name and Complete Address of Funeral Facility	32. Date of Disposition
Flintoft's Funeral Home and Crematory 540 East Sunset Way Issaquah, WA 98027	March 11, 2015

33. Funeral Director Signature X [signature]

Part 2: completed by Certifier

Cause of Death (See instructions and examples)

34. Enter the chain of events – diseases, injuries, or complications – that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE. Add additional lines if necessary.

			Interval between Onset & Death
IMMEDIATE CAUSE (Final disease or condition resulting in death) →	a.	Due to (or as a consequence of):	Interval between Onset & Death
Sequentially list conditions, if any, leading to the cause listed on line a. Enter the UNDERLYING CAUSE (disease or injury that initiated the events resulting in death) LAST	b.	Due to (or as a consequence of):	Interval between Onset & Death
	c.	Due to (or as a consequence of):	Interval between Onset & Death
	d.		

35. Other significant conditions contributing to death but not resulting in the underlying cause given above	36. Autopsy?	37. Were autopsy findings available to complete the Cause of Death?
	☐ Yes ☒ No	☐ Yes ☒ No

38. Manner of Death	39. If female	40. Did tobacco use contribute to death?
☒ Natural ☐ Homicide ☐ Accident ☐ Undetermined ☐ Suicide ☐ Pending	Not pregnant within past year ☐ Pregnant at time of death ☐ Not pregnant, but pregnant within 42 days before death ☐ Not pregnant, but pregnant 43 days to 1 year before death ☐ Unknown if pregnant within the past year	☐ Yes ☐ Probably ☒ No ☐ Unknown

41. Date of Injury (MM/DD/YYYY)	42. Hour of Injury (24hrs)	43. Place of Injury (e.g., Decedent's home, construction site, restaurant, wooded area)	44. Injury at Work?
			☐ Yes ☐ No ☐ Unk

45. Location of Injury: Number & Street: Apt No.

City or Town: County: State: Zip Code+ 4:

46. Describe how injury occurred	47. If transportation injury, specify:
	☐ Driver/Operator ☐ Pedestrian ☐ Passenger ☐ Other (Specify)

48a. Certifying Physician - To the best of my knowledge, death occurred at the time, date, and place and due to the cause(s) and manner stated.	48b. Medical Examiner/Coroner - On the basis of examination, and/or investigation, in my opinion, death occurred at the time, date, and place, and due to the cause(s) and manner stated.
X [signature]	X

49. Name and Address of Certifier - Physician, Medical Examiner or Coroner (Type or Print)	50. Hour of Death (24hrs)
Naomi Olegs 751 NE BLAKELY, ISSAQUAH WA 98029	09:55

51. Name and Title of Attending Physician if other than Certifier (Type or Print)	52. Date Signed (MM/DD/YYYY)
Daragh O'Mahony, MD	03/05/2015

53. Title of Certifier	54. License Number	55. ME/Coroner File Number	56. Was case referred to ME/Coroner?
MD	MD60224907		☐ Yes ☒ No

57. Registrar Signature	58. Date Received (MM/DD/YYYY)
X [signature]	MAR 9 2015

59. Amendments

DOH 422-024 January 2013
DOH 01-003 (6/14)

Affidavit for Correction

Health

This is a legal document. Complete in ink and do not alter.

Mail to. Center for Health Statistics
P.O. Box 47814
Olympia, WA 98504-7814
360-236-4300
www.doh.wa.gov

STATE OFFICE USE ONLY

State File Number	Fee Number	Initials	Date	Affidavit Number

Use the section below for requesting any changes on the record

Record Type: ☐ Birth ☐ Death ☐ Marriage ☐ Dissolution

1. Name on record:	2. Date of Event:	3. Place of Event:

4. Father/Parent Full Birth Name	5. Mother/Parent Full Birth Name

The record is incorrect or incomplete as follows:

The record now shows:	The true fact is:
6.	7.
8.	9.
10.	11.
12.	13.

14. I represent the person as: ☐ Self ☐ Parent ☐ Guardian ☐ Informant ☐ Funeral Director ☐ Other (Specify) Telephone Number:

I declare under penalty of perjury under the laws of the State of Washington that the forgoing is true and correct.

15. Signature:	16. Date:	17. Address:
(Printed Name)		

All vital records are registered as received. **Most changes must be established by documentary proof submitted with the affidavit.**
We do not accept a driver's license, Social Security card or hospital issued decorative birth certificate as documentary proof.

Examples of acceptable documentary proof: Birth Record, Certificate of Naturalization, Military Record (DD-214), Passport, Full Numident Report (Social Security Administration), Marriage/Divorce Record, Life insurance Policy, School Transcripts (Official), Alien Registration (front and back), Hospital/Medical Record

Birth Certificates

1. Only a parent, legal guardian (if the child is under 18), or the named individual (if 18 or older) may change the birth certificate.
2. The proof(s) must match exactly the asserted true fact(s). For example, if the affidavit says the name is Mary Ann Doe, then the proof must show the name to be Mary Ann Doe. Mary A. Doe or M. A. Doe does not prove the name is Mary Ann Doe.
3. Child under 18
   - Guardian must submit certified court order giving them authority to act on behalf of child(ren).
   - Up to age one, the last name of the child can be changed once, to the mother/parent full birth name, father/parent full birth name (if present on the certificate) or any combination of the two. After age one a court ordered legal name change is required.
   - Parent(s) may change the child's first or middle name by completing this affidavit of correction. No proof is needed.
   - To correct parent's information, one documentary proof is required. Proof must be five (or more) years old or have been established within five years of birth.
   - To correct the sex of the child, submit one proof from a medical provider.

   Adult (18 years or older)
   - Only the adult themselves can change the birth certificate.
   - If the first or middle name is absent, three pieces of documentary proof are required.
   - If the first, middle and/or last name is misspelled, or date of birth is incorrect, two pieces of documentary proof are required.
   - To correct parent's birth date, place of birth, or name, one documentary proof is required.
   - Proof must be five (or more) years old or have been established within five years of birth
4. **This affidavit cannot be used to add a father to a birth certificate. (Use the paternity acknowledgment form DOH 422-032)**

Death Certificates

1. Only the informant, the funeral director, or executors/administrators (if evidence confirming such position is presented) may change the non-medical information. Proof is required to make changes if requested by a family member not listed as the informant on the certificate (family members are spouse or registered domestic partner, parent, sibling or adult child or stepchild). Marital status requires a certified copy of a court order if someone other than the informant is requesting the change.
2. The medical information (cause of death) may be changed only by the certifying physician or the coroner/medical examiner.

