



1510 – B Third Street
Tillamook, Oregon 97141
www.tillamook.or.us
Building (503) 842-3407
Planning (503) 842-3408
Sanitation (503) 842-3409
FAX (503) 842-1819
Toll Free 1(800) 488-8280

Land of Cheese, Trees and Ocean Breeze

Neskowin Coastal Hazard Area Permit #851-21-000254-PLNG: Tran

*NOTICE TO MORTGAGEE, LIENHOLDER, VENDOR OR SELLER:
ORS 215 REQUIRES THAT IF YOU RECEIVE THIS NOTICE,
IT MUST BE PROMPTLY FORWARDED TO THE PURCHASER*

NOTICE OF ADMINISTRATIVE REVIEW

Date of Notice: October 22, 2021

Notice is hereby given that the Tillamook County Department of Community Development is considering the following:

#851-21-000254-PLNG: A request for approval of a Neskowin Coastal Hazard Area Permit for the construction of a single-family dwelling on a property located within the Unincorporated Community Boundary of Neskowin, zoned Neskowin Low Density Residential (NeskR-1) and within the Neskowin Coastal Hazards Overlay (Nesk-CH) Zone. The subject property is accessed via Sea Ridge Lane, a private road, and designated as Tax Lot 3500 of Section 35DA in Township 5 South, Range 11 West of the Willamette Meridian, Tillamook County, Oregon.

Notice of the application, a map of the subject area, and the applicable criteria are being mailed to all property owners within 250 feet of the exterior boundaries of the subject parcel for which the application has been made and other appropriate agencies at least 14 days prior to this Department rendering a decision on the request.

Written comments received by the Department of Community Development prior to 4:00p.m. on November 5, 2021, will be considered in rendering a decision. Comments should address the criteria upon which the Department must base its decision. A decision will be rendered no sooner than November 8, 2021.

A copy of the application, along with a map of the request area and the applicable standards/criteria for review are available for inspection on the Tillamook County Department of Community Development website: <https://www.co.tillamook.or.us/commdev/landuseapps> and is also available for inspection at the Department of Community Development office located at 1510-B Third Street, Tillamook, Oregon, 97141.

If you have any questions about this application, please contact Sarah Absher, CFM, Director at 503-842-3408 x 3317 or by email: sabsher@co.tillamook.or.us.

Sincerely,

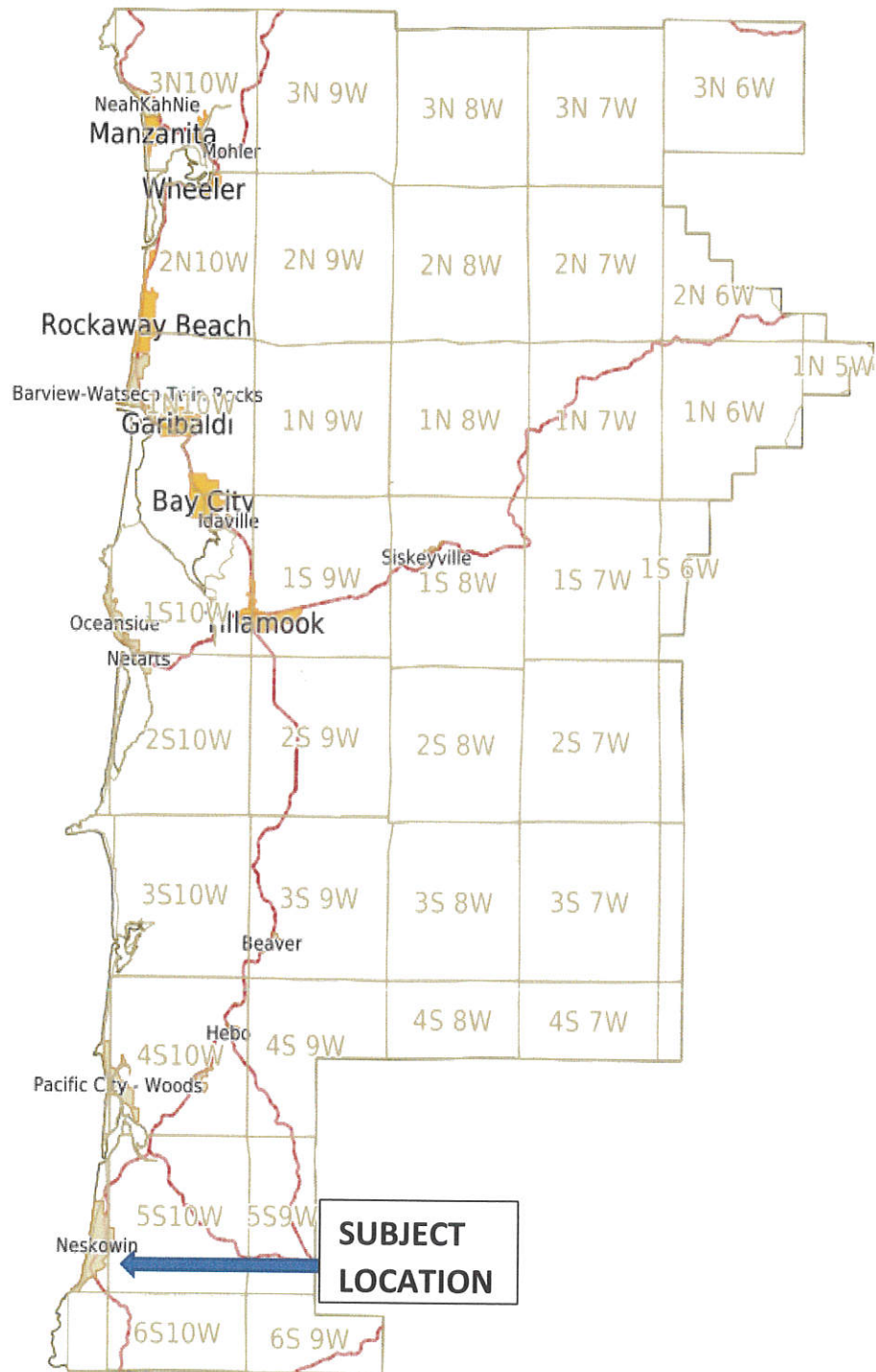
Sarah Absher, CFM, Director

Enc. Applicable Ordinance Standards/Criteria
Maps

TCLUO SECTION 3.570(4)(e): A decision to approve a Neskowin Coastal Hazard Area Permit shall be based upon findings of compliance with the following standards:

- (A) The proposed development is not subject to the prohibition of development on beaches and certain dune forms as set forth in subsection (8) of this section;
- (B) The proposed development complies with the applicable requirements and standards of subsections (6), (7), (8), and (10) of this section;
- (C) The geologic report conforms to the standards for such reports set forth in subsection (5) of this section;
- (D) The development plans for the application conform, or can be made to conform, with all recommendations and specifications contained in the geologic report; and
- (E) The geologic report provides a statement that, in the professional opinion of the engineering geologist, the proposed development will be within the acceptable level of risk established by the community, as defined in subsection (5)(c) of this section, considering site conditions and the recommended mitigation.

VICINITY MAP



#851-21-000254-PLNG: TRAN



Tillamook County Department of Community Development
 1510-B Third Street, Tillamook, OR 97141 | Tel: 503-842-3408 Fax: 503-842-1819
www.co.tillamook.or.us

PLANNING APPLICATION

Applicant (Check Box if Same as Property Owner)

Name: _____ Phone: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Email: _____

Property Owner

Name: Samantha M. Tran Phone: 503.975.4896
 Address: 12487 SE Capri Ct.
 City: Happy Valley State: OR Zip: 97086
 Email: stran@thtranlaw.com

Request: _____
Single family dwelling

OFFICE USE ONLY	
Date Stamp	
RECEIVED	
JUL 06 2021	
BY: <u>Courter</u>	
<input type="checkbox"/> Approved	<input type="checkbox"/> Denied
Received by: <u>WT</u>	
Receipt #: <u>121045</u>	
Fees: <u>615.00</u>	
Permit No: <u>851-21-000254PLNG</u>	

Type II

- Farm/Forest Review
- Conditional Use Review
- Variance
- Exception to Resource or Riparian Setback
- Nonconforming Review (Major or Minor)
- Development Permit Review for Estuary Development
- Non-farm dwelling in Farm Zone
- Fore-dune Grading Permit Review
- Neskowin Coastal Hazards Area

Type III

- Appeal of Director's Decision
- Extension of Time
- Detailed Hazard Report
- Conditional Use (As deemed by Director)
- Ordinance Amendment
- Map Amendment
- Goal Exception

Type IV

- Appeal of Planning Commission Decision
- Ordinance Amendment
- Large-Scale Zoning Map Amendment
- Plan and/or Code Text Amendment

Location:

Site Address: 3500 Sea Ridge Lane, Neskowin

Map Number: 5 11 35DA 03500
Township Range Section Tax Lot(s)

Clerk's Instrument #: _____

Authorization

This permit application does not assure permit approval. The applicant and/or property owner shall be responsible for obtaining any other necessary federal, state, and local permits. The applicant verifies that the information submitted is complete, accurate, and consistent with other information submitted with this application.

