



Coos County Land Use Permit Application

SUBMIT TO COOS COUNTY PLANNING DEPT. AT 225 N. ADAMS STREET OR MAIL TO:
COOS COUNTY PLANNING 250 N. BAXTER, COQUILLE OR 97423. EMAIL
PLANNING@CO.COOS.OR.US PHONE: 541-396-7770

FILE NUMBER: ACU-21-008

Date Received: 2/8/21 Receipt #: 224210 Received by: _____

This application shall be filled out electronically. If you need assistance please contact staff.
If the fee is not included the application will not be processed.
(If payment is received on line a file number is required prior to submittal)

LAND INFORMATION

A. Land Owner(s) Dennis and Christina Borgens

Mailing address: 66897 Beaver Loop Road, North Bend, OR 97459

Phone: 541-290-7344 Email: dborgens62@gmail.com

Township:	Range:	Section:	¼ Section:	1/16 Section:	Tax lots:
23S	13W	26	Select	Select	2401
Select	Select	Select	Select	Select	

Tax Account Number(s): 63201 Zone: Select Zone Rural Residential-2 (RR-2)
Tax Account Number(s) _____ Please Select _____

B. Applicant(s) Coos Curry Consulting Group

Mailing address: P.O. Box 1548, Bandon, OR 97411

Phone: 541-982-9531

C. Consultant or Agent: Sheri McGrath

Mailing Address P.O. Box 1548, Bandon, OR 97411

Phone #: 541-982-9531 Email: cooscurry@gmail.com

Type of Application Requested

- | | | |
|--|---|---|
| <input type="checkbox"/> Comp Plan Amendment | <input checked="" type="checkbox"/> Administrative Conditional Use Review - ACU | <input type="checkbox"/> Land Division - P, SUB or PUD |
| <input type="checkbox"/> Text Amendment | <input type="checkbox"/> Hearings Body Conditional Use Review - HBCU | <input type="checkbox"/> Family/Medical Hardship Dwelling |
| <input type="checkbox"/> Map - Rezone | <input type="checkbox"/> Variance - V | <input type="checkbox"/> Home Occupation/Cottage Industry |

Special Districts and Services

Water Service Type: On-Site (Well or Spring) Sewage Disposal Type: Select type of Sewage System
School District: North Bend Fire District: North Bend RFPD (Hauser Rural)

Please include the supplement application with request. If you need assistance with the application or supplemental application please contact staff. Staff is not able to provide legal advice. If you need help with findings please contact a land use attorney or consultant.

Any property information may be obtained from a tax statement or can be found on the County Assessor's webpage at the following links: [Map Information](#) Or [Account Information](#)

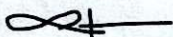
D. **ATTACHED WRITTEN STATEMENT.** With all land use applications, the “burden of proof” is on the applicant. It is important that you provide information that clearly describes the nature of the request and indicates how the proposal complies with all of the applicable criteria within the Coos County Zoning and Land Development Ordinance (CCZLDO). You must address each of the Ordinance criteria on a point-by-point basis in order for this application to be deemed complete. A planner will explain which sections of the Ordinance pertain to your specific request. The information described below is required at the time you submit your application. The processing of your application does not begin until the application is determined to be complete. An incomplete application will postpone the decision, or may result in denial of the request. Please mark the items below to ensure your submittal is complete.

Application Check List: Please make off all steps as you complete them.

- I. A written statement of intent, attached to this application, with necessary supporting evidence which fully and factually describes the following:
1. A complete explanation of how the request complies with the applicable provisions and criteria in the Zoning Ordinance. A planner will explain which sections of the Ordinance pertain to your specific request. You must address each of the Ordinance criteria on a point-by-point basis in order for this application to be deemed complete.
 2. A description of the property in question, including, but not limited to the following: size, vegetation, crops grown, access, existing buildings, topography, etc.
 3. A complete description of the request, including any new structures proposed.
 4. If applicable, documentation from sewer and water district showing availability for connection.
- II. A plot plan (map) of the property. Please indicate the following on your plot plan:
1. Location of all existing and proposed buildings and structures
 2. Existing County Road, public right-of-way or other means of legal access
 3. Location of any existing septic systems and designated repair areas
 4. Limits of 100-year floodplain elevation (if applicable)
 5. Vegetation on the property
 6. Location of any outstanding physical features
 7. Location and description (paved, gravel, etc.) of vehicular access to the dwelling location
- III. A copy of the current deed, including the legal description, of the subject property. Copies may be obtained at the Coos County Clerk's Office.

I certify that this application and its related documents are accurate to the best of my knowledge. I am aware that there is an appeal period following the date of the Planning Director's decision on this land use action. I understand that the signature on this application authorizes representatives of the Coos County Planning Department to enter upon the subject property to gather information pertinent to this request. If the application is signed by an agent, the owner's written authorization must be attached.

If this application is refereed directly to a hearings officer or hearings body I understand that I am obligated to pay the additional fees incurred as part of the conditions of approval. I understand that I/we are not acting on the county's behalf and any fee that is a result of complying with any conditions of approval is the applicants/property owner responsibility. I understand that conditions of approval are required to be complied with at all time and an violation of such conditions may result in a revocation of this permit.



Sheri McGrath on behalf of Owner 2-2-21

ACCESS INFORMATION

The Coos County Road Department will be reviewing your proposal for safe access, driveway, road, and parking standards. There is a fee for this service. If you have questions about these services please contact the Road Department at 541-396-7660.

Property Address: 66897 Beaver Loop Road, North Bend, OR 97459

Type of Access: County Road

Name of Access: Beaver Loop Road

Is this property in the Urban Growth Boundary? No

Is a new road created as part of this request? No

Required parking spaces are based on the use of the property. If this is for a residential use two spaces are required. Any other use will require a separate parking plan submitted that is required to have the following items:

- Current utilities and proposed utilities;
- Roadmaster may require drawings and specs from the Oregon Standards Specification Manual (OSSC) (current edition).
- The location and design of bicycle and pedestrian facilities shall be indicated on the site plan if this is a parking plan;
- Location of existing and proposed access point(s) on both sides of the road where applicable;
- Pedestrian access and circulation will be required if applicable. Internal pedestrian circulation shall be provided in new commercial, office, and multi-family residential developments through the clustering of buildings, construction of walkways, landscaping, accessways, or similar techniques;
- All plans (industrial and commercial) shall clearly show how the internal pedestrian and bicycle facilities of the site connect with external existing or planned facilities or systems;
- Distances to neighboring constructed access points, median openings (where applicable), traffic signals (where applicable), intersections, and other transportation features on both sides of the property;
- Number and direction of lanes to be constructed on the road plus striping plans;
- All planned transportation features (such as sidewalks, bikeways, auxiliary lanes, signals, etc.); and
- Parking and internal circulation plans including walkways and bikeways, in UGB's and UUC's.

Additional requirements that may apply depending on size of proposed development.

- a. Traffic Study completed by a registered traffic engineer.
- b. Access Analysis completed by a registered traffic engineer
- c. Sight Distance Certification from a registered traffic engineer.

Regulations regarding roads, driveways, access and parking standards can be found in Coos County Zoning and Land Development Ordinance (CCZLDO) Article 7.

By signing the application I am authorizing Coos County Roadmaster or his designee to enter the property to determine compliance with Access, Parking, driveway and Road Standards. I understand that I shall contact the Road Department to let them know when the improvements are ready to be inspected or Bonded. Contact by phone at 541-396-7600

Coos County Road Department Use Only

Roadmaster or designee: _____

Driveway Parking Access Bonded Date: _____ Receipt # _____

File Number: DR-20-

Coos Curry Consulting Group

P.O. Box 1548 * Bandon, Oregon 97411
cooscurry@gmail.com
541-982-9531

CONSENT FOR REPRESENTATION

I, Dennis and/or Christina Borgens of 66897 Beaver Loop Road, North Bend, OR 97459 give permission to Coos Curry Consulting Group to represent me on all design, permit and consulting matters concerning the property located on the Coos County Tax Assessor's Map 23-13-26 Tax Lot 2401 and at 66897 Beaver Loop Road, North Bend. The tax account for this property is 63201.

Sheri McGrath is the direct contact for all permit application questions, plan review comments, concerns or questions, and any other information related to the above property.

Contact information for Sheri McGrath is:

Cell: 541-982-9531
E-mail: cooscurry@gmail.com
Mailing address: P.O. Box 1548, Bandon, OR 97411

This consent automatically expires eight months from the date below, without requirement of notice.