Marriage/Dissolution (Divorce) Certificates

1. Personal fact(s) (minor spelling changes in name, date or place of birth or residence) may be changed by affidavit (with proof) by the person.
2. To change the date or place of marriage or dissolution, the officiant (marriage) or clerk of court (dissolution) must sign the affidavit.

DOH 422-034 June 2014

CERTIFIED
Jeffrey S. Duchin, MD
219146
Public Health
Seattle & King County
STATE OF WASHINGTON

BB00219146

Appendix C.

Site Evaluation Reports

DESCHUTES COUNTY

COMMUNITY DEVELOPMENT

May 5, 2020

LIVING TRUST OF LARRY J HANSEN
23220 SE 47TH WAY
SAMMAMISH, WA 98075

RE: 247-20-000479-EVAL
16745 Winchester Dr, 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 April 30, 2020. Part of the evaluation is to determine the level to which the ground water 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 are gray soils and mottling (discoloration of the soil).

In the test pits on the property the indicators suggest the water table may rise within 24 inches of the ground surface. Past observations and elevation 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.

OAR 340-71-290(2)(b)(A)(i) – does not meet minim separation requirements. OAR 340-071-0130(1) – a system will likely create a public health hazard if installed on the lot. Groundwater monitoring pursuant to OAR 340-040-0030(2) has shown the region in question to be highly susceptible to pollution from septic systems. Water depths represents first contact with water.

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 due to the lack of topographical changes.

DEQ rules do not allow installation of a Standard drainfield [OAR 340-071-0220 (1)(b)A], [OAR 340-071-0265(1)(c), Capping Fill drainfield, Pressurized Distribution System or Sand Filter System [OAR 340-71-290(2)(b)] in these circumstances. Installation of an Alternative Treatment Technology (ATT) requires a standard, capping fill, pressurized drainfield or sand filter system for final treatment and dispersal. Therefore, if a conventional drainfield or sand filter system cannot be installed on the property, an ATT cannot be used.

RULE REQUIREMENTS

Oregon Department of Environmental Quality Rules (DEQ) requires a minimum 4-foot separation between the bottom of a wastewater dispersal trench and the highest level a permanent water table may reach. Drainfields must be installed a minimum of 12 inches into the ground. Drainfields can only be installed therefore, where the water table does not rise closer than 5 feet from the ground surface. This allows for the 4-foot separation from the bottom of the trench to the water. [OAR 340-71-220(1)(b). DEQ rules also require 24 inches of separation between the highest level reached by the water table and the bottom of a surface mounted sand filter system which is an alternative onsite system that provides high quality wastewater treatment [OAR 340-071-290(2)(b)]. In addition to the above it is important to meet minimum siting criteria to protect water resources and public health. A detailed hydrogeological study found that the aquifer is sensitive to loading, particularly in areas with

very shallow groundwater, and contamination is accumulating within the aquifer.

Oregon Onsite Wastewater Treatment system rules (OAR 340-071-0130(1)) state:
Deschutes County Environmental Soils Division *"may not authorize installation or use of 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 … using an alternative system."*

Data and information produced during the La Pine National Decentralized Wastewater Demonstration Project shows that traditional onsite systems (standard, pressure distribution and sand filter systems) installed on individual sites pollute the groundwater under those sites to the extent that state groundwater quality and safe drinking water standards are exceeded. Cumulative impacts of this pollution on individual sites include regional groundwater quality degradation and increased nutrient loading to rivers and streams of the region. Additionally, extensive groundwater sampling and modeling conducted by the Oregon Department of Environmental Quality(DEQ) and the US Geological Survey has identified specific standards for onsite systems in south Deschutes County that will protect and improve groundwater quality both on individual sites and on a regional basis.

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 Environmental Soil 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,
Environmental Soils Division