Samantha M. Tran 7/6/21
 Property Owner Signature (Required) Date

Applicant Signature Date

12487 SE Capri Ct.
Happy Valley, OR 97086
503.975.4896

July 6, 2021

Tillamook County Planning Department

**Re: 3500 Sea Ridge Lane
Tax Lot 3500 Neskowin Heights Development
PARTITION PLAT 1998-17 PARCEL 3**

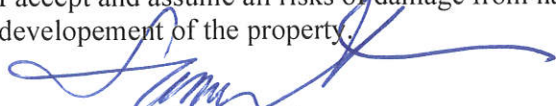
Dear Sir/Madam:

My name is Samantha and I am the owner of the above-referenced property. I am submitting the following materials in support of the Type II application based upon the parcel's location in the Neskowing Coastal Hazard Zone:

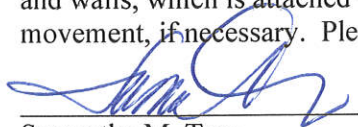
- 1) Type II application;
- 2) ~~Completed Consolidated Building/Zoning permit;~~
 - a. Plot plan;
 - b. House plans;
 - c. Water certification;
 - d. Letter of Sewer availability;
 - e. Septic design and permit;
- 3) Geologic report, dated March 8, 2021;
- 4) Design Compliance letter, dated March 16, 2021;
- 5) Addendum to Geologic report, dated April 14, 2021; and
- 6) Addendum to Geologic report, dated May 25, 2021.

Also, I believe that you need statements from me, as the owner and designer, to satisfy certain provisions of the TCLUO 3.570. As such we make the following statements:

- 1) Estimate of depths and extent of all proposed excavation (3.570(4)(d)(B)): Per the soil tests conducted, there is less than 5" of topsoil overlying weathered basalt. Report, page 5. Therefore, we do not believe there will be more than 2' of excavation at any point during the construction of the residence.
- 2) Hazard Disclosure Statement (3.570(4)(d)(F)): As such, Samantha M. Tran states as follows:
 - a. The above-referenced property is subject to chronic natural hazards and that development thereon is subject to risk of damage from such hazards;
 - b. I have commissioned a geologic report for the property and has reviewed the geologic report and have been informed and is aware of the type and extent of hazards present and the risks associated with development of the property; and
 - c. I accept and assume all risks of damage from natural hazards associated with the development of the property.


Samantha M. Tran

- 3) Moveable structure design (3.570(6)(a)): The owner and designer (Samantha M. Tran) and certify that the structure is designed and will be built with four (4) mounted anchor hooks on a monolithic concrete structure. The structure is designed and will be built with ICF foundation and walls, which is attached with anchor points which can be used to detach structure for movement, if necessary. Please also see the Addendum to Geologic Report, dated May 25, 2021.



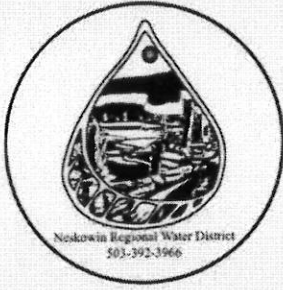
Samantha M. Tran

Please contact us if you have any questions or concerns.

Sincerely,



Samantha M. Tran
stran@thtranlaw.com



Neskowin Regional Water District

PO Box 823, 47880 South Beach Rd

Neskowin, OR 97149

Phone: (503)392-3966

Email: tnt@neskowinwater.com

Web: www.neskowinwater.com

DATE: 2/02/2021

TO: Tillamook County
Department of Community Development – One Stop Permit Counter
201 Laurel Avenue
Tillamook, OR 97141
(503) 842-3408
(503) 842-1819 FAX

FROM: Neskowin Regional Water District

RE: Water Availability

To Whom It May Concern:

I confirm that the water is available to the following lot(s) within our district:

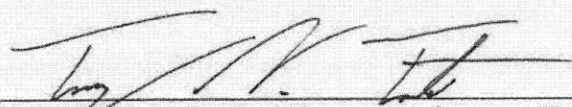
T 5S R 11 SEC 35DA TL# 03500

According to our records, the legal owner is:

HOPKIRK, ROLLIN C & VIRGINIA M

Comments: Water Service is located on the Southeastern part of this lot.

This letter shall not create a liability on the part of Tillamook County, or by an officer, or employee thereof, for the services described above.



Signature of Authorized Representative: Troy N. Trute

General Manager

Title

(503) 392-3966

Phone



Neskowin Regional Sanitary Authority

P O Box 383, Neskowin, Oregon 97149

(503) 392-3404 (TTY 1-800-735-2900)

Date: 4-22-2021
 To: Tillamook County One-Stop Permit Counter
 From: Neskowin Regional Sanitary Authority
 Re: Sewer Availability

I confirm that sewer is available to the following lot(s) within our District:

Township: 5S Range: 11 Section: 35 DA Tax Lot: 3500

According to our records, the legal owner is:

Samantha M. Tran

Comments:

Additional reviews, easements and conditions may be required. This letter becomes void after 12 months from the date of issuance.

The current System Development Charge will be due to NRSA Sanitary District upon issuance of a building permit by the Tillamook County Department of Community Development. The District requires a copy of the approved building permit be sent to NRSA.

This letter shall not create a liability on the part of the Neskowin Regional Sanitary Authority, or by any officer, employee thereof, for the services described above.

[Signature]
Signature of Authorized NRSA Representative

NRSA Office Mgr.
Title

Telephone No: (503) 392-3404
 Fax No: (503) 392-3477
 E-mail Address: nrsa01@centurylink.net

03/28/07

*"An Equal Opportunity Provider"
Tillamook County-Land of Cheese, Trees and Ocean Breezes*



Oregon

Kate Brown, Governor

Department of Environmental Quality
Northwest Region Portland Office/Water Quality
700 NE Multnomah St, Suite 600
Portland, OR 97232-4100
(503) 229-5263
FAX (503) 229-6957
TTY 711

May 24, 2021

Annis Leslie, Office Manager
Neskowin Regional Sanitary Authority
PO Box 383
Neskowin OR 97149

WQ – Neskowin Regional Sanitary Authority
File No: 60335
Tillamook County

Residential STEP Addition – Tran Residence; Sea Ridge Lane, Neskowin, T.5S R.11W 35DA, Tax Lot 3500
STEP Plan Approval

Dear Ms. Leslie:

The Department of Environmental Quality (DEQ) has approved plans and specifications for installation of the above septic tank effluent pumped (STEP) unit. Plans were prepared by Mr. David H. Crimp PE, of Clearwater Engineering. Documentation was submitted by Neskowin Regional Sanitary Authority (NRSA), per requirements listed in OAR 340-052.

The Department's fee for plan review for each STEP installation is **\$859** per OAR 340-045, Table 70F. NRSA's standing request is that DEQ invoice its plan review fee to the Authority.

The proposed STEP systems will be operated and maintained by the NRSA per the approved Standards. Project descriptions, conditions of approval, and NRSA responsibilities are listed below.

DESCRIPTION

For the new residence at the property listed above, install a Willamette Greystone precast concrete (or approved equal) 2000 gallon, 2-compartment, septic/dose tank, equipped with inlet and outlet access risers with lids. The outlet riser must be minimum 24-inch diameter. Install one Orenco Biotube pump vault & filter cartridge with Orenco Systems high head 0.5 horsepower effluent pump (PF Series), and Orenco Systems S-1 control panel. The STEP unit will discharge through a 1.25-inch interior diameter Schedule 80 PVC DWV line to the existing pressure main in Sea Ridge Lane.

CONDITIONS OF APPROVAL

1. The STEP tank and controls must be installed, connected to the NRSA sewer, and tested with clean water under the supervision of NRSA staff using licensed installers and electricians. The electrical installation for the STEP pump, alarm, and control panel must comply with the Tillamook County electrical permit.
2. Design pumped effluent velocities should be minimum 2.5 fps.
3. The Orenco control panel must be securely locked by NRSA staff and will remain the property of NRSA; however, the alarm silencer must remain accessible to the customer.

4. The installation must be completed as designed, according to the approved plans; except as may be approved by the designer through formal change order. NRSA must not allow deviation from the approved plans, materials, or workmanship; except as authorized by the designer. The final tank location must be as approved by the designer and NRSA staff.
5. *Tests must be witnessed by NRSA. Test forms must be retained by NRSA. Informal tests performed by the contractor shall not count for acceptance.*
6. This STEP installation must conform to all applicable building, plumbing, and safety codes.
7. STEP easements must be recorded by NRSA.
8. This *approval is valid for one year*, but expires after that time to allow for updated materials and procedures. If after one year construction is not underway, the project must be updated and resubmitted for review; unless waived by the Department.