DATED: 1.28., 2021

COOS CURRY CONSULTING GROUP


By: Sheri McGrath

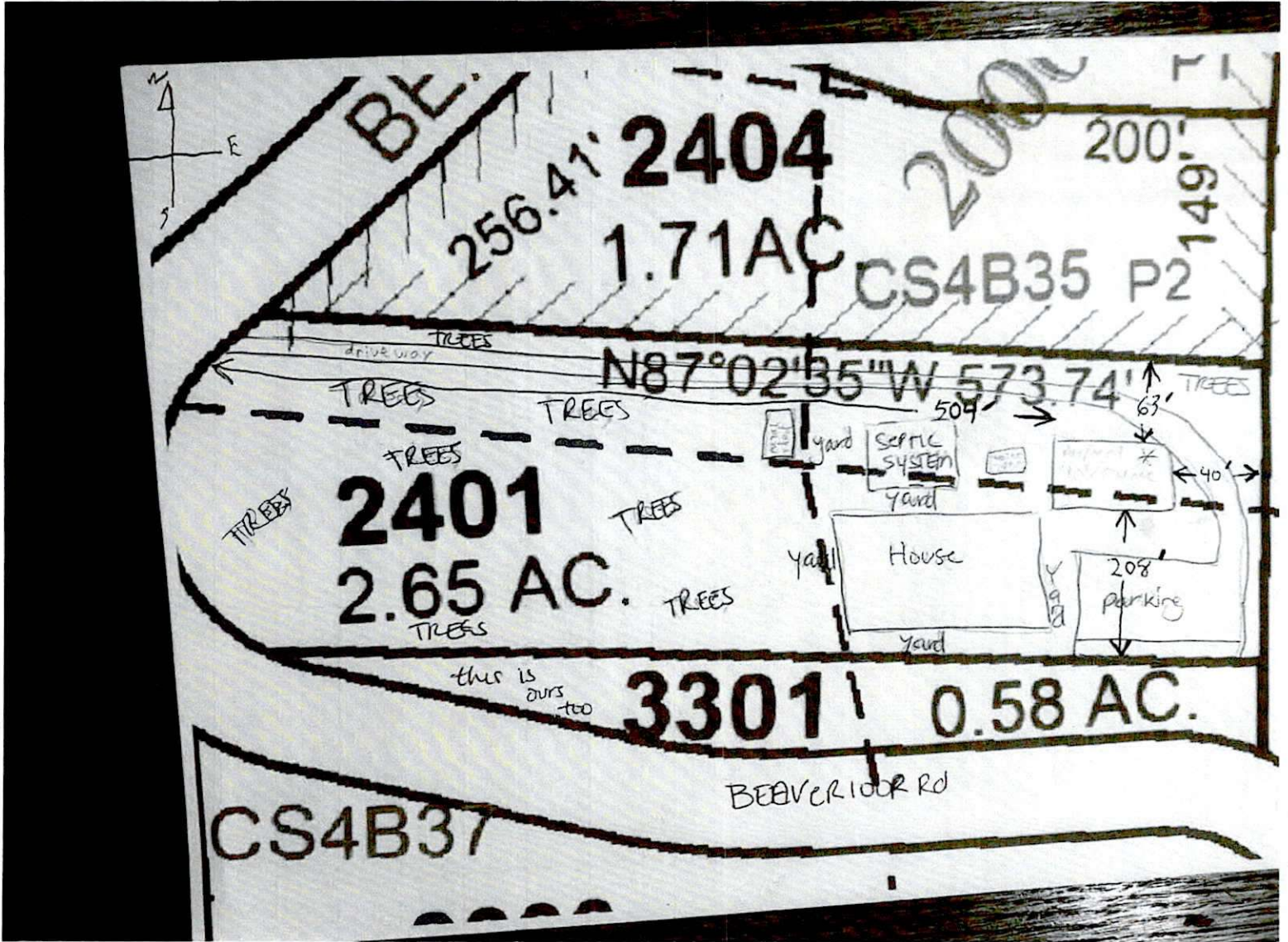
CLIENT

By: Dennis and/or Christina Borgens

OWNER INFORMATION:
Dennis and Christina Borgens
66897 Beaver Loop Rd
North Bend, OR 97459
23-13-26 TL 2401
Tax Acct 63201

Map Prepared by Owner

N



February 4, 2021

APPLICATION FOR A SHOP STRUCTURE IN BEACHES AND DUNES AREA

66897 Beaver Loop Road

North Bend, OR 97459

23-13-26 TL 2401

Tax Account 63201

PROPERTY OWNER

Dennis and Christina Borgens

66897 Beaver Loop Road

North Bend, OR 97459

APPLICANT

Coos Curry Consulting Group

P.O. Box 1548

Bandon, OR 97411

Office Contact:

Sheri McGrath

P.O. Box 1548

Bandon, OR 97411

cooscurry@gmail.com

541-982-9531

EXISTING PROPERTY CONDITIONS

The Borgens property is located in North Bend, found in Coos County, Oregon. The property is known as Tax Lot 2401 on the Coos County Tax Assessor's Map 23-13-26. The property is located in the RR-2 district and in a Beaches and Dunes area. The property is 2.65 acres in size. The situs address is 66897 Beaver Loop Road, North Bend, OR 97459.

Existing development includes a septic system, well, small accessory structure that will be torn down, a pump house and a single family dwelling. A mix of vegetation exists including alder and fir trees, azaleas, rhododendron and other native plants. The property is not used for farming or forest practices.

PROPOSED PROPERTY CONDITIONS

The Borgens family would like to construct a shop accessory structure on the subject property. The property is located in a Beaches and Dunes area, therefore an administrative conditional use permit is required for the approval and siting of the shop structure. Water and sewer connections to the shop are not proposed. No other development is proposed at this time.

The applicant is requesting clearance for the shop accessory structure. Below are findings to support the request. A Land Use Application and Geology Site Investigation report have been provided with these findings. A fee of \$1174.00 is enclosed. A previous payment of \$306.00 was made to the Coos County Planning Department and will be applied to the conditional use permit fee of \$1480.00.

COOS COUNTY ZONING AND LAND DEVELOPMENT ORDINANCE (CCZLDO) FINDINGS OF FACT

- 2.1.200 Accessory Use is defined as, "a use, building or structure that is (1) customarily incidental and subordinate to the principal use, main building or structure, and (2) subordinate in extent, area, and purpose to the principal use. A use that constitutes, in effect, conversion to a use not permitted in the district is not an accessory use."
- Conditional Use is "applied to a use which may be permitted by the issuance of a conditional use permit."
- Zoning District is defined as, "a zoning designation in this Ordinance text and delineated on the zoning maps, in which requirements for the use of land or buildings and development standards are prescribed."
- 4.2.100 The "RR-2" district provides for continued existence of rural family life.
- 4.3.200 Accessory structures are outright permitted in the RR-2 zone.
- 4.3.225(7) The proposed accessory structure will exceed the minimum setback requirements of 35' from right of ways and 5' minimum setback to other property lines.
- 4.3.225(8) Outdoor storage of boats, trailers and other recreational equipment may be stored on site, but not used as an accessory use.
- 4.3.230(2,a,ii) The subject exceeds the minimum of acreage for the RR-2 zone which is two acres.
- 4.11.129 This section addresses the criteria for development within areas designated by Beach and Dunes Policy 5.10. The subject property is labeled as having "limited suitability" for development.
- 4.11.129a The measures prescribed in this policy are specifically required by Statewide Planning Goal #18. The Administrative Conditional Use permit process is required for all development. A geological site investigation is required for the review process.

- 4.11.129(a) Limited suitability requires an Administrative Conditional Use permit and a site evaluation by a licensed geologist. A geology report is attached which addresses the criteria of this section.
- 4.11.129(a,i) Development will be approved upon the establishment of findings that consider
- (a. They type of proposed use and the effects it might have on the site and surrounding areas
 - (b. The need for stabilization programs and maintenance of existing or proposed vegetation
 - (c. The methods needed to protect the surrounding area from adverse effects
 - (d. Hazards to life, public and private property and natural environment
- 4.11.129(a,ii) Coos County will regulate the following actions:
- (a. Destruction of desirable vegetation including root damage
 - (b. The exposure of stable and conditionally stable areas to erosion
 - (c. Construction or shore structures
 - (d. Any development actions with adverse impacts
- 6.1.125 The parcel is considered lawfully created.
- 6.2.550 Improvements will comply with the county and state laws as required for water, sewer, drainage, storm drainage and erosion control.
- 7.1.425 The road access points, driveway and turn around are permitted and inspected by the Coos County Road Department.