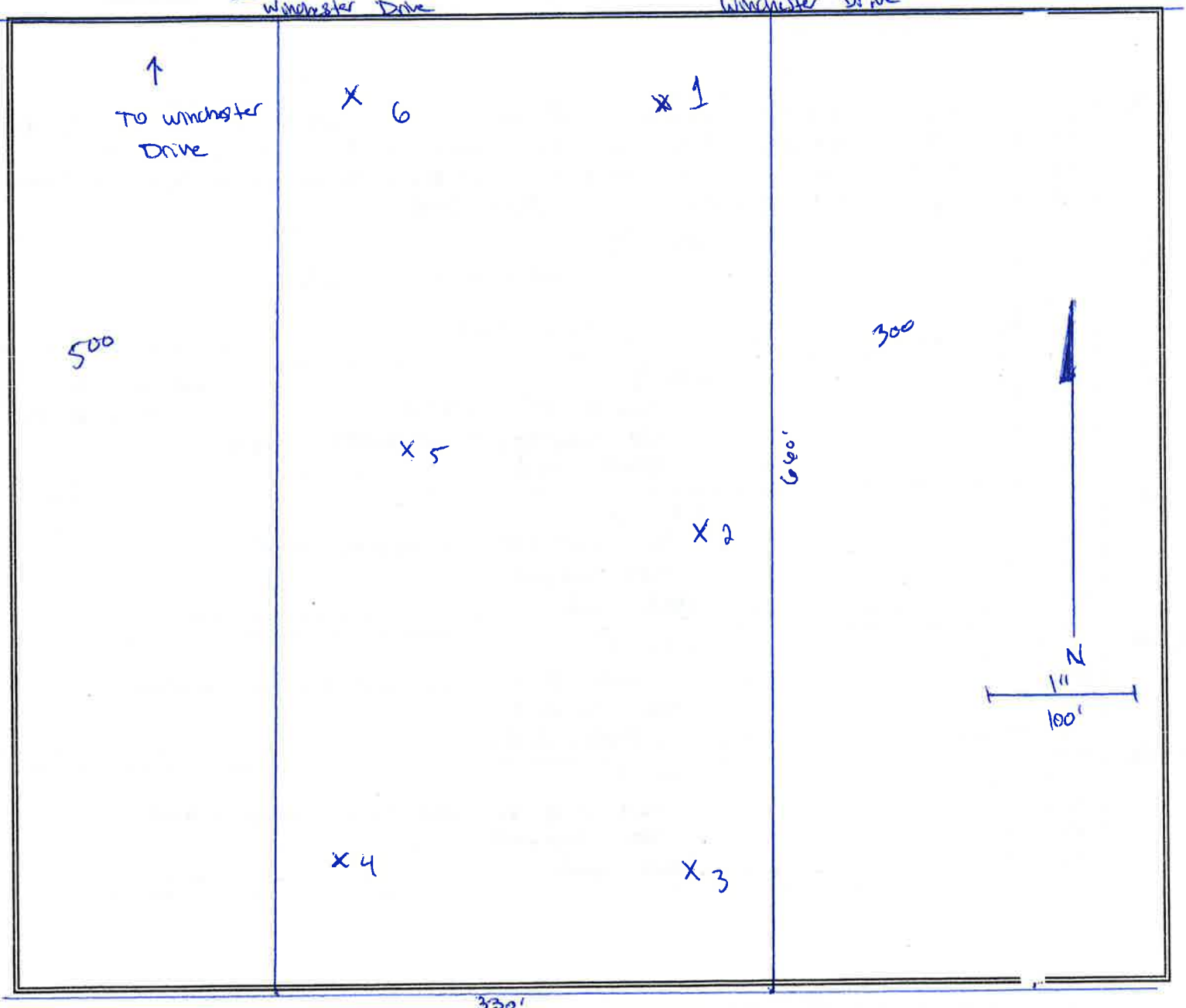
Kevin Hesson

Kevin Hesson
Environmental Health Specialist Trainee

SITE EVALUATION FIELD INSPECTION FORM

Applicant: Linda Hansen
Site Evaluation # 247-20-000479
Evaluator: Kevin Hesson
Date: 4/30/20
Parcel Size: 5.18
Subdivision:
T 20 R 10 S 23 TL 00400 L ___ B ___

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



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

System type approved:
Initial
Replacement
Tank Size

Absorption facility: Denied
Min. Size ___ Max. Depth ___ Min. Depth ___
Min. Size ___ Max. Depth ___ Min. Depth ___
Sewage Flow

Special Conditions:

SITE EVALUATION FIELD INSPECTION FORM

Applicant: Linda Hansen
Site Evaluation # 247-20-000479
Evaluator: Kevin Hesson
Date: 4/30/20
Parcel Size: 5.18
Subdivision:
T 20 R 10 S 23 TL 00400 L ____ B ____

	DEPTH	TEXTURE	COLOR	Notes on roots, structure, rock frag, redox, limiting layer type & depth
0-1% 1	0-17	LS	10YR 3/4	3vf, f, m, co. lf sbk Augered - wet @ 72", H2O @ 76"
	17-27	coS	10YR 5/4	2vf, f, m, lco, sg, depletions @ 17", coarse pumice ash
	27-44	gr SL	10YR 3/3	lvf, m, 2f sbk, light glowing, Fe concentrations throughout (faint)
	44-60	cogr S	10YR 2/1	lvf, sg, Black Sand
0-1% 2	0-10			Like 1
	10-23			redox @ 10", depletions
	23-39			
	39-65			Black Sand
0-1% 3	0-10			Like 1 wet @ 72"
	10-22			redox @ 14", depletions H2O @ 75"
	22-41			redox throughout, Fe concentrations, glowing
	41-57			Black Sand
0-1% 4	0-14			Like 3
	14-25			Fe concentrations and depletions @ 14"
	25-42			redox throughout
	42-60			Black Sand
0-1% 5	0-10			Like 2
	10-22			redox @ 11", Fe concentrations and depletions
	22-42			redox throughout
	42-61			Black Sand
0-1% 6	0-8			Like 2
	8-25			redox @ 8, Fe concentrations, many distinct
	25-53			redox throughout
	53-60			Black Sand
7				

Landscape Note:
Slope: Aspect: Groundwater: Permanent
Other site notes: Lodgepole Pine, antelope bitterbrush, bunchgrass, Ponderosa Pine, ravenberry, bearberry, baltic rush
Comments: water depth represents first contact with water.

Reason for Unsuitability: (Include Rule Reference)
OAR 340-071-0290(2)(b)(A)(i) - does not meet minimum separation requirements. 340-071-0130(1) - a system will likely create a public health hazard if installed on the lot. Groundwater monitoring pursuant to OAR 340-040-0030(2) has shown the region in question to be highly susceptible to pollution from septic systems.

Appendix D.

Water Well Reports

#11 NOV 21 1990 DESC 221 20S/10E/6 aa

STATE OF OREGON WATER RESOURCES DEPT. SALEM, OREGON

WATER WELL REPORT

(as required by ORS 537.765)

(START CARD) # 22598

(1) OWNER:

Well Number:

Name Tom Budish

Address 16764 WINCHESTER

City BEND State OREGON Zip 97707

(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 100 ft.

Explosives used Yes ☐ No ☐ Type ____ Amount ____

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10"	0	20	CEMENT	0	18	9 sacks
6"	18	99				

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	99	250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) ____

(7) PERFORATIONS/SCREENS:

☒ Perforations Method Torch cut.

☐ Screens Type ____ Material ____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
89	99	1/4x6	54	6		☒	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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

☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
			1 hr.
24	14		2 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: 12'-14' SEALED WITH CEMENT.

(9) LOCATION OF WELL by legal description:

County DESCHUTES Latitude ____ Longitude ____

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

Section 6 N.E. ¼ N.E. ¼

Tax Lot 101 Lot ____ Block ____ Subdivision ____

Street Address of Well (or nearest address) 16764 WINCHESTER BEND ORE 97707

(10) STATIC WATER LEVEL:

18 ft. below land surface. Date oct 16-90

Artesian pressure ____ lb. per square inch. Date ____

(11) WATER BEARING ZONES:

Depth at which water was first found 12

From	To	Estimated Flow Rate	SWL
12	14	10	
90	100	30-40	

(12) WELL LOG:

Ground elevation ____

Material	From	To	SWL
PUMICE	0	3	
PUMICE + SAND	3	12	
CINDERS	12	14	
CLAY - GREY	14	90	18
SAND MED COARSE	90	100	

Date started oct 16-90 Completed oct. 18-90

(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 4525

Signed James D. Allen Date oct 18-90

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

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

DESC 64100
4/30/2023

WELL I.D. LABEL# L 150352
START CARD # 1060657
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name ART Last Name SHARKEY
Company
Address 16712 WINCHESTER
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 115.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	115

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	15	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	113	.250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

Shoe ☐ Inside ☒ Outside ☐ Other Location of shoe(s) 113
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)
25	8	85	2.5

Temperature 40 °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 23 NE 1/4 of the NE 1/4 Tax Lot 100
Tax Map Number Lot
Lat ° ' " or 43.83265758 DMS or DD
Long ° ' " or -121.49068316 DMS or DD
● Street address of well ○ Nearest address
16712 WINCHESTER, THREE RIVERS, OR 97707

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	4/18/2023			68

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 75.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
4/18/2023	75	115	50			68

(11) WELL LOG

Ground Elevation

Material	From	To
top soil	0	3
brown sand	3	10
grey clay	10	25
diatomite and sand	25	50
clay and fine black sand	50	61
diatomite and sand	61	82
clay and fine black sand	82	97
fractured bassalt	97	98
fine black sand	98	111
pumice	111	115

Date Started 4/13/2023 Completed 4/18/2023

(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 4/27/2023
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 4/30/2023
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 64100

4/30/2023

WELL I.D. LABEL# L 150352

START CARD # 1060657

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

Neal Wright and Jesse Mack where helpers on this well.