NRSA RESPONSIBILITIES

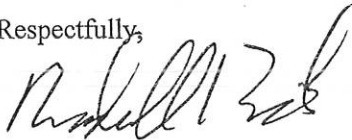
1. NRSA is responsible for maintaining a complete record of this installation and for submittal of DEQ's plan review fee, per OAR 350-045, Table 70F. At its option, NRSA may require reimbursement or prepayment from its sewer customer for DEQ's review fee.
2. As holder of the NPDES permit governing service to this area, NRSA is responsible for ensuring adherence to our conditions of approval. Conditions and submittals of documents and fees must not be waived. Submittals must be directed to my attention.

If there is a problem with any of the above conditions, construction must not begin until the issue is resolved.

INQUIRIES:

Please contact Randall Bailey at (503) 229-5019, or randall.bailey@deq.state.or.us if you have questions concerning the above approval.

Respectfully,



Randall Bailey, EIT
DEQ Northwest Region, Water Quality

CC:

Mr. David H. Crimp PE, Clearwater Engineering, 38934 Mary's River Road, Blodgett, OR 97326

Ecc:

Tiffany Yelton-Bram, Manager, NWR-WQ, Source Control Section



March 8, 2021

Thanh Tran
Via Email: thtran@thranlaw.com

RE: GEOLOGIC HAZARD ASSESSMENT AND GEOTECHNICAL EVALUATION
MAP 5s, 11W, 35DA
TAX LOT 3500
NESKOWIN HEIGHTS DEVELOPMENT
NESKOWIN, TILLAMOOK COUNTY, OREGON 97149
Branch Engineering Inc Project No. 21-086

Pursuant to your request, Branch Engineering Inc. (BEI) collaborated with Gary C. Sandstrom, Certified Engineering Geologist (C.E.G.), to conduct a Geologic Hazard Assessment and Geotechnical Evaluation of the subject site in the Neskowin Heights Development off Sea Ridge Lane in Neskowin, Oregon. This study was requested to address Section 3.570: Neskowin Coastal Hazards Overlay Zone for the planned construction of a single-family residence. The purpose of the study is to identify any geologic hazards that may impact the proposed site development, and evaluate impacts of the development on adjacent properties. In addition, preliminary engineering design recommendations for design and constructions pursuant to Tillamook County Land Use Ordinance Article 4, Section 4.130 Development Requirements for Geologic Hazard Areas are included in this report.

Introduction

Tillamook County has determined the subject parcel is located within a mapped geologic hazard zone and is subject to an assessment of these hazards. This report was completed for the proposed development of a single-family residence within the Neskowin Coastal Hazards Overlay Zone, which has that stated purpose of managing development in areas subject to chronic coastal hazards in a manner that reduces long term risks to life, property, and the community.

BEI staff performed a geotechnical/geological evaluation and subsurface investigation of the subject site on February 4, 2021, with review of photographed site conditions, test pit logs, and geologic mapping by Gary C. Sandstrom.

This report presents the results of our site research, field exploration and testing, geologic hazard assessment, as well as our conclusions and recommended geotechnical design parameters. Based on the results of this study, no geotechnical/geologic hazards were identified at the site that would prohibit the proposed site development, provided that the recommendations of this report are implemented in the design and construction of the project.

Scope of Work

A site reconnaissance, geologic assessment, and sub-surface investigation was conducted by excavating four shallow geotechnical test pit excavations and soil probing to evaluate soil consistency. In addition, the following websites, literature, and map sources were reviewed:

- Site Plan, Figure 1
- ORMAP GIS, <http://www.ormap.org> Oregon Map website listing tax lot numbers

- Tillamook County
<http://tillamookcountymaps.co.tillamook.or.us/geomoose2/geomoose.html>,
- Snavelly, P.D. Niem, A., Wong, F.L., MacLeod, N.S., and Calhoun, T.K., with Minasian, D.L., and Niem, W., *Geologic map of the Cascade Head Area, Northwestern Oregon Coast Range (Neskowin, Nestucca Bay, Hebo, and Dolph 7.5-Minute Quadrangles)*, U.S. Dept. of the Interior, Geological Survey, Open-File Report OF-96-534, 1996
- Schlicker, H.G., Beaulieu, J.D. and Olcott, G.W., 1972, *Environmental Geology of the Coastal Region of the Tillamook and Clatsop Counties, Oregon*, State of Oregon, DOGAMI, Bulletin B-74-07
- M.C. Williams., C.A. Appleby., J.M. Bauer., J.T. Roberts., *Natural Hazard Risk Report for Tillamook County*. Interpretative Map 58 DOGAMI, 2020.
- Preliminary Geologic Map of the Neskowin Quadrangle, Lincoln and Tillamook Counties, Oregon, United States Geological Survey (USGS), Open File Report 90-413, 1990.
- L.L. Stimely., J.C. Allen., *Evaluation of Erosion Hazard Zones for the Dune-Backed Beaches of Tillamook County, Oregon, 2014.*
- United States Dept. of Agriculture, Natural Resources Conservation Service, Pacific Northwest Soils website, <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey>,
- State of Oregon, DOGAMI website, *Geologic Map of Oregon*, <https://gis.dogami.oregon.gov/maps/geologicmap/>
- State of Oregon, DOGAMI website, LIDAR, <https://gis.dogami.oregon.gov/maps/lidarviewer/>
- State of Oregon, DOGAMI website, Statewide Landslide Inventory for Oregon (SLIDO), <https://gis.dogami.oregon.gov/slido/>
- State of Oregon, DOGAMI website, Statewide Geohazards Viewer (HazVu), <https://www.oregongeology.org/hazvu/>
- https://www.oregongeology.org/pubs/ims/IMS-58/IMS-58_report.pdf
- ATC Hazards by Location, Site Specific Hazard Seismic Information
<https://hazards.atcouncil.org>

This report presents our geologic hazard assessment and geotechnical recommendations for the site.

Site Location and Description

The subject site is located in the first addition of the Neskowin Heights development in Neskowin, Oregon, at the approximate coordinates of 45.092579° north latitude, and 123.991110° west

longitude, about 0.50-miles south of Proposal Rock. The Neskowin Heights Development is located on a north-south trending ridge, bordered by steep cliffs and the Pacific Ocean on the west, and a deep ravine with actively flowing water on the east. The 0.17-acre parcel is an irregular polygon, the convex north and west border runs along Pacific Shore Court, and has an established CMU retaining wall that varies in height from 3- to 8-feet and appeared to be in good condition. The south, and east sides of the property share boundaries with adjacent single-family residences, and the site access from Sea Ridge Drive. The site has been cleared of mature native vegetation since the initial site development, which occurred sometime between May, 1994, and August, 2000 based on Google Earth Imagery. Currently the site has a surface of turf at an elevation of about 236-feet and a border of Salal along the top of the retaining wall.

To the west of the site a rocky headland with numerous residences on it projects out into the Pacific Ocean. These residences to the west are located very near to the near vertical cliffs, the closest cliff edge to the site is approximately 160-feet to the west with residences/roadways between the project site and the cliff. The site itself was graded flat during the initial development, and based on conversations with adjacent homeowners, the retaining wall is believed to have been constructed during the initial development of the area.

No flowing water is mapped at the subject site, and none was observed during the site visit. A generally northeast-flowing tributary of Neskowin Creek is mapped about 450-feet to the southeast of the site.

The proposed construction is single-family residence, no site-plans or structural details were available for review when this report was written.

Geologic Setting

The slopes underlying the project site are classified in the geologic literature (USGS OFR-90-413) as the upper Eocene Basalt of Cascade Head, described as: subaerial flows (terrestrial as opposed to underwater) of massive to platy, spheroidal-weathering porphyritic olivine-augite basalt, plagioclase-phyric basalt and aphanitic basalt; most basalts are alkalic; flows commonly have red scoriaceous upper surfaces; locally basalt is very vesicular, rarely pillowed, and commonly veined with calcite; includes interbeds of fine to lapilli subaqueous tuff, tuffaceous siltstone, and flow breccia; intruded by numerous feeder dikes of basalt, porphyritic basalt and plagioclase-rich basalt, and several hornblende dacite dikes; siltstone clasts and calcareous concretions derived from underlying Nestucca Formation are commonly associated with breccias in the lower part of the sequence; the basalt of Cascade Head thins northward and grades laterally into marine tuffaceous siltstone and sandstone with subaqueous lapilli tuff interbeds assigned to the Nestucca Formation; correlates with upper Eocene Yachats Basalt. The closest Cascade Head Basalt bedding dip mapped is 10-degrees to the NNE about 0.3-miles south of the subject site and 15-degrees to the NNW is mapped at Proposal Rock a little more than a 0.5-miles to the north. An E-W trending fault dipping southward about 65 degrees is mapped about 900 feet northeast of the subject site and a left-lateral, NW-SE trending shear fault is mapped generally coinciding with Neskowin Creek about a half-mile northeast of the subject site. The nearest active fault mapped on the DOGAMI HazVu website is a NE-SW trending fault about 3-miles northwest of the subject site.