ADDITIONAL SUPPORTING DOCUMENTS

Land Use Application and Fee

Coos County Tax Assessor's Map 23-13-26 TL 2401

Coos County Tax Assessor's Summary Report

Consent Form

Plot plan

Warranty Deed

Geology Report

COOS County Assessor's Summary Report

Real Property Assessment Report

FOR ASSESSMENT YEAR 2021

NOT OFFICIAL VALUE

January 27, 2021 11:04:30 am

Account # 63201 Map # 23S13260002401 Code - Tax # 1318-63201 Legal Descr See Record Mailing Name BORGENS, DENNIS R., JR. & CHRISTINA Agent In Care Of Mailing Address 66897 BEAVER LOOP RD NORTH BEND, OR 97459-7768 Prop Class 101 MA SA NH Unit RMV Class 101 01 07 RRL 1366-1	Tax Status ASSESSABLE Acct Status ACTIVE Subtype NORMAL Deed Reference # See Record Sales Date/Price See Record Appraiser
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Situs Address(s)	Situs City
ID# 10 66897 BEAVER LOOP RD	NORTH BEND

Code Area	RMV	MAV	Value Summary			RMV Exception	CPR %
			AV	SAV	MSAV		
1318 Land	98,520					Land	0
Impr.	138,460					Impr.	0
Code Area Total	236,980	214,700	214,700	0	0		0
Grand Total	236,980	214,700	214,700	0	0		0

Code Area	ID#	RFPD	Ex	Plan Zone	Value Source	Land Breakdown			Land Class	LUC	Trended RMV
						TD%	LS	Size			
1318	10	<input checked="" type="checkbox"/>		RR-2	Market	100	A	1.00	HS	001	54,860
1318	20	<input checked="" type="checkbox"/>		RR-2	Market	100	A	1.65	MV	002	43,660
Grand Total								2.65			98,520

Code Area	ID#	Yr Built	Stat Class	Description	Improvement Breakdown		Total Sq. Ft.	Ex% MS Acct #	Trended RMV
					TD%				
1318	1	1978	132	One story with basement-Class 3	100		2,376		138,460
Grand Total								2,376	138,460

Code Area	Type	Exemptions/Special Assessments/Potential Liability					
1318	FIRE PATROL:						
	■ FIRE PATROL SURCHARGE	Amount	47.50		Year	2021	
	■ FIRE PATROL TIMBER	Amount	18.75	Acres	1.65	Year	2021

THIS MAP WAS PREPARED FOR
ASSESSMENT PURPOSE ONLY

SE1/4 SW1/4 SEC.21 T.28S. R.14W. W.M. COOS COUNTY

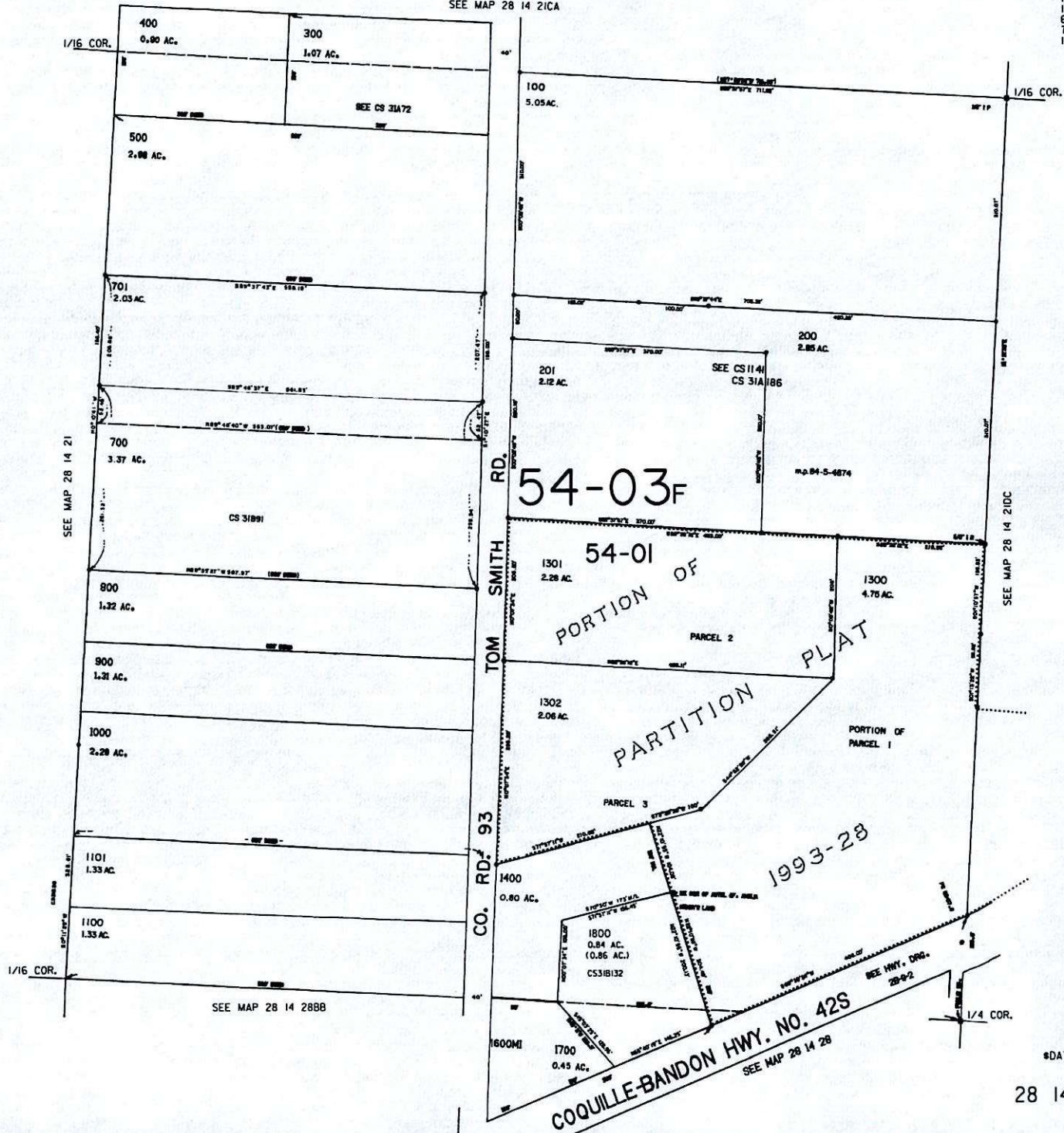
28 14 21CD

1" = 100'

CANCELLED

1500
1600
600
702
1200

SEE MAP 28 14 21CA



SEE MAP 28 14 21

SEE MAP 28 14 21DC

SEE MAP 28 14 28BB

SEE MAP 28 14 28

DATE

28 14 21CD

96 06 1485

WARRANTY DEED

MIKE MAST and JAMES MAST, each as to an undivided 50.000% interest as tenants in common, Grantors, convey and warrant to DENNIS RAY BORGENS, JR. AND CHRISTINA MARIE BORGENS, husband and wife, as tenants by the entirety, Grantees the following described real property free of encumbrances except as specifically set forth herein, all situate in the County of Coos, State of Oregon, to-wit:

See Exhibit "A" attached hereto and by this referenced incorporated herein as if fully set forth herein verbatim.

The true consideration for this conveyance is \$119,000.00.

Until a change is requested, all tax statements shall be sent to the following address:

Dennis B. Borgens, Jr.
Christina M. Borgens
7612 WILDWOOD DRIVE
NORTH BEND, OR 97459

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

DATED this 24TH day of JUNE, 1996.

Mike Mast
Mike Mast
James Mast
James Mast

STATE OF OREGON)
County of COOS) ss.

The foregoing instrument was acknowledged before me this 24 day of JUNE, 1996, by Mike Mast.



Tracy M. McKinley
Notary Public for Oregon
My Commission Expires: 6/3/99

RETURN TO KEY TITLE & ESCROW
Upon recording, return to:
Dennis B. Borgens, Jr.
Christina M. Borgens
7612 WILDWOOD DRIVE
NORTH BEND, OR 97459

Page 1 - WARRANTY DEED

24-63966/TM

3218

RECORDING # 96061485
I, Mary Ann Wilson,
Coos County Clerk, certify
the within instrument
was filed for record at



3:34 ON 06/28/1996
M. WILSON

By _____ Deputy

#pages 5 Fee \$ 53.00

96 06 1485.

STATE OF OREGON)
) ss.
County of COOS)

The foregoing instrument was acknowledged before me this
24TH day of JUNE, 1996, by James Mast.



Tracy M. Kinley
Notary Public for Oregon
My Commission Expires: 6/3/99

3219

EXHIBIT "A"

The South 1/3 of the Southwest quarter of the Southwest quarter of the Northeast quarter of Section 26, Township 23 South, Range 13 West of the Willamette Meridian, Coos County, Oregon, the North line of which is parallel to the South boundary of the said Southwest quarter of the Southwest quarter of the Northeast quarter.