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

DESC 64100

4/30/2023

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

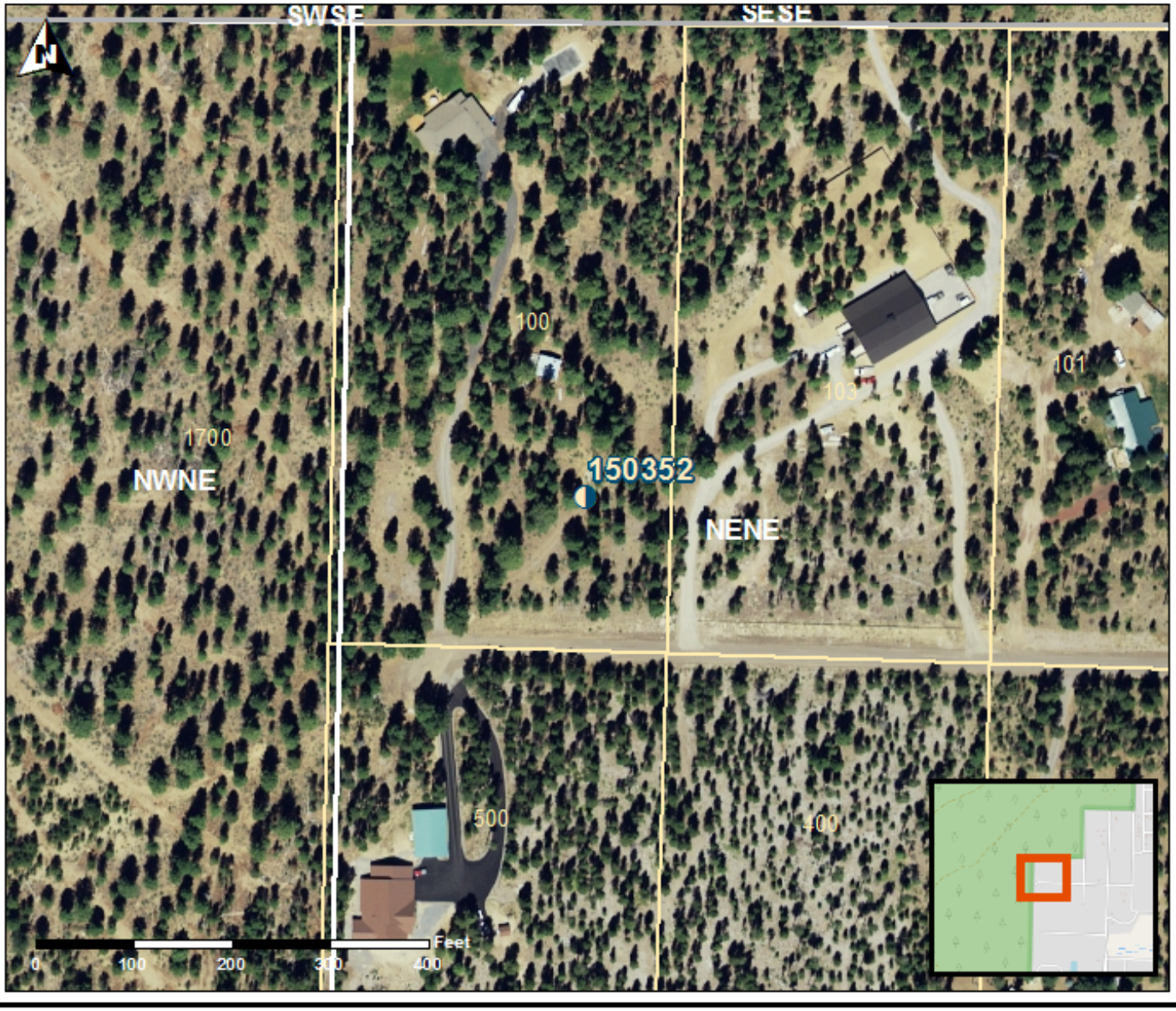
Latitude: 43.83265758 Datum: WGS84
Longitude: -121.49068316
Township/Range/Section/Quarter-Quarter Section:
WM20.00S10.00E23NENE
Address of Well:
16712 WINCHESTER, THREE RIVERS, OR 97707

Well Label: 150352

Printed: April 27, 2023

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



STATE OF OREGON

WATER SUPPLY WELL REPORT

(as required by ORS 537.765)

DESC 56162

WELL I.D. # L 50974

START CARD # 158114

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

(1) LAND OWNER Well Number _____

Name Art Sharkey

Address 16712 winchester Dr.

City Bend 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 60 ft.

Explosives used ☐ Yes ☑ No Type _____ Amount _____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
10	0	20	Bent.	0	20	12
6"	20	60'				

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	20	250	☑	☐	☑	☐
	~~5"~~	~~0~~	~~60~~	~~250~~	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	5"	0	60	188	☑	☐	☑	☐
					☐	☐	☐	☐

Drive Shoe used ☐ Inside ☐ Outside ☑ None

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

☑ Perforations Method Factory

☐ Screens Type _____ Material _____

From	To	Slot size	Number	Tele/pipe Diameter	Tele/pipe size	Casing	Liner
40	60	1/8	240			☑	☐
						☐	☐
						☐	☐
						☐	☐

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

☑ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
20 GPM	5'		1 hr.