Earlier literature (B74-07) classified the underlying slopes as several thousand feet of submarine and subaerial Eocene basalt flows and basalt breccias. B74-08 shows the subject site is not situated on known landslides or landslide topography.

The USDA National Resource Conservation Service Pacific NW Soils website classifies the soil on site as Salander - Necanicum complex materials on 30-60% slopes. The site soils are generally classified as Hydrologic Group B with moderate infiltration rates when wet, and AASHTO Group A-8.

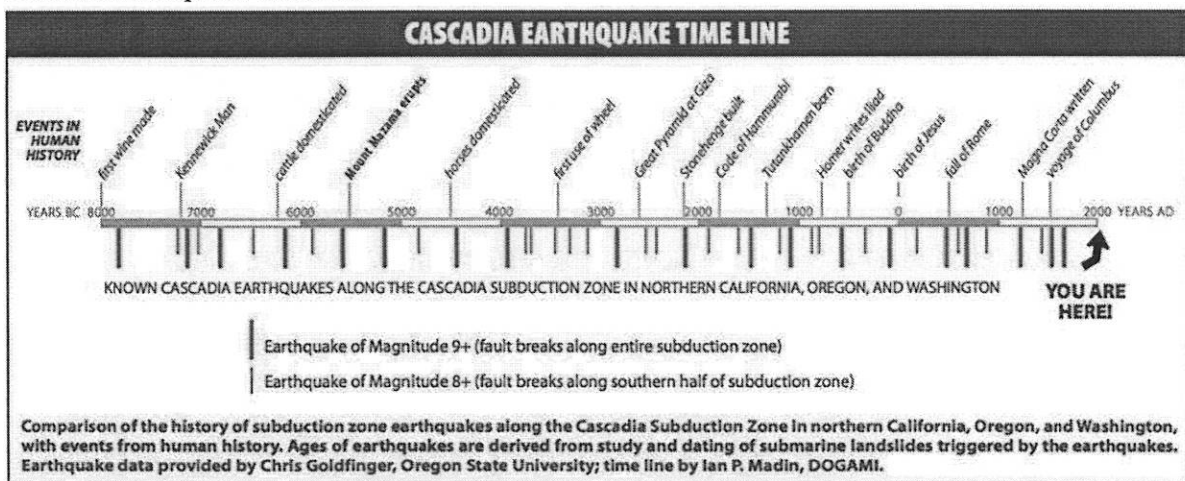
Geologic Hazard Mapping and Slope Stability

No landslides are mapped underlying the subject site on the DOGAMI SLIDO website, the closest mapped landslide is a pre-historic (>150 years ago) debris flow, approximately 0.2-miles to the south. From aerial photos and a surface reconnaissance two unmapped, but well known, recent debris flows exist in the project vicinity. The closest slide is located approximately 450-feet to the south near Tax Lot 4800, and appears to consist of unstable slopes undergoing gradual undercutting due to wave action and loss of mature vegetation from the development. Another slide located approximately 800-feet to the north of the project site has a disputed origin; however, based on aerial imagery the location appears to have been experiencing erosion (slopes are free of vegetation and steeper than the materials natural angle of repose) since at least 2005. Numerous attempts to repair and armor this slope have failed and continued erosion has caused a head scarp to form within 30-feet of a residence.

The deep landslide hazard in the site vicinity is classified as moderate - landsliding is possible, and the shallow landsliding hazard is also classified as moderate. The DOGAMI HazVu website rates the site vicinity likely to feel severe shaking in the event of a Cascadian Subduction Zone earthquake and strong shaking in the event of smaller or more distant earthquakes, with no soil liquefaction hazard. Many geologists believe a Cascadian Subduction Zone earthquake could re-mobilize existing landslides and generate new landslides in areas prone to landsliding, particularly if the earthquake occurs at a time of high soil saturation. Research at Oregon State University suggests the odds of a large subduction zone earthquake are about 1 in 3, to 1 in 4 in the next fifty years (see DOGAMI Cascadia Earthquake Time Line below). The closest active fault trends generally SW-NE and is mapped on the HazVu website approximately 3-miles to the northwest.

Site elevation is well above the statutory tsunami inundation line (30- feet) and the Flooding Hazard line (30- feet), and the site straddles the boundary between the High and Medium Hazard Coastal Erosion Hazard Zones mapped on the HazVu website. The Active Erosion Zone is mapped at a distance of generally more than 130-feet from the subject parcel and several residences are situated within the intervening High Hazard Zone.

Cascadia Earthquake Time Line



Soils Observed

The analyses, conclusions and recommendations contained in this report are based on site conditions as they presently exist, and assume the exploratory results presented are representative of the subsurface conditions throughout the site. If, during construction, subsurface conditions differ from those encountered at the exploratory test pit locations; BEI requests that we be informed to review the site conditions and adjust our recommendations, if necessary.

Four exploratory test pit excavations were performed on the project site during the site visit on February 4, 2021 (see Figure 1 Site Plan for test pit locations; and attached documents for logged test pit conditions). Materials encountered in three of the test pit excavations were generally consistent, however, Test Pit 4 performed near the retaining wall was documented with fill overlying bedrock. The typical soil profile found is as follows: A shallow (<5-inches) horizon of brown sandy silt topsoil overlying weathered basalt that varies in hardness and fracturing due to the effects of in-situ weathering. In Test Pit 4 approximately 2.5-feet of native soil with angular rock was found overlying the weathered basalt. No static or perched groundwater was encountered in the subsurface exploration. The USDA NRCS PNW Soils website maps Salander-Necanicum complex on the parcel, described as mountain slope deposits of medial loam and para-gravelly medial clay loam colluvium and residuum derived from igneous rock. The NRCS soil mapping of the site is generally consistent with observations made by BEI.

Conclusions

The subject site is situated on relatively flat area near a ridge crest that appears to have been flattened during initial site development. The deep (global) landslide hazard in the site vicinity is classified as moderate - landsliding is possible, and the shallow landsliding hazard is also classified as moderate. Historic and recent earthflow events are documented in the site vicinity. The vicinity is expected to experience severe shaking in the event of a Cascadian Subduction Zone earthquake and strong shaking during smaller or more distant earthquakes, but is well above the tsunami inundation and ocean flooding zones and is rated at low to no risk from soil liquefaction. Although the site is mapped partially within the High Coastal Erosion Hazard Zone it is our professional opinion that the site is suitable for the planned development, and that the risk of land sliding impacting the site is minimized by the distance to at-risk slopes. Due to the dynamic nature of the shoreline environment all residents of the Oregon Coast must assume some degree of risk.

Recommendations

The following recommendations are for earthwork in the building foundation areas and parking areas. Earthwork shall be performed in general accordance with the standard of practice as generally described in Appendix J of the 2019 Oregon Structural Specialty Code and as specified in this report.

All areas intended to directly or laterally support structures and accessways shall be stripped of vegetation, organic soil, unsuitable fill, and/or other deleterious material such as moisture softened exposed soil. Due to susceptibility to surface washing and erosion clearing operations should be kept to a minimum. The spoils shall be removed from the site or reserved for use in landscaping or non-structural areas if deemed acceptable. In areas of existing trees, vegetation, or previously placed fill the required depth of site clearing/stripping may be increased.

The subsurface conditions observed in our site investigation are consistent; however, the test pit excavations only represent a very small portion of the site. Should soft or unsuitable soils extend to a depth greater than that described herein, or areas of distinct soil variation be discovered, this office shall be notified to perform site observation and additional excavation may be required.

Foundation Subgrade Preparation

Within areas of proposed structural foundations, we recommend that all organic soil, soft/loose, or wet material be removed from structural areas. The depth to suitable subgrade for foundations is below the existing topsoil zone. Suitable subgrade consisting of weathered basalt was generally encountered within 0.5-feet of the ground surface. The native weathered basalt rock has an allowable bearing capacity of 4,000 psf. Footings are recommended to be underlain by a leveling course of compacted granular fill to fill any voids and provide a level surface for foundation elements. Foundations shall be stripped and backfilled as soon as concrete curing allows. Although drilling is not anticipated to be required for removal of the basalt it may present a more efficient method of removal. The hardness of the basalt is 6 to 7 on the MOHS scale with a toughness of 1.7 to 2.3 depending on the degree of weathering. Use of hydraulic hammers (>4000 ft-lb) and a D8 or larger dozer equipped single-shank ripper should be expected for efficient removal of the rock, and the final material size considered for efficient transport and disposal or reuse on or off-site.

Perimeter footing drains are recommended to prevent pooling and shall be discharged in a system to prevent gutter drain backflow from saturating the footing subgrade. Flow from foundation drains should be tight-lined down the slopes to a suitable location and discharged in a non-erosive manner. Clean-out ports should be placed adjacent to the footings/stemwalls to facilitate maintenance of the drain lines. In general, surface water within construction areas should be drained away by cutting drainage ditches or pumping from a sump hole if necessary. Surface vegetation; topsoil, and any saturated, disturbed or incompetent materials encountered during construction should be removed and replaced if necessary, with densely-compacted granular fill materials.