Excepting therefrom that portion of the above described property which lies on the West side of Old Highway 101 and now named Wildwood Drive, as shown by a survey made by Forrest J. Hales on November 15, 1974.

Also Except that portion in Wildwood Drive.

Also Except that portion described in Property Line Adjustment Deed to Clifford W. Plummer and Elaine C. Plummer, recorded October 3, 1995, in Microfilm Reel No. 95-10-0135, Records of Coos County, Oregon.

ALSO

The North 1/2 of the Northeast 1/4 of the Northwest 1/4 of the Southeast 1/4 of Section 26, Township 23 South, Range 13 West of the Willamette Meridian, Coos County, Oregon. Except that portion described in Deed to Stanley E. Warthen and Vicki J. Warthen, recorded August 8, 1988, in Microfilm Reel No. 88-8-0549, Records of Coos County, Oregon. Also except that portion described in Deed to the State of Oregon, recorded May 21, 1952 in Book 218, Page 236 of Deed Records of Coos County Oregon. Also except that portion embraced in Old Highway 101, now known as Wildwood Drive. Also Except 1/2 of all minerals as reserved in Deed by L.L. Adcox recorded April 14, 1959 in Book 271, Page 58, Deed Records of Coos County, Oregon.

ALSO

Beginning at the Southeast corner of the Southeast 1/4 of the Southwest 1/4 of the Northeast 1/4, Section 26, Township 23 South, Range 13 West of the Willamette Meridian, Coos County, Oregon, and then running North 87° 08' West along the South line of the Southeast 1/4 of the Southwest 1/4 of the Northeast 1/4 in said Section 26 a distance of 100 feet; thence, North 44° 57' 50" East 140.63 feet, more or less, to the East line of said Southeast 1/4 of the Southwest 1/4 of the Northeast 1/4; thence, South 0° 15' East a distance of 104.54 feet, more or less, to the point of beginning containing .12 acres, more or less.

RESERVING AND EXCEPTING unto Grantors, their heirs, successors and assigns, all merchantable trees, including but not limited to all merchantable trees of the conifer species and hardwood species, whether said merchantable trees are already cut or are still to be cut, together with the right of ingress and egress to and from and upon the property and the right to freely occupy the property with no restrictions for the purpose of conducting a timber cutting and removal operation and to conduct all necessary logging operation, including but not limited to cutting, bucking, yarding, piling, and decking of said timber, incident to said timber removal. Grantors shall have the right to give third persons the right to enter upon and occupy the above-described property to assist with the timber removal. The Grantors shall be responsible for reforestation of the real property described in Exhibit "B" in conformance with applicable law, unless Grantees submit a written plan to convert the property above-described to pasture which meets applicable law and thus removes the property from any reforestation requirements as provided by applicable law. Grantors, their contractors or sub-contractors, shall have the right to enter upon the property and occupy the property for purposes of reforestation should the property need to be reforested. Once reforestation requirements are met, or if the property is removed from reforestation due to acts or non-acts by the Grantees, the Grantees shall be responsible for any additional taxes and penalties and interests if the property is disqualified as forest land. Grantors shall have no obligation to see that the property continue to meet state requirements per the Oregon Forest Practices Act after the initial planting. This Reservation shall terminate and cease to exist at 11:59 PM on October 31, 1997, except that Grantors shall have a reasonable time after October 31, 1997 to meet reforestation requirements, if necessary.

The above reservation does not include merchantable timber agreed upon and marked by Grantor around the residence.

TOGETHER WITH an appurtenant easement to transport water, created by instrument, Recorded: September 26, 1995, Microfilm Reel Number 95-09-0920, records of Coos County, Oregon.

Subject to the Standard Exceptions, if any, the printed Exclusions and the Conditions and stipulations of the policy as well as the following Special Exceptions:

1. The rights of the public in and to that portion of the premises herein described lying within the limits of roads, streets and highways.
2. The assessment roll and the tax roll disclose that the premises herein described were specially assessed as Forest Land. If the land becomes disqualified for the special assessment under the statute, an additional tax may be levied for previous years in which the land was subject to the special land use assessment.
3. Limited access provisions contained in deed to the State of Oregon, by and through its State Highway Commission, which provides that no right or easement of right of access to, from or across the State Highway other than expressly therein provided for shall attach to the abutting property,
Recorded: May 21, 1952, in Book 218, Page 236,
Records of Coos County, Oregon
4. Limited access provisions contained in deed to the State of Oregon, by and through its State Highway Commission, which provides that no right or easement of right of access to, from or across the State Highway other than expressly therein provided for shall attach to the abutting property,
Recorded: June 12, 1952 in Book 218, Page 655.
Records of Coos County, Oregon
5. An easement created by instrument, including the terms and provisions thereof,
Recorded: March 22, 1977, Microfilm Reel Number 77-3-04200
Records of Coos County, Oregon
For: To transport water
6. Maintenance agreement, including the terms and provisions thereof, on appurtenant easement for transporting water, created by instrument recorded on September 26, 1995 in Microfilm Reel Number 95-09-0920, deed records of Coos County, Oregon.
7. Any facts, rights, interest, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
8. Discrepancies, conflicts in boundary lines, encumbrances apparent on the land, encroachments or any facts which a correct survey would disclose or which are disclosed by a filed survey.
9. All other easements, rights of ways, reservations, provisions, restrictions and encumbrances of record.

3221

96 06 1485

Exhibit "B"

The North 1/2 of the Northeast 1/4 of the Northwest 1/4 of the Southeast 1/4 of Section 26, Township 23 South, Range 13 West of the Willamette Meridian, Coos County, Oregon. Except that portion described in Deed to Stanley E. Warthen and Vicki J. Warthen, recorded August 8, 1988, in Microfilm Reel No. 88-8-0549, Records of Coos County, Oregon. Also except that portion described in Deed to the State of Oregon, recorded May 21, 1952, in Book 218, Page 236 of Deed Records of Coos County Oregon. Also except that portion embraced in Old Highway 101, now known as Wildwood Drive. Also Except 1/2 of all minerals as reserved in Deed by L.L. Adcox recorded April 14, 1959 in Book 271, Page 58, Deed Records of Coos County, Oregon.

ALSO

Beginning at the Southeast corner of the Southeast 1/4 of the Southwest 1/4 of the Northeast 1/4, Section 26, Township 23 South, Range 13 West of the Willamette Meridian, Coos County, Oregon, and then running North 87° 08' West along the South line of the Southeast 1/4 of the Southwest 1/4 of the Northeast 1/4 in said Section 26 a distance of 100 feet; thence, North 44° 57' 30" East 140.63 feet, more or less, to the East line of said Southeast 1/4 of the Southwest 1/4 of the Northeast 1/4; thence, South 0° 15' East a distance of 104.54 feet, more or less, to the point of beginning containing .12 acres, more or less.

3222

Cascadia Geoservices, Inc.

190 6th Street
PO Box 1026
Port Orford, Oregon 97465
D. 541-332-0433
C.541-655-0021
Email: info@cascadiageoservices.com
www.cascadiageoservices.com



Geologic Site Assessment

66897 Beaver Loop Road
North Bend, Oregon 97459
T23S-R13W-Sec 26, Tax Lot 240100

Prepared for

Mr. Dennis Borgens
66897 Beaver Loop Road
North Bend, OR 97459

Sent via e-mail: dborgens62@gmail.com

CGS Project No.: 20107
Date: November 20, 2020

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INTRODUCTION

Cascadia Geoservices, Inc. (CGS) is pleased to submit this Geologic Site Assessment Report for a portion of the above listed property (subject property or site) located on Beaver Loop Road in North Bend, Oregon (Figure 1, Location Map). This report summarizes our project understanding and site investigation, including subsurface explorations, and provides our conclusions and recommendations regarding the site.

PROJECT UNDERSTANDING

Our understanding is based on phone conversations with you and with Coos County personnel beginning on May 27, 2020 and on a site visit to the site on October 14, 2020. We understand that you are proposing to build a shop on your site. The shop will be a post and beam structure which will measure 46 feet long by 30 feet wide. We further understand that you have no plans for excavations which will exceed 4 feet deep or fills which will exceed 4 feet thick.

SURFACE DESCRIPTION

The subject property is located within the Coast Range Physiographic region of southwestern Oregon and is part of Tax Lot 240100, T23S-R13W-Sec 26. Tax Lot 240100 is 2.65 acres and is rectangular in shape. The proposed shop site is east of the home near the eastern boundary of the tax lot and is at an elevation of 135 feet above mean sea level (AMSL). The site is generally level and is bordered on the east and south by the home's private access road. The site is bordered on the north by a short swale. The site is currently being used for storing various household items and vehicles and has scarce ground vegetation and deciduous and evergreen trees (Photo 1). The site appeared well drained and stable at the time of our site visit with no indication of near surface groundwater or ground cracks or areas of settlement.