Temperature of water 49° 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 23A 9W 1/4 9W 1/4

Tax Lot 100 Lot _____ Block _____ Subdivision _____

Street Address of Well (or nearest address) Same

(10) STATIC WATER LEVEL:

48 ft. below land surface. Date 6-14-04

Artesian pressure _____ lb. per square inch Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found _____

From	To	Estimated Flow Rate	SWL
48'	60	40GPM	48'

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
Soil + Pumice	0	2	
Broken GRAY LAVA	2	60	48
Course Gravel	60	64	

RECEIVED

JUL 21 2004

WATER RESOURCES DEPT
SALEM, OREGON

Date started 5-14-04 Completed 6-1-04

(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 Steve Walker Date 6-14-04

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

Amended 8/31/2023

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

DESC 64099

4/30/2023

WELL I.D. LABEL# L 150351
START CARD # 1060483
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name ART Last Name SHARKEY
Company
Address 16712 WINCHESTER
City THREE RIVERS State OR Zip 97707

(2) TYPE OF WORK

[X] 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

[X] Rotary Air [ ] Rotary Mud [X] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE

[X] Domestic [ ] Irrigation [ ] Community
[ ] Industrial/ Commericial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION

Special Standard [ ] (Attach copy)
Depth of Completed Well 105.00 ft.

BORE HOLE

Dia	From	To
10	0	80
8	80	100
6	100	105

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	30	32	S
		Calculated	13.69	
		Calculated		

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E
[X] Other POURED
Backfill placed from 30' ft. to 80' ft. Material sand
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	X	1	100	.250	●	○	X	
○	●	5	X	1	105	.188	●	○	X	
○	○						○	○		
○	○						○	○		
○	○						○	○		

Shoe [ ] Inside [X] Outside [ ] Other Location of shoe(s) 100
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

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 23 NE 1/4 of the NE 1/4 Tax Lot 100
Tax Map Number Lot
Lat ° ' " or 43.83395392 DMS or DD
Long ° ' " or -121.49103721 DMS or DD
(●) Street address of well ( ) Nearest address
16712 WINCHESTER, THREE RIVERS, OR 97707

(10) STATIC WATER LEVEL

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

Flowing Artesian? [ ] Dry Hole? [X]

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
top soil	0	2
medium brown sand	2	5
fractured bassalt	5	70
cinders and fine black sand	70	75
fractured bassalt	75	100
clay and fine black sand	100	105

Date Started 3/27/2023 Completed 4/11/2023

(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 4/27/2023
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 4/30/2023
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 64099

4/30/2023

WELL I.D. LABEL# L 150351

START CARD # 1060483

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

Neal 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 64099

4/30/2023

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

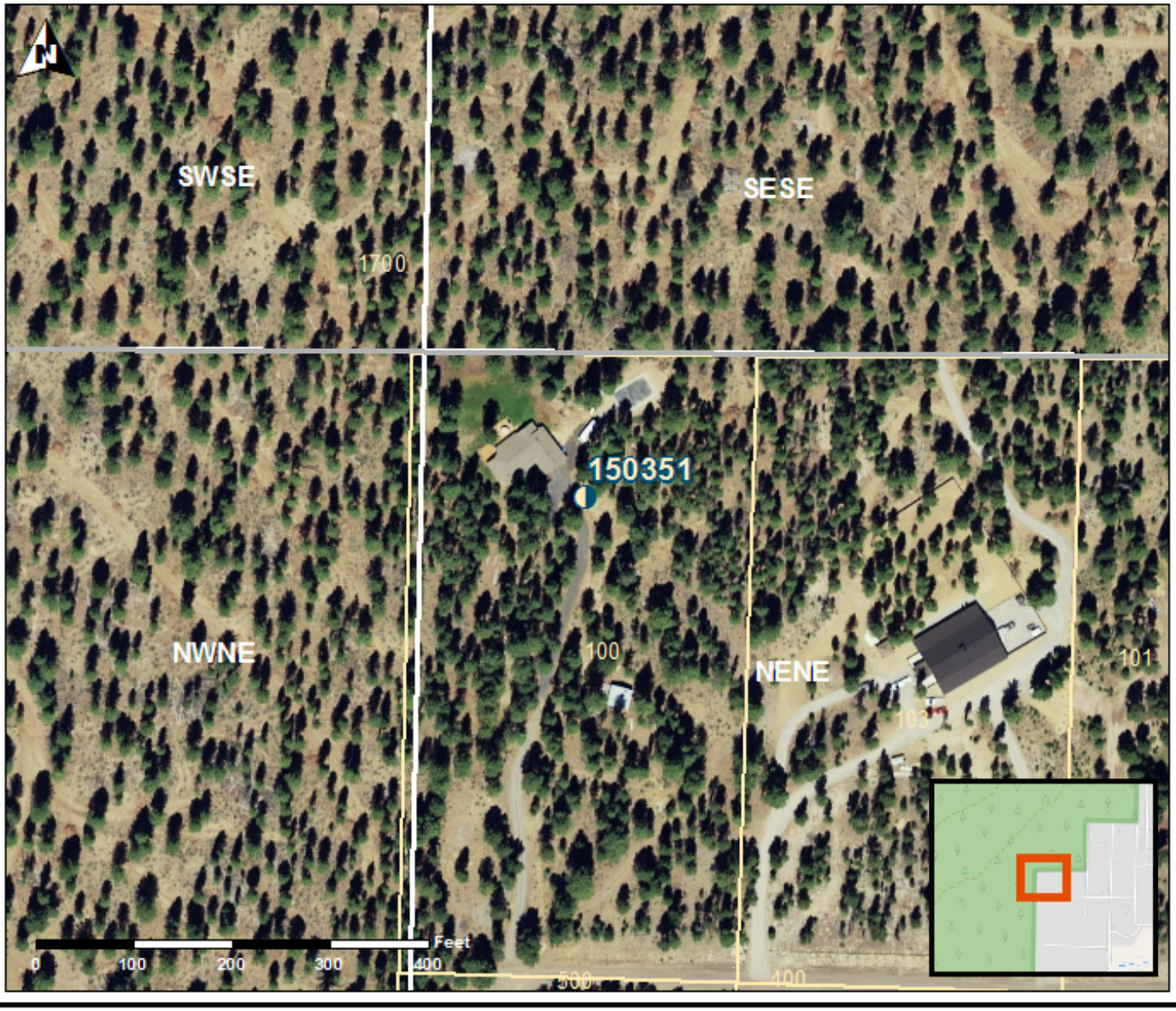
Latitude: 43.83357469 Datum: WGS84
Longitude: -121.49097284
Township/Range/Section/Quarter-Quarter Section:
WM20.00S10.00E23NENE
Address of Well:
16712 WINCHESTER, THREE RIVERS, OR 97707