In exposed soil areas grass seed covered with straw mulch should be planted on exposed soils as a temporary erosion-prevention method, and bare soil spoils piles should be covered with tarps to reduce erosion from rainfall. The site should be re-vegetated as soon as possible after construction to reduce soil erosion. Maintaining drought-resistant, deep-rooted, perennial native vegetation on slopes is arguably the best way to enhance stability, the roots bind the soil together and remove water from the subgrade, organic forest soils soak up more water, and the foliage protects the soil from rain and wind impact. Irrigation systems on or immediately above the steeper slopes should be avoided to prevent surface run-off erosion. Relatively impermeable soils or pavements should be placed adjacent to footing walls and sloped away from the building to reduce infiltration of run-off into the footing backfill and subgrade and reduce potential foundation settlement.

Temporary unsupported cut slopes should be no steeper than 1 horizontal to 1 vertical (1H:1V) and in general can be cut vertical up to 4-feet. All excavations should be performed in accordance with Department of Labor Occupational Safety and Health Administration (OSHA) guidelines for Type A soils. Deeper excavations may be excavated at grades steeper than the recommended OSHA grades provided the excavations are monitored and certified by a qualified geotechnical engineer. Heavy equipment and construction materials shall not be placed within 10-feet of the top of cut slopes. Site safety is the sole responsibility of the project contractor and /or the owners. Fills should not be placed on or near steep slopes on the site prior to consulting with a qualified engineering geologist or geotechnical specialist. Any fill placed in the proposed building area must be placed only after the subgrade is properly prepared and then approved by a qualified engineering geologist or

geotechnical specialist. All permanent unsupported slopes shall not be steeper than 2 horizontal to 1 vertical (2H:1V) unless specified by a qualified geotechnical specialist.

Retaining Wall Specifications

The following design parameters are given for retaining wall structures with a subgrade consisting of weathered basalt bedrock prepared as described above. The design parameters assume no hydrostatic pressure or surcharge loads. Passive resistance can be employed at 6-inches below the surface of a freshly exposed basalt surface.

- Active Earth Equivalent Fluid Pressure (K_a) = 25 pcf
- At-Rest Earth Equivalent Fluid Pressure (K_o) = 40 pcf
- Passive Earth Equivalent Fluid Pressure (K_p) = 500 pcf
- Friction coefficient for concrete poured on weathered basalt= 0.5
- Friction coefficient for concrete poured on compacted aggregate = 0.5

Seismic Specifications

Based on the soil properties encountered in our site borings and review of geologic mapping in the site vicinity, a Seismic Site Class A designation, Hard Rock (Table 20.3-1 ASCE 7-16) is recommended for design of site structures. The following parameters are recommended for use in the design of site structures based on the 2019 Oregon Structural Specialty Code.

Table 1: Seismic Design Ground Motion Parameters

Site Class	A "Hard Rock"
Seismic Design Category	D, Structure of Ordinary occupancy that could experience very strong shaking. Occupancy type II.
Mapped MCE_r Spectral Acceleration, 0.2-second (S_s), 1-second (S_1)	$S_s = 1.30$; $S_1 = 0.68$
Site Coefficients, Relative Amplification and Attenuation.	$F_a = 0.8$; $F_v = 0.8$
Short and 1-second Period Design Response Acceleration, units of percent g.	$S_{D5} = 0.69$; $S_{D1} = 0.36$

Report Limitations

This report presents BEI's site observations, site research, site explorations, and recommendations for the proposed site development. The conclusions in this report are based on the conditions described in this report and are intended for the exclusive use Thanh Tran and his designated representatives for use in the site development design and construction. The analysis and general recommendations provided herein may not be suitable for structures or purposes other than those described herein. Services performed by the geologist and geotechnical engineer for this project have been conducted with the level of care and skill exercised by other current geotechnical

professionals in this area under similar budget and time constraints. No warranty is herein expressed or implied. The conclusions in this report are based on the site conditions as they currently exist and it is assumed that the limited site locations that were physically investigated generally represent the subsurface conditions at the site. Should site development or site conditions change, or if a substantial amount of time goes by between our site investigation and site development, we reserve the right to review this report for its applicability. If you have any questions regarding the contents of this report, or if we can be of further assistance, please contact our office.

Sincerely,
Branch Engineering Inc.



EXPIRES: 12/31/2021

Ronald J. Derrick, P.E., G.E.
Principle Geotechnical Engineer

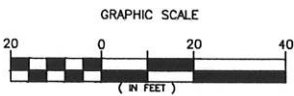
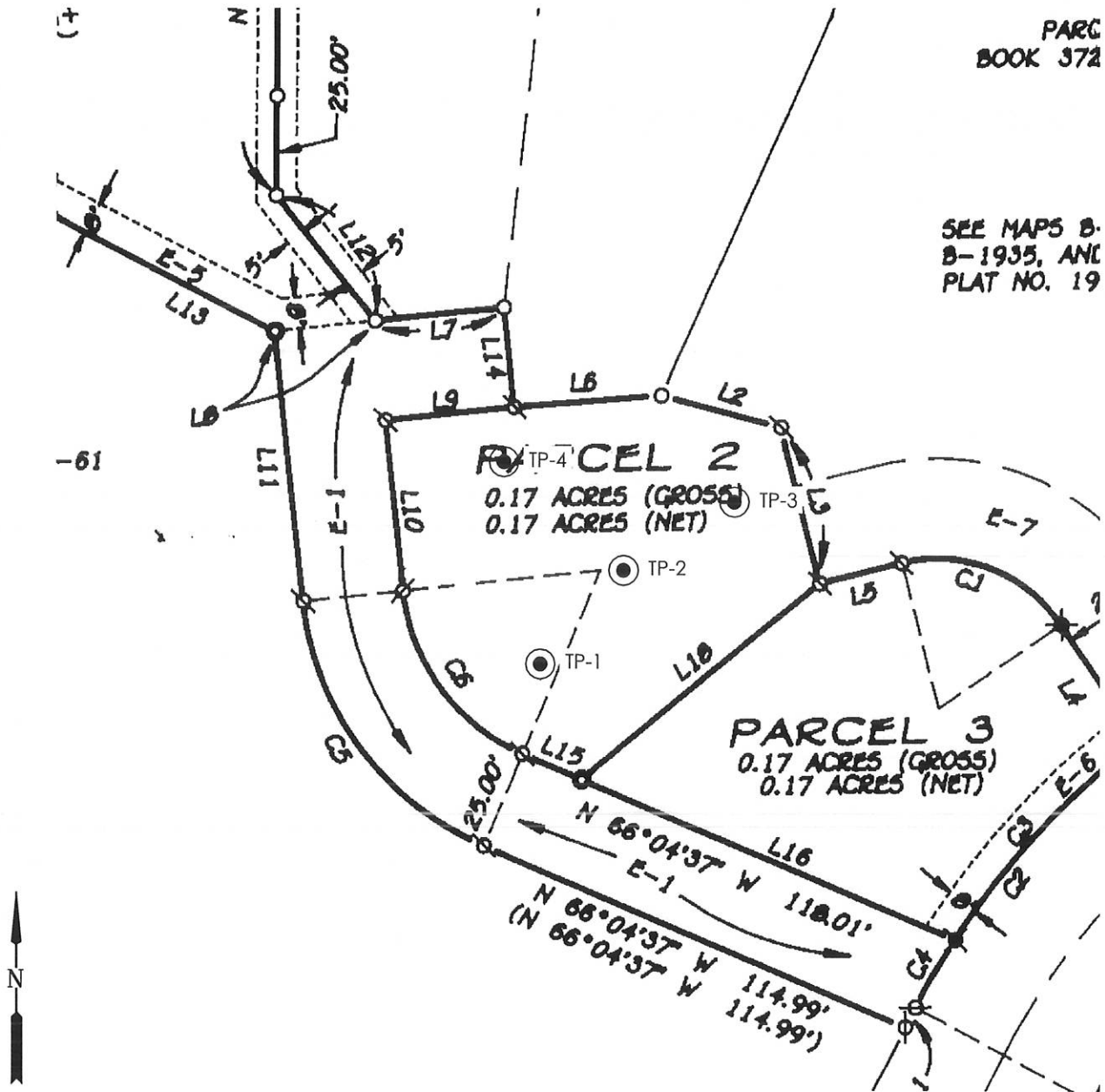
Digitally signed by Ronald J. Derrick
Date: 2021.03.08 09:43:06 -08'00'