Based on mapping by others,^{1, 2} soils at the site consist of sandy loam (1 C-Bandon sandy loam, 7 to 12 percent slopes). These soils are well drained and are derived

¹ United States Department of Agriculture (USDA), Natural Resource Conservation Service Web Soil Survey viewed at <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

² Beaulieu, J. D., & Hughes, P. W. (1975). Environmental Geology of Western Coos and Douglas Counties, Oregon. Oregon Department of Geology and Mineral Industries, Bulletin 87 (p. 148)

from marine deposits. These soils overlie surficial deposits which consist of sands, silts, clays, and gravels of the Quaternary Marine Terrace deposits (QMTD).

SUBSURFACE EXPLORATIONS

CGS excavated 4 hand augered borings during our October 14, 2020 site visit (see Figure 2, Site Map). These borings were excavated near the perimeter of the proposed shop building. Two of the excavated borings (HA-3 and HA-4) were within the boundaries of the access driveway and encountered $\frac{3}{4}$ inch minus roadbed gravel. We observed that these gravels were well compacted and unyielding. HA-1 and HA-2 were excavated near the southwest and northwest corners, respectively. These hand augered borings encountered loose organic silty fine sand to a depth of from 2.0 to 2.5 feet below ground surface (bgs). We infer that these soils are sandy loam soils identified by others². Below these soils we encountered medium dense tan fine sand. The sands were determined to be moist and moderately cemented. We infer that these are surficial deposits of the Quaternary Marine Terrace deposits (QMTD). The locations of the hand augered borings are shown on Figure 2.

The borings were drilled using a hand auger and were logged by an Oregon certified engineering geologist from our southern Oregon coast office. A Dynamic Cone Penetrometer (DCP) was used by CGS to test the relative consistency of the soils at 3 feet bgs in the hand augered borings. In general, the tan fine sands encountered from 2.0 to 2.5 feet bgs were determined to be medium dense with a penetration rate of 5 to 7.

Upon completion, the borings were filled with excavated material and the locations plotted using GPS.

GROUNDWATER

Groundwater was not encountered in any of the hand augered borings. The site appeared well drained. Based on a review of water-well cards for wells in the area,³ the primary aquifer in this area is less than 50 feet bgs. We anticipate that water levels will rise during periods of sustained rainfall and will form perched

³ Oregon Water Resources Department (OWRD), retrieved from www.oregon.gov/OWRD

aquifers in porous layers above confining layers of clay. We infer that the hydraulic gradient follows topography and is to the south.

GEOLOGIC HAZARDS

A review of the State Landslide Inventory Database (Oregon HazVu)⁴ indicates that the site is not in an identified landslide or debris flow complex. The descending slope south of the site has been identified as having a moderate susceptibility for future landslides which indicates that these slopes may become unstable.

A review of LIDAR⁵ mapping for the area reveals the site is on a level terrace above a low-lying drainage swale. The topography of the site is consistent with older, vegetated dunes. The site has no breaks in topography and no anomalous landforms.

Based on a review of U.S. Geological Survey maps,⁶ the site is not impacted by geologically young faults associated with the Cascadia Subduction Zone (CSZ).

There is now a consensus among earth scientists that much of the western US including the entire southern Oregon coast region, is in an area which has been seismically active in the recent geologic past. To protect people living in seismically active areas within the state, the State has recently updated its Oregon Residential Specialty Code⁷ (OSSC 2019). It is our opinion that new structures such as you are proposing for this site should adopt, where applicable, these updated standards.

Liquefaction

Liquefaction potential was assessed based on the information obtained from our hand augered borings and using the parameters suggested in Youd & Andrus, et al., 2001.⁸ Based on the depth of groundwater and the consistency of the fines sand encountered in our borings, it is our opinion that the liquefaction potential for this site is low.

⁴ (HazVu). Oregon Department of Geology and Mineral Industries (DOGAMI) Statewide Geohazards Viewer. Viewed at www.oregongeology.org

⁵ LIDAR is a surveying technology that measures distance by measuring the amount of time it takes for light to travel from a light-emitting source to an object and back to a sensor.

⁶ U.S. Geological Survey (USGS), Quaternary Faults Web Mapping Application, viewed at <https://earthquake.usgs.gov>

⁷ Oregon Structural Specialty Code, 2019, State of Oregon, viewed at www.oregon.gov

⁸ Youd, T. L., Andrus, I. M., et al., 2001. Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils. ASCE, Journal of Geotechnical and Geoenvironmental Engineering, v. 127, No. 10, pp. 817-33.

Tsunamis

Based on recent mapping and modeling done by the state of Oregon,⁹ the site is not within the Tsunami Inundation Zone. We note that regionally, access roads may be impacted by a local source Cascadia Subduction Zone earthquake of 8.8 or larger. Because of this, we strongly recommend that you check local resources and the state of Oregon's Department of Geology and Mineral Industries (DOGAMI) Tsunami Resource Center¹⁰ for current information regarding tsunami preparedness and emergency procedures.

COOS COUNTY BEACH AND DUNE POLICY

The USDA¹¹ has classified the sand dunes in this area as being "recently stabilized". Based on a review of Coos County's Map Atlas,¹² the site has been inventoried pursuant to the County's Beaches and Dunes Policy 5.10, as having "limited suitability" for development potential within the Beach and Dune Area of the county. As part of the planning and permitting process, Coos County will consider whether the site is suitable for the proposed development and whether development will impact other surrounding areas.

The subject property and surrounding area are east of the boundary of the Oregon Dunes National Recreation Area approximately 1,300 feet. It is in an area which has been divided into 2.0-acre parcels and developed for residential use. It is on a site with an existing residence to the west.

It is our opinion that if the site is developed in accordance with our recommendations, development will not have an adverse impact on either the site or adjacent areas. Further, it is our opinion that the proposed development will not significantly impact. It is our opinion that there is no need for temporary and permanent stabilization programs or the planned maintenance of new and existing vegetation to protect or further stabilize the dunes. Further, we see no hazards to life, public and private property, or to the natural environment by the proposed

⁹ Oregon Department of Geology and Mineral Industries (DOGAMI) Tsunami Inundation Map (TIM) Series. Viewed at www.oregongeology.org

¹⁰ Viewed online at www.oregongeology.org

¹¹ US Department of Agriculture

¹² Viewed on line at Coos County's website at <http://www.co.coos.or>.

development. Finally, it is our professional opinion that the proposed development will not cause destruction of desirable vegetation (including inadvertent destruction by moisture loss or root damage), cause exposure of stable and conditionally stable areas to erosion, or modify current air wave patterns leading to beach erosion.

DISCUSSION AND RECOMMENDATIONS

It is CGS's opinion that the subject property is suitable to site the proposed shop structure if it is developed in accordance with our recommendations.

We recommend that the shop be sited south of the existing drainage ditch a minimum of 10. The support posts for the structure should be firmly embedded in the underlying medium dense sands encountered at 2.0 to 2.5 feet bgs. The medium dense sands will provide an allowable bearing pressure of 2,500 pounds per square foot (psf).

We further recommend that the building pad should be stripped of all organic material encountered in our hand augered borings to a depth of 2.5 feet. This should include the footprint of the shop and 3 feet around the footprint.

Following stripping and prior to placing fill, pavement, or building improvements, the exposed subgrade should be evaluated by probing or proofrolling. The subgrade should be proofrolled with a fully loaded 10 yard or larger dump truck or similar heavy rubber-tire construction equipment to identify soft, loose, or unsuitable areas. Soft or loose zones identified during testing should be compacted to an unyielding condition or excavated and replaced with structural fill.

The excavation should be rebuilt with minus- $\frac{3}{4}$ -inch granular fill placed in 9-inch lifts and compacted to at least 95 percent of the maximum dry density, in accordance with ASTM D1557. The pad should be elevated a minimum of 1.0 foot above the highest adjoining grade elevation. Final compaction should be checked using a proof-roll or other suitable method. Please refer to **APPENDIX 1: GENERAL CONSTRUCTION CONSIDERATIONS** located in the back of this report for details regarding site preparation and materials.

A CGS engineering geologist (or their representative) should confirm suitable bearing conditions and evaluate all subgrades. Observations should also confirm that loose or soft materials, organics, unsuitable fill, and old topsoil zones are

removed. Localized deepening of the excavation may be required to penetrate any deleterious materials.

FINAL GRADING

Final grading should facilitate positive drainage away from the shop structure.

CONSTRUCTION OBSERVATIONS

Satisfactory pavement and earthwork performance depend on the quality of construction. Sufficient monitoring of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. We recommend that a representative from CGS be retained to observe general excavation, stripping, fill placement, footing subgrades, and subgrades and base rock for floor slabs and pavements.

Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated.

LIMITATIONS

Cascadia Geoservices, Inc.'s (CGS) professional services are performed, findings obtained, and recommendations prepared in accordance with generally accepted principles and practices for engineering geologists. No other warranty, express or implied, is made. The Customer acknowledges and agrees that:

1. CGS is not responsible for the conclusions, opinions, or recommendations made by others based upon our findings.
2. This report has been prepared for the exclusive use of the addressee, and their agents, and is intended for their use only. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without the expressed written consent of the Customer and Cascadia Geoservices, Inc.
3. The opinions, comments, and conclusions presented in this report are based upon information derived from our literature review, historical topographic map and aerial photograph review, and on our site observations. The scope of our services is intended to evaluate soil and groundwater (ground) conditions within the primary influence or influencing the proposed

development area. Our services do not include an evaluation of potential ground conditions beyond the depth of our explorations or agreed-upon scope of our work. Conditions between or beyond our site observations may vary from those encountered.

4. Recommendations provided herein are based in part upon project information provided to CGS. If the project information is incorrect or if additional information becomes available, the correct or additional information should be immediately conveyed to CGS for review.
5. The scope of services for this subsurface exploration and report did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site.
6. If there is a substantial lapse of time between the submission of this report and the start of work at the site, if conditions have changed due to natural causes or construction operations at or adjacent to the site, or if the basic project scheme is significantly modified from that assumed, this report should be reviewed to determine the applicability of the conclusions and recommendations. Land use, site conditions (both on and off site), or other factors may change over time and could materially affect our findings. Therefore, this report should not be relied upon after two years from its issue, or in the event that the site conditions change.
7. The work performed by the Consultant is not warranted or guaranteed.
8. There is an assumed risk when building on marginal ground, sites subject to flooding, or adjacent to bluffs, sea cliffs, or on steep ground.
9. The Consultant's work will be performed to the standards of the engineering and geology professions and will be supervised by licensed professionals. Attempts at improving marginal ground, sites subject to flooding, or adjacent to bluffs, sea cliffs, or on steep ground supporting the Customer's property may, through acts of God or otherwise, be temporary and that marginal ground, sites subject to flooding, or adjacent to bluffs, sea cliffs, or on steep ground may continue to degrade over time. The Customer hereby waives any claim that they may have against CGS for any claim, whether based on personal injury, property damage, economic loss, or otherwise, for any work performed by CGS for the Customer relating to or arising out of

attempts to stabilize the marginal ground, sites subject to flooding, or bluffs, sea cliffs, or steep ground located at the Customer's property identified hereunder. It is further understood and agreed that continual monitoring of the Customer's property may be required, and that such monitoring is done by sophisticated monitoring instruments used by CGS. It is further understood and agreed that repairs may require regular and periodic maintenance by the Customer.

10. The Customer shall indemnify, defend, at the Customer's sole expense, and hold harmless CGS, affiliated companies of CGS, its partners, joint ventures, representatives, members, designees, officers, directors, shareholders, employees, agents, successors, and assigns (Indemnified Parties) from and against any and all claims for bodily injury or death, damage to property, demands, damages, and expenses (including but not limited to investigative and repair costs, attorney's fees and costs, and consultant's fees and costs) (hereinafter "Claims") which arise or are in any way connected with the work performed, materials furnished, or services provided under this Agreement by CGS or its agents.

PROFESSIONAL QUALIFICATIONS

To review our professional qualifications, please visit our website at www.CascadiaGeoservices.com.

Sincerely,

Cascadia Geoservices, Inc.



Eric Oberbeck, RG, 997CEG
Expires June 1, 2021

PHOTO

FIGURES

Figure 1, Location Map

Figure 2, Site Map

APPENDIX 1: GENERAL CONSTRUCTION CONSIDERATIONS



66897 Beaver Loop Road
 North Bend, Oregon 97459
 23S-13W-26-2401 and 331

Photographic Log

Date: November 20, 2020

Cascadia Geoservices, Inc.
 Project No: 20107

Photo No: 1

Direction Photo is Taken: West

Photo Description:

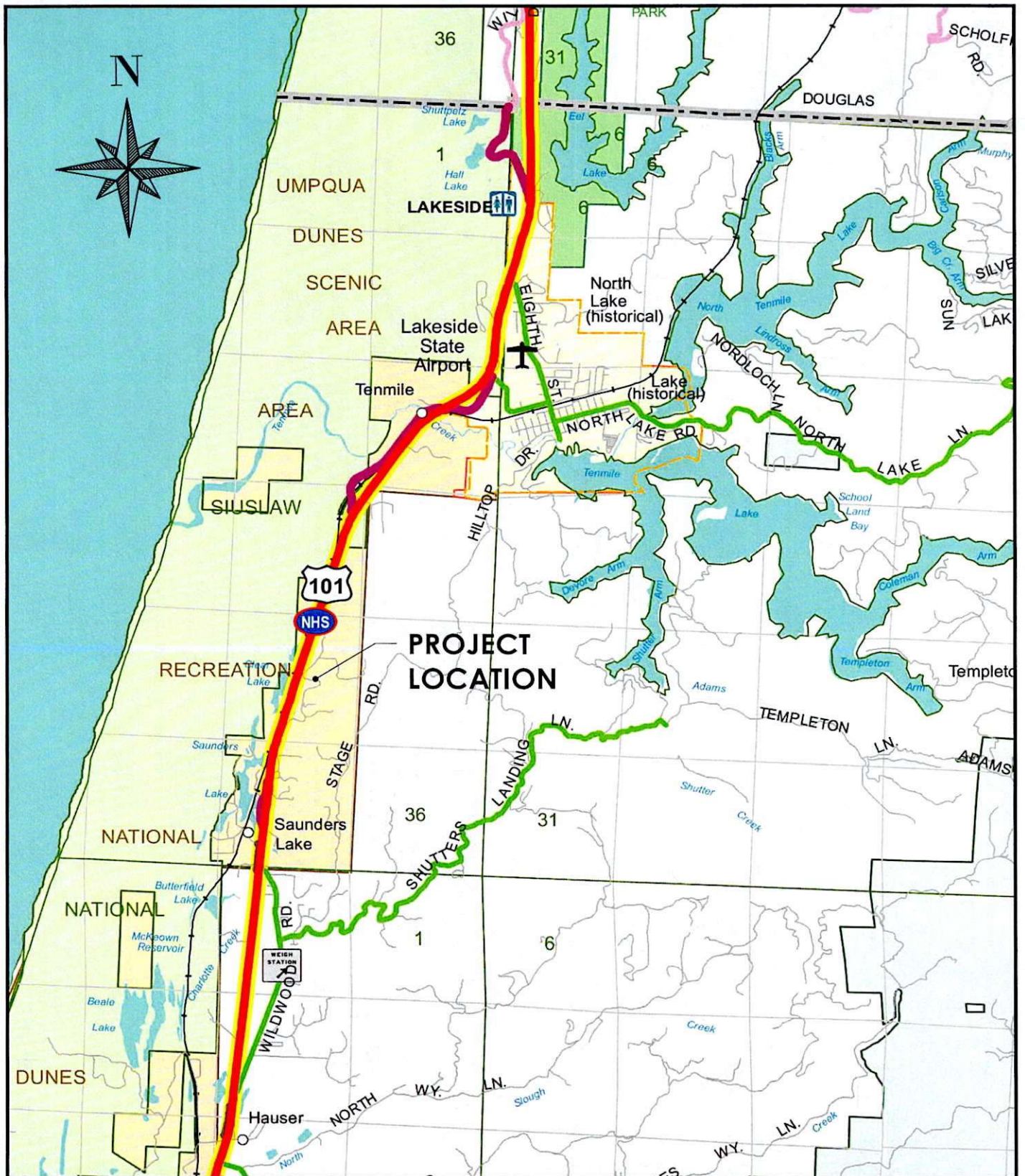
View of shop site looking west



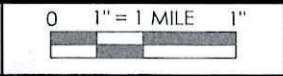
Photo No:

Direction Photo is Taken:

Photo Description:



Drawn By: SRS
Date: 11/23/2020



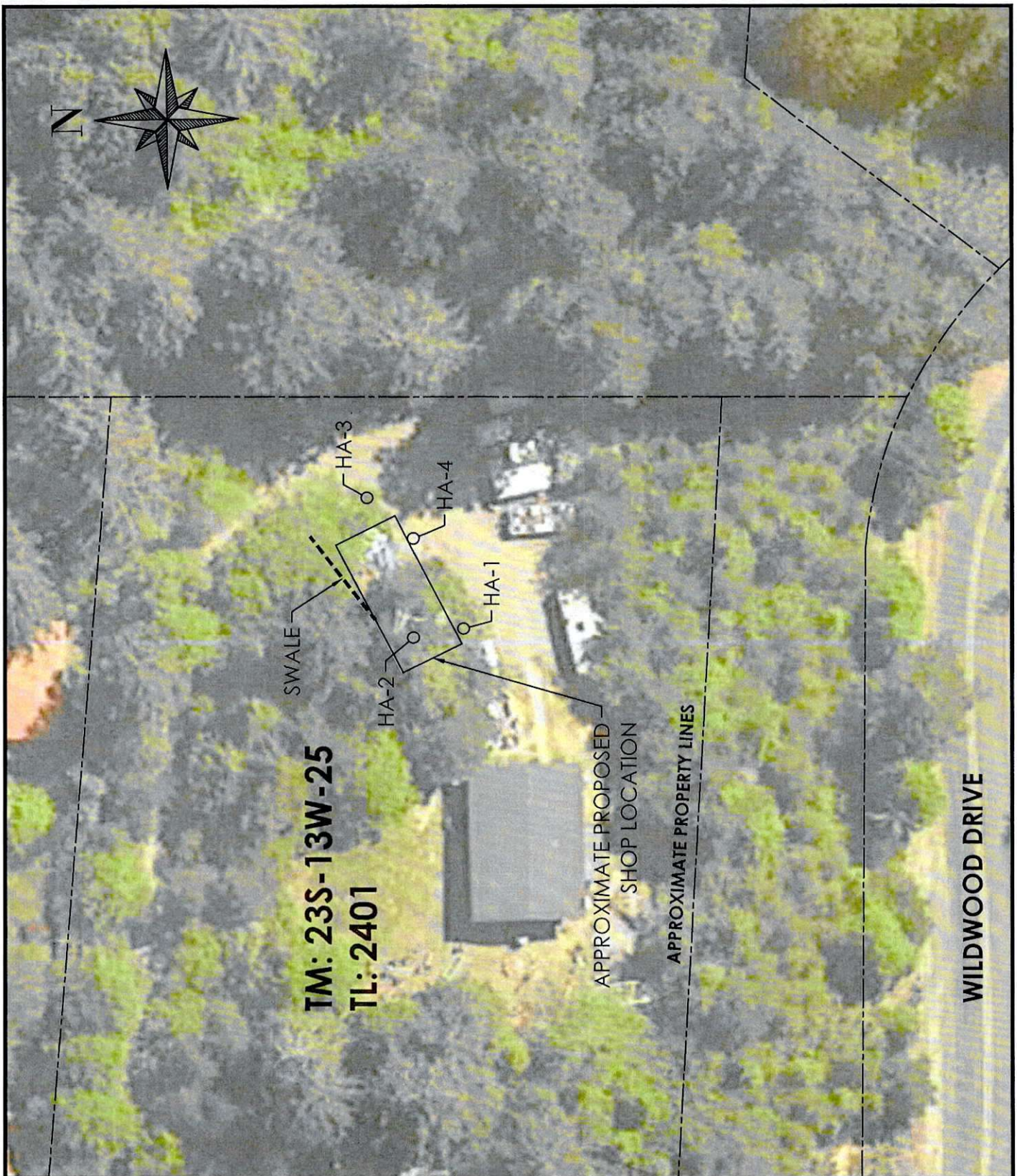
LOCATION MAP

FIGURE

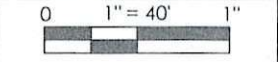
**BORGENS DUNE
SUITABILITY ASSESSMENT**

66897 BEAVER LOOP ROAD
NORTH BEND, OR

1



Drawn By: SRS
Date: 11/23/2020



SITE MAP

FIGURE

**BORGENS DUNE
SUITABILITY ASSESSMENT**

66897 BEAVER LOOP ROAD
NORTH BEND, OR

2

1.0 APPENDIX 1: GENERAL CONSTRUCTION CONSIDERATIONS

Site Preparation

Site preparation should include removal of existing structures and foundations. Underground utility lines, vaults, or tanks should be removed or grouted full if left in place. The excavations resulting from removal of footings, buried tanks, etc., should be backfilled with compacted structural fill. The base of these excavations should be excavated to firm subgrade before filling with sides sloped to allow for uniform compaction.

Materials generated during demolition of existing improvements should be transported off-site or stockpiled in areas designated by the owner. Organic and clay rich soils are typically not suitable for use as structural fill but may be used for landscaping and general backfill. Asphalt, concrete, and base rock materials may be crushed and recycled for use as general fill.

Trees and shrubs should be removed from all pavement and improvement areas. In addition, root balls should be grubbed out to the depth of the roots, which could exceed 3 feet bgs. Depending on the methods used to remove the root balls, considerable disturbance and loosening of the subgrade could occur during site grubbing. Soil disturbed during grubbing operations should be removed to expose firm undisturbed subgrade. The resulting excavations should be backfilled with structural fill.

The existing topsoil zone should be stripped and removed from all proposed building pads, pavement, and improvement areas and for a 5-foot margin around such areas. Please review **Discussion Section** of this report to ascertain the actual stripping depth. All loose fill and organics soils should be removed. Greater stripping depths may be required to remove localized zones of loose or organic soil. Greater stripping depths may be anticipated in areas with thicker vegetation and shrubs and where fill is present. The actual stripping depth should be based on field observations at the time of construction.

Stripped organic material should be transported off-site for disposal or used in landscaped areas.

Following stripping and prior to placing fill, pavement, or building improvements, the exposed subgrade should be evaluated by probing or proofrolling. The subgrade should be proofrolled with a fully loaded 10 yard or larger dump truck or similar heavy rubber-tire construction equipment to identify soft, loose, or unsuitable areas. A member of CGS's staff should observe the proofrolling. Soft or loose zones identified during testing should be compacted to an unyielding condition or excavated and replaced with structural fill, as discussed in the "Structural Fill" section of this appendix.

Wet-Weather Conditions

Trafficability on the near-surface soils may be difficult during or after extended wet periods or when surface soils become saturated. Soils that have been disturbed during site-preparation activities, or soft or loose zones identified during probing or proofrolling, should be removed and replaced with compacted structural fill.

The thickness of the granular material for access roads and building areas will depend on the amount and type of construction traffic. A 12- to 18-inch-thick mat of imported granular material is sufficient for most staging areas. The granular mat for haul roads and areas with repeated heavy construction traffic typically needs to be increased to between 18 to 24 inches. The actual thickness of haul roads and staging areas should be based on the amount and type of traffic anticipated and the type of underlying soils present. Imported granular material should be placed in one lift over the undisturbed subgrade and compacted using a smooth-drum, non-vibratory roller. Additionally, a geotextile fabric should be placed as a barrier between the subgrade and imported granular material in areas of repeated construction traffic.

2.0 MATERIALS SECTION

Structural fill should be placed over subgrade that has been prepared in conformance with the "Site Preparation" and "Wet-Weather Conditions"

sections of this report. A wide range of material may be used as structural fill; however, all material used should be free of organic matter or other unsuitable materials and should meet the specifications provided in the 2018 ODOT *Oregon Standards Specifications for Construction* (ODOT SS, 2018)¹ depending on the application. A brief characterization of some of the acceptable materials is provided below.

Native Soils

Native soils are suitable for use as general fill only if they meet the requirements of ODOT SS 00330.12 – Borrow Material. Laboratory testing is required to determine if the moisture content of the near-surface soils is greater than the soils' optimum moisture content required for satisfactory compaction. To adequately compact the soil, it may be necessary to moisture condition the soil to within 2 to 3 percentage points of the optimum moisture content. In most instances, moisture conditioning will be difficult due to the fine-grained nature of the soil.

Imported Granular Material

Imported granular material used during periods of wet weather or for haul roads, building pad subgrades, staging areas, etc., should be pit or quarry run rock, crushed rock, or crushed gravel and sand and should meet the specifications provided in ODOT SS 00330.12 – Borrow Material and ODOT SS 00330.13 – Selected General Backfill. In addition, the imported granular material should also be well-graded between coarse and fine material and have less than 5 percent by weight passing the U.S. Standard No. 200 Sieve.

Imported granular material should be placed in lifts with a maximum uncompacted thickness of 8 to 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D 698. During the wet season or when wet subgrade conditions exist, the initial lift should be approximately 18 inches in uncompacted thickness and should be compacted by rolling with a smooth-drum roller without using vibratory action.

¹ View online at <https://www.oregon.gov>

Where imported granular material is placed over soft-soil subgrades, we recommend a geotextile be placed as a barrier between the subgrade and imported granular material. Depending on site conditions, the geotextile should meet ODOT SS 2320.10 – Geosynthetics, Acceptance, for soil separation or stabilization. The geotextile should be installed in conformance with ODOT SS 0350.40 – Geosynthetic Construction.