Well Label: 150351

Printed: April 27, 2023

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



RECEIVED

SEP 27 1994

WATER RESOURCES DEPT.
SALEM, OREGON

20S/10E/23aa

(START CARD) # 58315

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

DESC 9520

(1) OWNER: Well Number
Name BRIAN ERCEG
Address 13720 S.E. CLAY
City PORTLAND, State OR. Zip 97233

(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 100 ft.
Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10"	0	18'	PORTLAND	0	18'	8 SACKS
6"	18'	100'				

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'	100'	.250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

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

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
89'	99'	12"	12	1/8"		☒	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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

Yield gal/min	Drawdown	Drill stem at	Time
20	55'		4 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: 16' ~ 95'

(9) LOCATION OF WELL by legal description:
County DESCHUTES Latitude Longitude
Township 20 S N or S. Range 10 E E or W. WM.
Section 23 NE ¼ NE ¼
Tax Lot 116846 Lot 01 Block 11 Subdivision
Street Address of Well (or nearest address) 16709
WINCHESTER, SUN RIVER, OR 97707

(10) STATIC WATER LEVEL:
16 ft. below land surface. Date 9/21/94
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found 16'

From	To	Estimated Flow Rate	SWL
16'	95'	8 GPM	16'
95'	100'	20 GPM	16'

(12) WELL LOG:
Ground elevation

Material	From	To	SWL
PUMICE	0	5'	–
GRAVEL	5'	10'	–
SAND & CLAY	10'	16'	16'
CLAY	16'	95'	16'
CLAY & GRAVEL	95'	100'	16'

Date started 9/16/94 Completed 9/22/94

(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 1584
Signed Dale L. Wynne Date 9/23/94

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 10/91

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

DESC 61044

10/17/2017

WELL I.D. LABEL# L 128037
START CARD # 1036469
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name JANE Last Name DEVLIN
Company
Address 64506 DANIEL CT
City BEND State OR Zip 97701

(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 52.00 ft.

BORE HOLE

Dia	From	To
10	0	19
6	19	52

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	19	11	S
		Calculated	8.67	
		Calculated		

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other POUR
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	19	250	●	○		
○	●	5	☐	2	52	188	●	○	☒	
○	○		☐				○	○		
○	○		☐				○	○		
○	○		☐				○	○		

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

(7) PERFORATIONS/SCREENS

Perforations Method TORCH
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size
Perf	Liner	5	35	40	.02	4	10	

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

◉ Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
65		50	1
22	4	40	2

Temperature 46 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 5 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 23 NE 1/4 of the NE 1/4 Tax Lot 103
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ○ Nearest address
16730 WINCHESTER DR

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	9/27/2017			14

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 30.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
9/27/2017	30	52	65			14

(11) WELL LOG

Ground Elevation

Material	From	To
PUMMICE	0	5
BROWN SAND	5	12
BROWN SAND/LAVA	12	35
LAVA ROCK	35	52

Date Started 9/26/2017 Completed 9/27/2017

(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 1966 Date 10/17/2017

Signed PAUL POCHATKO (E-filed)
Contact Info (optional) 541-536-4596

ORIGINAL - WATER RESOURCES DEPARTMENT

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

DESC 57528

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

WELL I.D. # L 83334
START CARD # 185255

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

(1) LAND OWNER Well Number
Name ROBERT CUEVAS
Address 136 PRESERVE DR.
City ROYAL PALM BEACH State FL Zip 33411

(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 98'-9" ft.
Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
10"	0	19'	3/4" HOLE PLUG	0	19'	15
6"	19'	98'-6"				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other 3 MIN. POUR/BAG
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"	+1-4"	98'-9"	.250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	NONE				☐	☐	☐	☐
					☐	☐	☐	☐

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

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

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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

Yield gal/min	Drawdown	Drill stem at	Time
25	22'		1 hr.

Temperature of water 46° 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 NONE
Depth of strata:

(9) LOCATION OF WELL by legal description:
County DESOTO Latitude Longitude
Township 39 N or (S) Range 24 (E) or W. WM.
Section 23A NE 1/4 NE 1/4
Tax Lot 102 Lot Block Subdivision
Street Address of Well (or nearest address) 35993 REMINGTON DR.

(10) STATIC WATER LEVEL:
15 ft. below land surface. Date 7-20-06
Artesian pressure lb. per square inch Date

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

From	To	Estimated Flow Rate	SWL
11'	14'	6+GPM	9'
98'	100'	25 GPM	15'

(12) WELL LOG:
Ground Elevation

Material	From	To	SWL
PUMMIE	0	4'	
BROWN SAND	4'	11'	
GRAVEL	11'	14'	9'
CLAY GRAY	14'	80'	
PURPLE CLAY	80'	98'	
PUMMICE COARSE	98'	100'	15'

RECEIVED
JUL 31 2006
WATER RESOURCES DEPT
SALEM, OREGON

Date started 7-6-06 Completed 7-20-06

(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 1614
Signed Tom Olson Date 7-28-06

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

MAY 28 1993

WATER RESOURCES DEPT.
SALEM, OREGON

DESC 1741

20S/10E/23aa

(START CARD) # W-48608

(1) OWNER: Well Number

Name DENNIS ROBERTSON

Address 58 BAROFINO CT.

City EUGENE State OR. Zip 97404

(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 130 ft.

Explosives used ☐ Yes ☐ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10	0	18	CEMENT	0	18	5 SACKS
6	18	130				

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	127	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
117	127	1/8 x 2	36	6		☒	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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

☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
			1 hr.
18	10		4 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 ND

Depth of strata:

(9) LOCATION OF WELL by legal description:

County DESCHUTES Latitude Longitude

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

Section 23AA N.E ¼ N.E. ¼

Tax Lot 800 Lot Block Subdivision

Street Address of Well (or nearest address) 16760 OERRINGER ON. BEND OR. 97707

(10) STATIC WATER LEVEL:

20 ft. below land surface. Date MAY 24-93

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 117

From	To	Estimated Flow Rate	SWL
117	130	25	20

(12) WELL LOG:

Ground elevation

Material	From	To	SWL
PUMICE	0	3	
PUMICE clay	3	10	
GRAVEL	10	13	
CLAY	13	117	
PUMICE GRAVEL	117	130	20

Date started MAY 21-93 Completed MAY 24-93

(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 1525

Signed James B. Palmer Date MAY 25-93

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 10/91

DESC 1741

77860

For Official Use Only by **The Oregon Water Resources Department:**

Received Date: _____ Well Log Number: Desc 1741 Well Identification Tag #: L-77860

RECEIVED
MAY 12 2005
WATER RESOURCES DEPT
SALEM, OREGON

APPLICATION FOR A WELL IDENTIFICATION TAG

(Please print clearly. If the well is shared see instructions)