Gary Sandstrom, R.G., C.E.G
Certified Engineering Geologist

PARC
BOOK 372

SEE MAPS B-
B-1935, AND
PLAT NO. 19



LEGEND

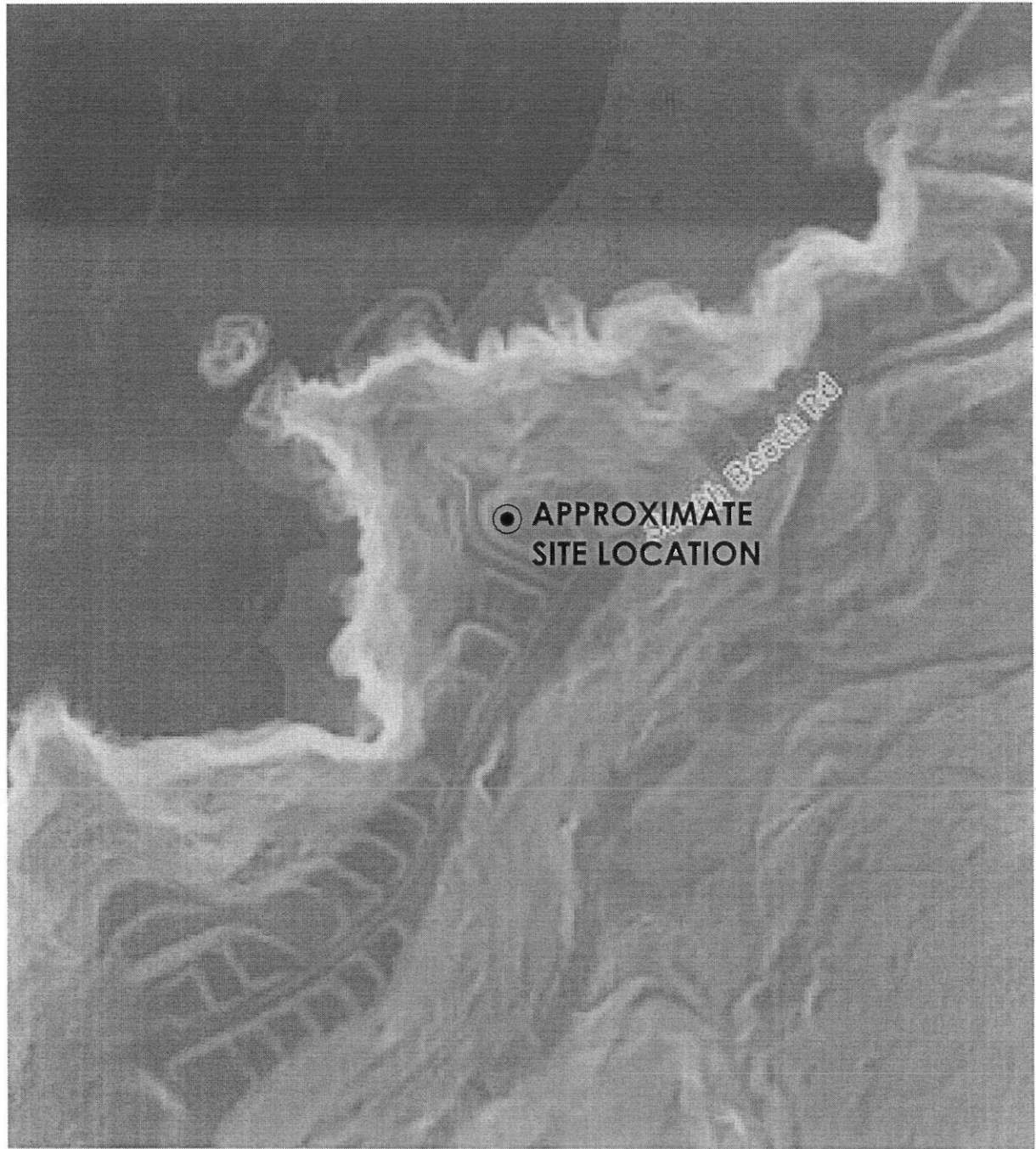
● TP-1 INDICATES APPROXIMATE LOCATION OF
SUBSURFACE EXCAVATION

NOTE: Survey by HLB and Assoc, Inc

SITE MAP - TAX LOT 3500 NESKOWIN HEIGHTS
NESKOWIN, OREGON

FIGURE-1
02-18-2021

PROJECT NO. 21-086

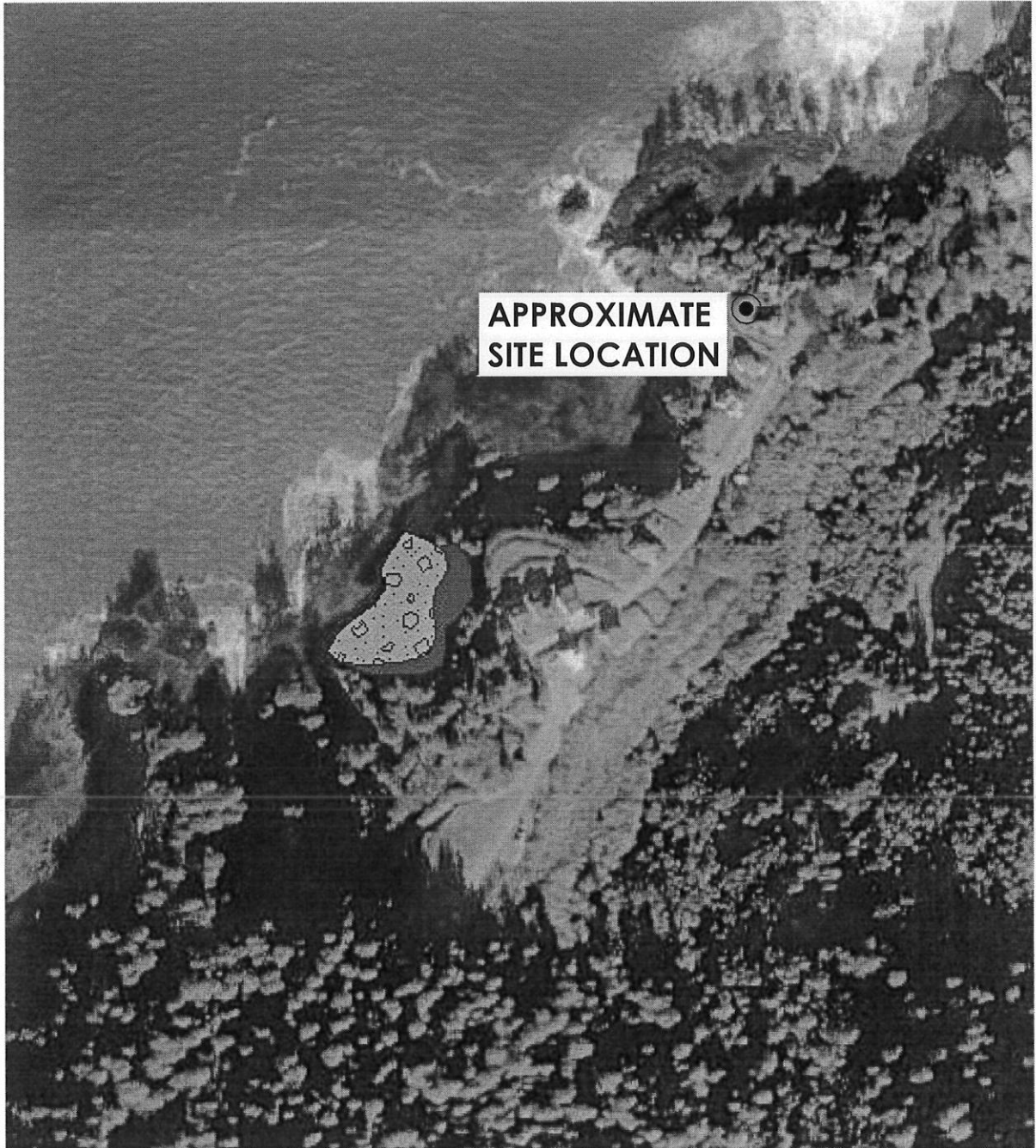


NOTE: Visual by DOGAMI Lidar Viewer

SITE LIDAR MAP - TAX LOT 3500 NESKOWIN HEIGHTS
NESKOWIN, OREGON

FIGURE-2
02-18-2021

PROJECT NO. 21-086

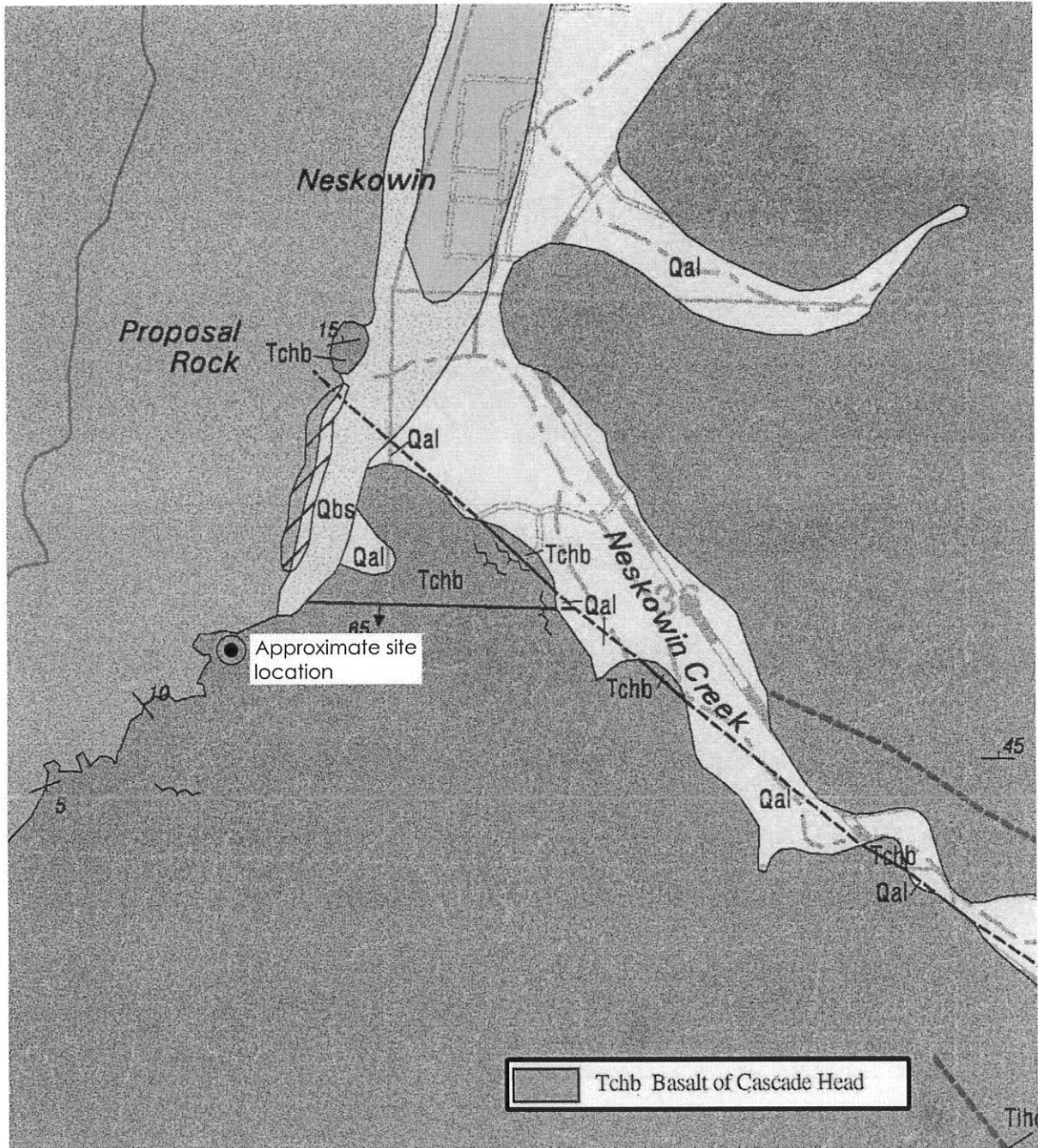


NOTE: Visual by DOGAMI Slido Viewer

SLIDO MAP - TAX LOT 3500 NESKOWIN HEIGHTS
NESKOWIN, OREGON

FIGURE-3
02-18-2021

PROJECT NO. 21-086



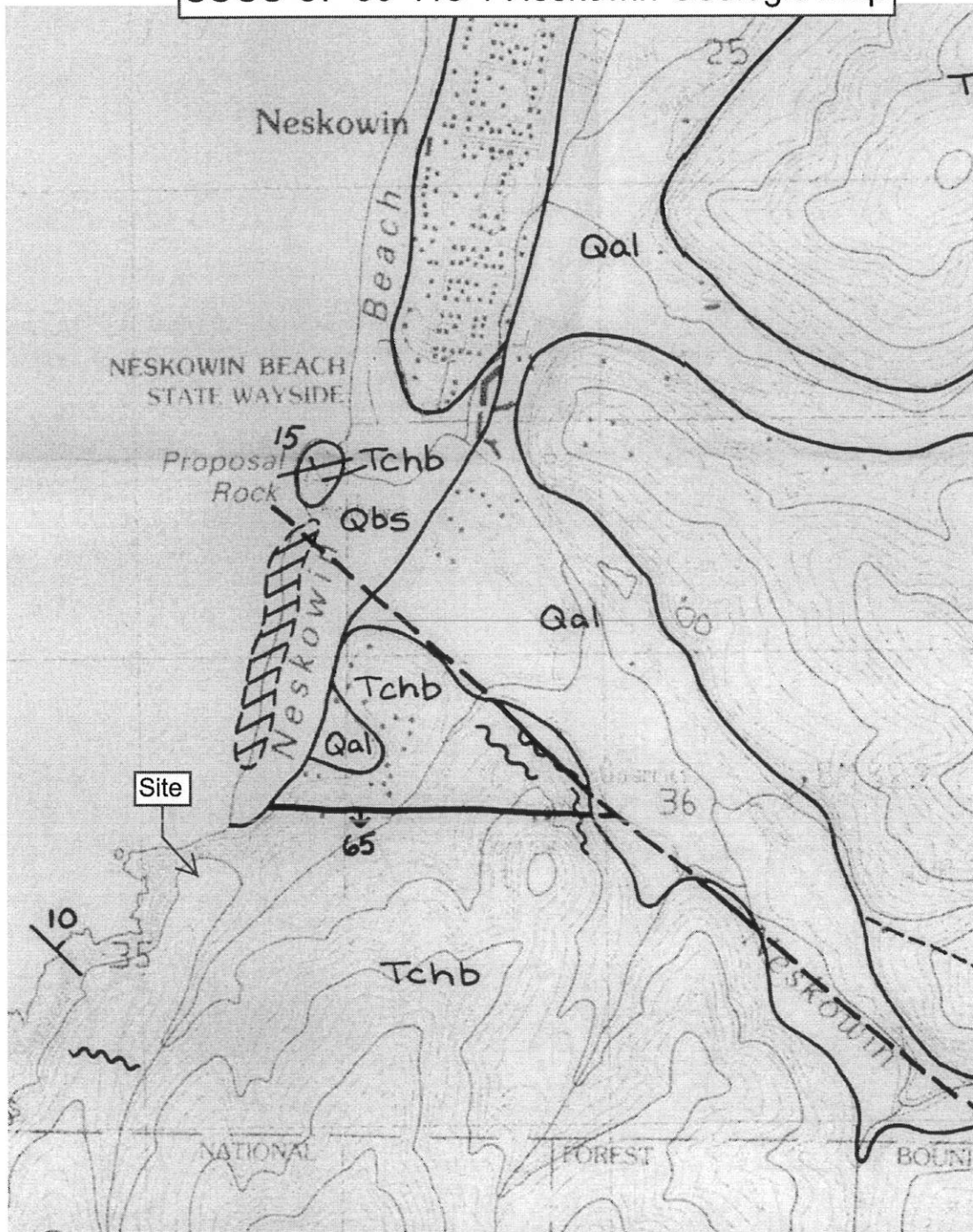
NOTE: Geology Map by DOGAMI

SITE GEOLOGY MAP - TAX LOT 3500 NESKOWIN HEIGHTS
 NESKOWIN, OREGON

FIGURE-4
 02-18-2021

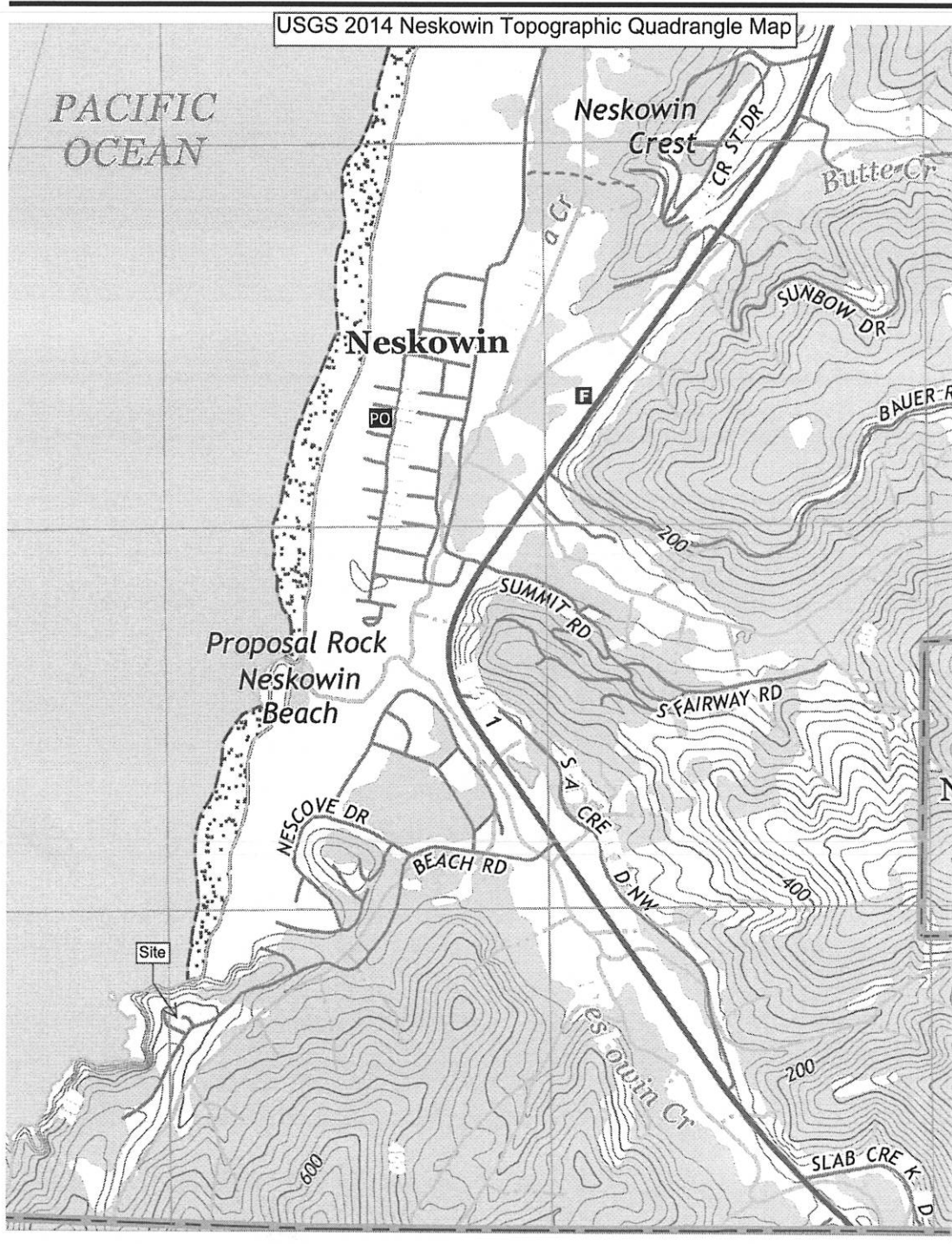
PROJECT NO. 21-086

USGS OF-90-413-1 Neskowin Geologic Map



USGS OF-90-413-1 NESKOWIN GEOLOGIC MAP
NESKOWIN, OREGON

FIGURE-5
02-18-2021



USGS NESKOWIN TOPOGRAPHIC MAP