Trench Backfill

Trench backfill placed beneath, adjacent to, and for at least 2 feet above utility lines (i.e., the pipe zone) should consist of well-graded granular material with a maximum particle size of 1.5 inches and less than 10 percent by weight passing the U.S. Standard No. 200 Sieve and should meet the standards prescribed by ODOT SS 405.12 – Pipe Zone Bedding. The pipe zone backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D 698, or as required by the pipe manufacturer or local building department.

Within roadway alignments or beneath building pads, the remainder of the trench backfill should consist of well-graded granular material with a maximum particle size of 2.5 inches, less than 10 percent by weight passing the U.S. Standard No. 200 Sieve, and should meet standards prescribed by OSSC 405.14 – Trench Backfill, Class A or B. This material should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D 698, or as required by the pipe manufacturer or local building department. The upper 2 feet of the trench backfill should be compacted to at least 95 percent of the maximum dry density, as determined by ASTM D 698.

Outside of structural improvement areas (e.g., roadway alignments or building pads), trench backfill placed above the pipe zone may consist of general fill materials that are free of organics and materials over 6 inches in diameter and meet ODOT SS 00330.12 – Borrow Material and ODOT SS 00405.14 – Trench Backfill, Class C, D, or E. This general trench backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D 698, or as required by the pipe manufacturer or local building department.

Stabilization Material

Stabilization rock should consist of imported granular material that is well-graded, angular, crushed rock consisting of 4- or 6-inch-minus material with less than 2 percent passing the U.S. Standard No. 4 Sieve. The material should be free of organic matter and other deleterious material.

Retaining Wall Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of $0.5H$, where H is the height of the retaining wall, should consist of select granular material meeting ODOT SS 00510.12 – Granular Wall Backfill. We recommend that the select granular wall backfill be separated from general fill, native soil, and/or topsoil using a geotextile fabric which meets the requirements provided in ODOT SS 02320.10 – Geosynthetics, Acceptance. The geotextile should be installed in conformance with ODOT SS 00350.40 – Geosynthetic Construction.

The wall backfill should be compacted to a minimum of 95 percent of the maximum dry density, as determined by ASTM D 698. However, backfill located within a horizontal distance of 3 feet from the retaining walls should only be compacted to approximately 90 percent of the maximum dry density, as determined by ASTM D 698. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (such as, a jumping jack or vibratory plate compactors). If flat work (sidewalks or pavements) will be placed atop the wall backfill, we recommend that the upper 2 feet of material be compacted to 95 percent of the maximum dry density, as determined by ASTM D 698.

Trench and Retaining Wall Drain Backfill

Backfill in a 2-foot zone against the back of retaining walls and for subsurface trench drains should consist of drain rock meeting the specifications provided in ODOT SS 00430.11 – Granular Drain Backfill Material. The drain rock should be wrapped in a geotextile fabric that meets the specifications provided in ODOT SS 02320.10 – Geosynthetics, Acceptance, for soil separation and/or stabilization.

The geotextile should be installed in conformance with ODOT SS 00350.40 – Geosynthetic Construction.

Footing Base

Imported granular material placed at the base of footings should be clean crushed rock or crushed gravel, and sand that is well-graded between coarse and fine. The granular materials should contain no deleterious materials, have a maximum particle size of 1.5 inches, and meet ODOT SS 00330.14 – Select Granular Backfill. The imported granular material should be placed on one lift and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D 698.

Floor Slab Base Aggregate

Base aggregate for floor slabs should be clean crushed rock or crushed gravel. The base aggregate should contain no deleterious materials, meet specifications provided in ODOT SS 00330.14 – Select Granular Backfill, and have less than 5 percent weight by passing the U.S. Standard No. 200 Sieve. The imported granular material should be placed in one lift and compacted to at least 95 percent of the maximum dry density, as determined by ASTM D 698.

Pavement Base Aggregate

Imported granular material used as base aggregate (base rock) along roadway alignments should be clean crushed rock or crushed gravel and sand that is fairly well-graded between coarse and fine. The base aggregate should meet the gradation defined in ODOT SS 02630.10 – Dense-Graded Aggregate 1"-0", depending upon application, with the exception that the aggregate has less than 5 percent passing a U.S. Standard No. 200 Sieve. The base aggregate should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D 698.

3.0 PERMANENT SLOPES

SETBACK

The 2017 Oregon Residential Specialty Code , Section R. 403.1.9.1 (code) requires that buildings adjacent to descending slope surfaces be founded in firm material with an embedment and setback from the slope surface sufficient to provide vertical and lateral support for the footing without detrimental settlement. When determining setbacks, the code recommends a minimum setback of at least the smaller of H/3 and 40 feet for descending slopes and the smaller of H/2 and 15 feet from ascending slopes. For slopes steeper than 100%, the setback shall be measured from an imaginary plane 45 degrees to the horizontal projected upward from the toe of the slope. We provide our setback recommendations in our **DISCUSSION AND RECOMMENDATIONS** section of this report.

Permanent cut and fill slopes up to 15 feet high may typically be built to a gradient as steep as 2 Horizontal:1 Vertical (2H:1V) dependent upon the type of soils and or rock present. However, cut slopes over 15 feet tall should be limited to a gradient of 2.5H:1V or should be partially retained by a retaining wall. Slopes that will be maintained by mowing should not be constructed steeper than 3H:1V. Newly constructed fill slopes should be over-built by at least 12 inches and then trimmed back to the required slope to maintain a firm face.

Access roads and pavements should be setback a minimum of 5 feet from the top of cut and fill slopes. Slopes should be covered with erosion control netting and planted with appropriate vegetation to provide protection against erosion as soon as possible after grading. A mixture of perennial and annual grasses works well. Surface water runoff should be collected and directed away from slopes to prevent water from running down the face of the slope.

4.0 DRAINAGE CONSIDERATIONS

The contractor shall be made responsible for temporary drainage of surface water and groundwater, as necessary, to prevent standing water and/or erosion at the working surface. The ground surface around the structures should be sloped to create a minimum gradient of 2 percent away from the building foundations for a distance of at

least 5 feet. Surface water should be directed away from all buildings into drainage swales or into a storm drainage system. "Trapped" planting areas or ponds should not be created next to any building without providing means for drainage. The roof downspouts should discharge onto splash blocks or paving that direct water away from the building or into smooth-walled underground drain lines that carry the water to appropriate discharge locations at least 10 feet away from any buildings. If built on a sloped or cut fill building site, drainage should not be directed onto the descending slope.

Foundation Drains

CGS recommends that foundation drains be installed around the perimeter foundations of all structures including buildings and tanks. The foundation drains should be at least 12 inches below the base of the slab. The foundation drain should consist of perforated collector pipes embedded in a minimum 2-foot-wide zone of angular drain rock. The drain rock should meet specifications provided in the "Structural Fill" section of this report. The drain rock should be wrapped in a geotextile fabric. The collector pipes should discharge at an appropriate location away from the base of the footings. Unless measures are taken to prevent backflow into the wall's drainage system, the discharge pipe should not be tied directly into the stormwater drain system.

The contractor should refer to the following 2008 *Oregon Standards Specifications for Construction* (ODOT SS, 2008) sections with regard to backfill materials and geosynthetics. Local or municipal standards may also apply. The contractor should check with the jurisdictional permitting office to determine applicability of local or municipal standards.

5.0 WET-SOIL CONDITIONS

If cohesive soils are present on the site, they will be susceptible to disturbance during periods of sustained rainfall. Trafficability or grading operations within the exposed soils may be difficult during or after extended wet periods or when the moisture content of the soils is more than a few percentage points above optimum. Soils disturbed during

site-preparation activities, or soft or loose zones identified during probing, should be removed, and replaced with compacted structural fill.

6.0 EXCAVATION

Trench cuts in native materials should stand vertical to a depth of approximately 4 feet, provided no groundwater seepage is present in the trench walls. Open excavation, which may be used to excavate trenches with depths deeper than 4 feet and shallower than 8 feet, can be done with the walls of the excavation cut at a slope of 1H:1V, provided groundwater seepage is not present and with the understanding that some sloughing may occur. The trenches should be flattened to 1.5H:1V if excessive sloughing occurs or seepage is present.

Water levels may fluctuate during the wet months of the year. If shallow groundwater is observed during construction, the use of a trench shield (or other approved temporary shoring) is recommended for cuts that extend below groundwater seepage or if vertical walls are desired for cuts deeper than 4 feet. The ultimate type and design of the shoring and dewatering systems used for this project should be the responsibility of the contractor who is in the best position to choose systems that fit the plan of operation. All excavations should be made in accordance with applicable Occupational Safety and Health Administration and State regulations.