This is Well # 1 *of* 1 *wells on the property*

LANDOWNER INFORMATION:

Current Landowner's Name and Address: RHONDA ROBERTSON
3865 PATTISON ST, EUGENE, OR 97402

Mail Tag To (If other than Current Landowner, - i.e.; Realtor or other party name & address):

Application Submitted By (Realtor or Other Party & Phone Number or E-mail):
RHONDA ROBERTSON (541) 461-1814

Landowner at time well was constructed, if known (see instructions):
DENNIS ROBERTSON

WELL LOCATION INFORMATION: (May also be referred to as the "Map & Tax Lot")

Township #: 20 (North or South?) Range #: 10 E (East or West?) Section #: 23

Tax Lot #: 800 (generally a 3 or 4 digit number following the Township, Range and Section numbers)

County DESCHUTES Street Address & City of Well 16760 DERRINGER DR, BEND, OR 97707

If the property had a different street address in the past, please indicate it, if known: _____

WELL INFORMATION: (You do not need to complete this section if the well report is attached)

Type of Well (i.e.; domestic, irrigation, commercial, industrial, monitoring, etc.): _____

Date Well Constructed: _____ Well Depth: _____ Casing Diameter: _____

Other Information: _____

Applications can be mailed to: Oregon Water Resources Department – 725 Summer Street N.E., Suite A - Salem, OR 97301-1271 OR fax to 503-986-0902. Applications are processed and tags mailed every Monday morning. **Thank you for participating in Oregon's Well Identification Program!**

11

DESC 9545

RECEIVED

OCT - 7 1994

20s/10E/23ad

STATE OF OREGON WATER WELL REPORT

(as required by ORS 537.765)

(START CARD) # W-71292

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

(1) OWNER: Well Number SALE

Name Double J. + Julie A. McWilliams

Address 16790 Deschutes Dr

City Bend State OR 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 130 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	350 185
6	18	130				

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	130	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
125	130	18	10	6		☑	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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

☑ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
21	2'		4 Hr. 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 - S N or S Range 10 - E E or W. WM.

Section 23 SE 1/4 NE 1/4

Tax Lot 900 Lot Block Subdivision

Street Address of Well (or nearest address) SAME

(10) STATIC WATER LEVEL:

20 ft. below land surface. Date 9-28-94

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 5

From	To	Estimated Flow Rate	SWL
126	130	20-30	20

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Pumice Soil	0	2	20
Clay soil	2	5	
gravel	5	8	
Brown clay	8	35	
green clay	35	82	
Brown clay	82	126	
Worm Hole LAVA	126	130	

Date started 9-26-94 Completed 9-28-94

(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 1559

Signed Date 9-28-94

(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 1525

Signed Date Sept 29-94

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

Appendix E.

Carbon-Enhancement and Lysimeter Installation, and Sampling Instructions

ELKHORN CONSULTING LLC

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

Carbon Enhanced Bottomless Sand Filter

Media and Lysimeter Installation Guide

- Remove duff and surface soil layer (typically 6 inches) to provide an infiltrative surface free of roots.
- Construct a frame using 2x4's (top and bottom sills with 2x4 studs no more than 4 feet apart) tall enough to extend from the bottom of the carbon-enhanced layer to the top of the distribution media layer (typically 5 feet).
- Install ¾-inch plywood on the interior of the framing to provide a smooth interior surface.
- Line the interior sidewall surfaces with plastic sheeting from the bottom up to the top of the underdrain media (typically 30 inches).
- When installing sampling devices (trough lysimeters), carefully mark the location of the orifice positions on each side of the box (typically 24 inches on center beginning 18 inches in from each end).
- Also mark the target elevations for each layer on the walls.
- Remove enough soil 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 a 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.
- Thoroughly mix the wood (50:50 blend of playground chips and sawdust) with the medium sand with 3 parts sand to 1 part wood and place in 7-inch lifts inside the box.
- Use a walk-behind plate compactor to make a single pass over each lift to compress the blend. This is meant to limit pore size and volume to slow the flow rate and limit the diffusion of oxygen into this layer in order to improve denitrification and limit future settling.
- After the final lift of carbon-enhanced media is installed, install the second lysimeter in a similar fashion as the first with the trough installed in the underdrain media layer.
- 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

Carbon Enhanced Bottomless Sand Filter

Lysimeter Sampling Guide

- Label all sample bottles in advance.
- Loosen the square nut plug on each lysimeter.
- Remove the plug from the deeper lysimeter (carbon-enhanced layer) and 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.
- Repeat this process for the shallower lysimeter (medium sand layer).
- If funding allows, collect a treated effluent sample from the discharge chamber of the AdvanTex unit.
- Deliver samples to the laboratory (nitrate-nitrogen samples need to be analyzed within **48 hours** of sample collection).

Appendix F.

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

475 NE Bellevue Dr
Bend, OR 97701

Take NE Dalton St to US-20

37 sec (459 ft)

1. Head north toward NE Dalton St

75 ft

2. Turn right toward NE Dalton St

148 ft

3. Turn right onto NE Dalton St

236 ft

Follow SE 27th St, SE Reed Market Rd and SE 15th St to Murphy Rd

8 min (3.6 mi)

4. Turn right onto US-20

0.2 mi

5. Turn left onto SE 27th St

1.2 mi

6. Turn right onto SE Reed Market Rd

1.0 mi

7. At the traffic circle, take the 3rd exit onto SE 15th St

1.2 mi

Follow Murphy Rd to S Hwy 97

4 min (1.7 mi)

8. At the traffic circle, take the 1st exit onto Murphy Rd

0.5 mi

9. At the traffic circle, continue straight to stay on Murphy Rd

0.5 mi

10. At the traffic circle, take the 2nd exit and stay on Murphy Rd

0.5 mi

11. At the traffic circle, continue straight to stay on Murphy Rd

0.2 mi

Take US-97 S to Stellar Dr

18 min (15.6 mi)

12. At the traffic circle, take the 3rd exit onto S Hwy 97

0.6 mi

13. Merge onto US-97 S

10.9 mi

14. Take exit 153 for S Century Dr toward Sunriver

0.2 mi

15. 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

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

0.6 mi

17. Continue onto Spring River Rd

1.7 mi

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

7 min (2.8 mi)

18. Turn left onto Stellar Dr

1.9 mi

19. Turn right to stay on Stellar Dr

0.2 mi

20. Turn right onto Upland Rd

0.2 mi

21. Turn left onto Savage Rd

0.2 mi

22. Turn right onto Winchester Rd

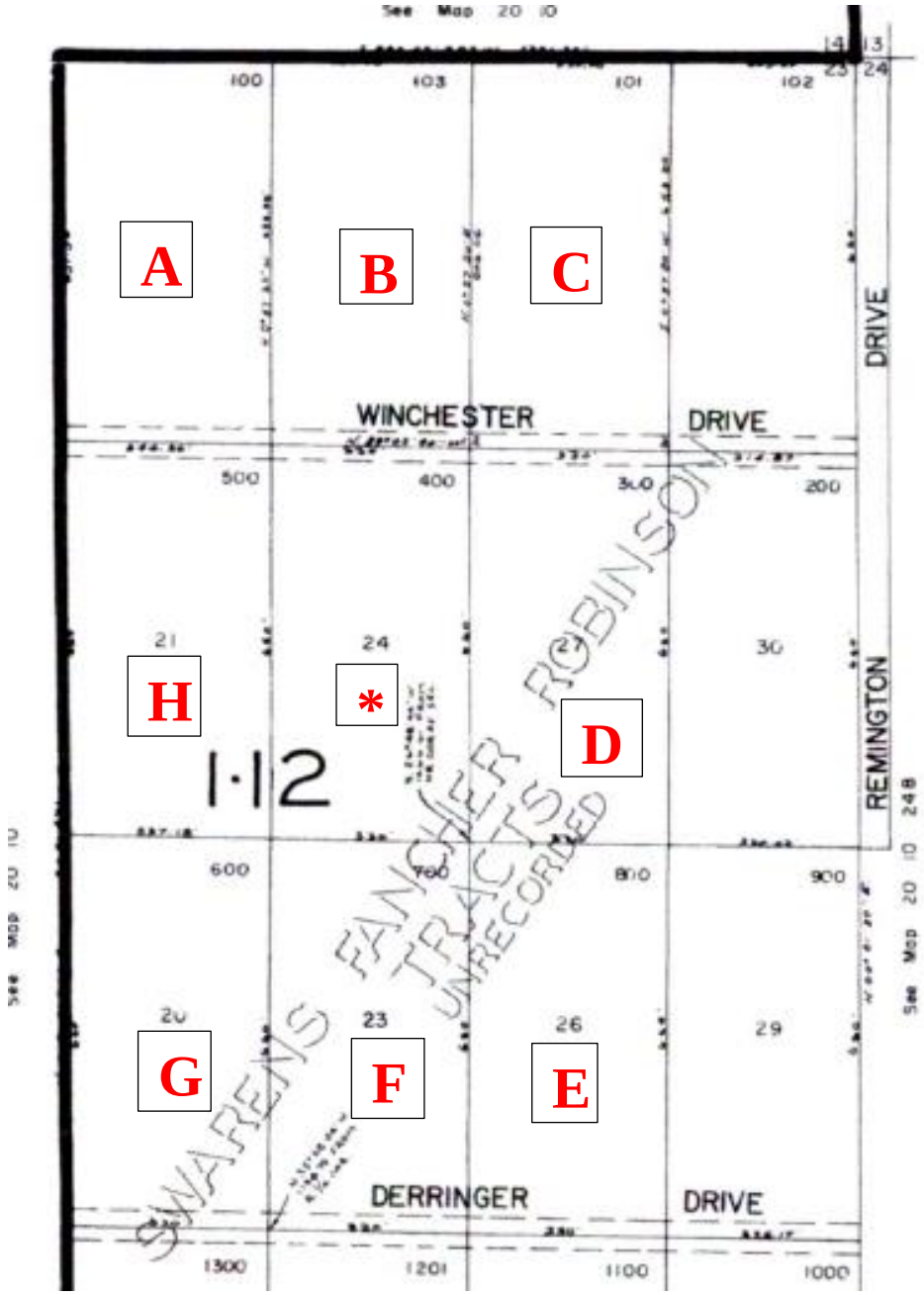
0.4 mi

16745 Winchester Dr
Bend, OR 97707

Adjacent Parcels Property Owners

16745 Winchester Drive, Bend, Oregon
(T20S, R10E, Section 23A, Tax Lot 400, 5.18 acres

*	Tax Lot	400	EJ Enterprises 22307 SE Sharon Dr Damascus, OR 97089
A.	Tax Lot	100	Sharkey, Arthur E & Rebecca S 16712 Winchester Dr Bend, OR 97707
B.	Tax Lot	103	Jane V Devlin Revocable Trust PO Box 3713 Bend, OR 97701
C.	Tax Lot	101	Hartley Family Trust PO Box 4743 Sunriver, OR 97707
D.	Tax Lot	300	Piva, Shauntae et al 5121 W Cove St Garden City, ID 83714
E.	Tax Lot	800	Phillips, Timothy R & Sherrie Sue PO Box 4712 Sunriver, OR 97707
F.	Tax Lot	700	Stead Family Trust PO Box 3957 Sunriver, OR 97707
G.	Tax Lot	600	Olsen Trust 239 El Cajon Way Los Gatos, CA 95032
H.	Tax Lot	500	Van Der Nat Family Trust PO Box 2257 Bend, OR 97707


See Map 20 10
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103
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SWARENS FANCHER ROBINSON TRACTS UNRECORDED
DERRINGER
DRIVE
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1201
1100
1000

Variance Application from Oregon Administrative Rules Regulating Onsite Wastewater Treatment Systems

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) EJ Enterprises LLC

Mailing Address 22307 SE Sharon Drive

City, State, Zip Damascus, OR 97089

Phone (503) 757-0710 Email trevorsarazin@gmail.com

Property Information:

County Deschutes

Township, Range, Section, Tax Lot T20S R10E S23A Tax Lot 400

Lot and Block Number Lot 24 Subdivision Name Swarens Fancher Robinson Tracts

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
JUL 08 2024
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

10-13-24 — Ryan Turner
Date — Owner Signature

10-13-24 — Ted Sawyer
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.

Variance Application from Oregon Administrative Rules Regulating Onsite Wastewater Treatment Systems

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) EJ Enterprises LLC

Mailing Address 22307 SE Sharon Drive

City, State, Zip Damascus, OR 97089

Phone (503) 757-0710 Email trevorsarazin@gmail.com

Property Information:

County Deschutes

Township, Range, Section, Tax Lot T20S R10E S23A Tax Lot 400

Lot and Block Number Lot 24 Subdivision Name Swarens Fancher Robinson Tracts

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.

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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.

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