NESKOWIN, OREGON

FIGURE-6
02-18-2021



Client: Thanh Tran Project Name: Tax Lot 3500 Neskowin Heights
 Project Number: 21-086 Project Location: Neskowin, Oregon
 Date Started: Feb 04 2021 Completed: Feb 04 2021 Logged By: SPR Checked By: RJD
 Contractor: Branch Engineering Inc. Latitude: Longitude: Elevation:
 Method: Test Pit Excavation Ground Water Levels
 Equipment:
 Notes:

Depth	Graphic	Material Description	Sample	Pocket Pen. (tsf)	Dry Unit Wt. (pcf)	MC: ⊗ PL LL: ●—■														
						10	20	30	40	50	60	70	80	90						
1		Sandy Silt Topsoil "Turf", Moist, Soft.																		
1		Weathered Basalt Bedrock, Very Dense, Gray-Brown, Fractured Surface.																		
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				

◇ Fines Content ⊗ Moisture Content ●—■ Plastic Limit and Liquid Limit



Client: Thanh Tran Project Name: Tax Lot 3500 Neskowin Heights
 Project Number: 21-086 Project Location: Neskowin, Oregon
 Date Started: Feb 04 2021 Completed: Feb 04 2021 Logged By: SPR Checked By: RJD
 Contractor: Branch Engineering Inc. Latitude: Longitude: Elevation:
 Method: Test Pit Excavation Ground Water Levels
 Equipment:
 Notes:

Depth	Graphic	Material Description	Sample	Pocket Pen. (tsf)	Dry Unit Wt. (pcf)	MC: ⊗ PL LL: ●—■	
						10	20 30 40 50 60 70 80 90
1		Sandy Silt Topsoil "Turf", Moist, Soft.					
2		Weathered Basalt Bedrock, Very Dense, Gray-Brown, Fractured Surface.					
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

◇ Fines Content ⊗ Moisture Content ●—■ Plastic Limit and Liquid Limit



Test Pit ID: TP-4

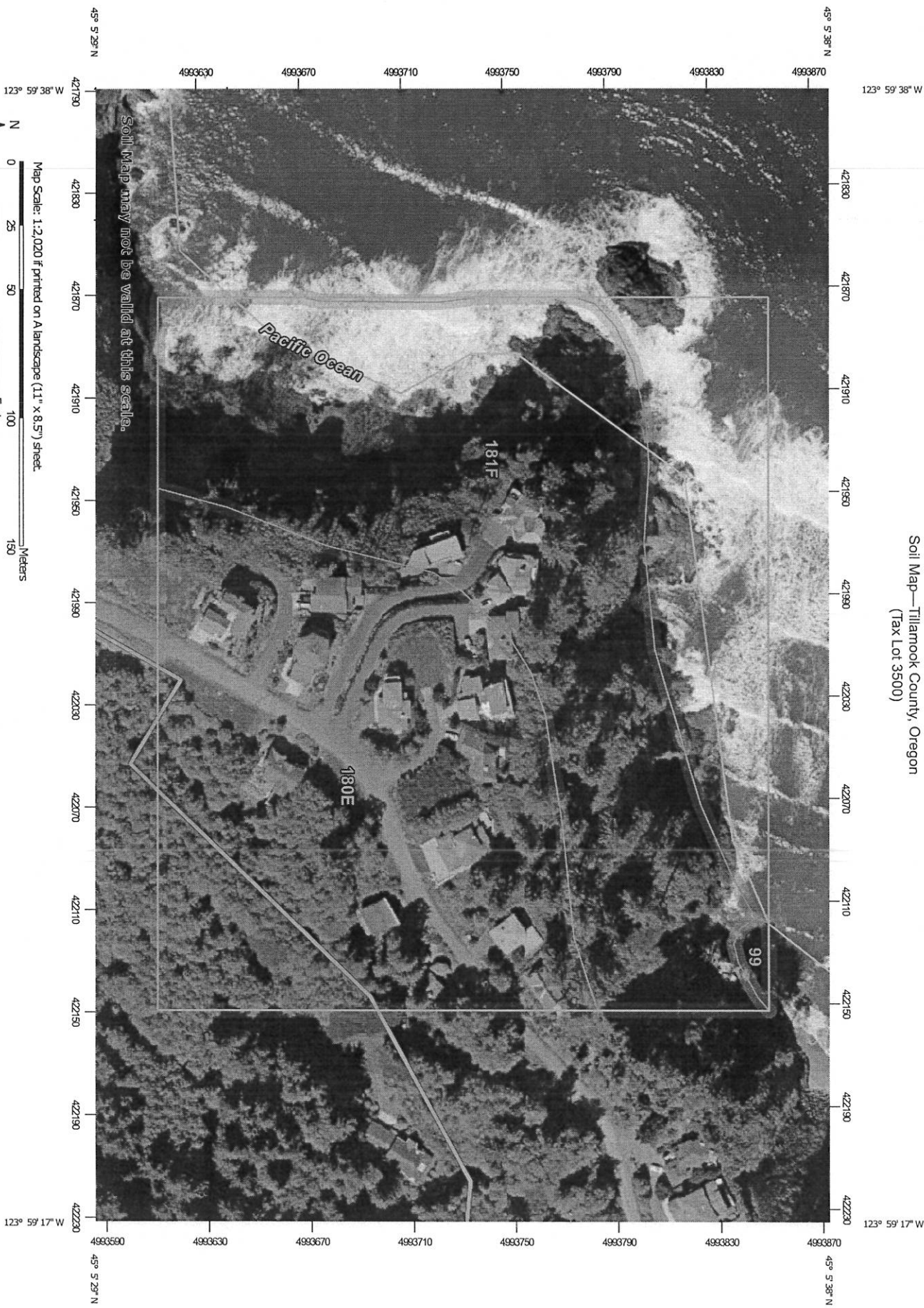
Sheet 1 of 1

Client: Thanh Tran Project Name: Tax Lot 3500 Neskowin Heights
 Project Number: 21-086 Project Location: Neskowin, Oregon
 Date Started: Feb 04 2021 Completed: Feb 04 2021 Logged By: SPR Checked By: RJD
 Contractor: Branch Engineering Inc. Latitude: Longitude: Elevation:
 Method: Test Pit Excavation Ground Water Levels
 Equipment:
 Notes:











































Depth	Graphic	Material Description	Sample	Pocket Pen. (tsf)	Dry Unit Wt. (pcf)	MC: ⊗ PL LL: ●—■														
						10	20	30	40	50	60	70	80	90						
1		Dark Brown, Sandy Silt Topsoil With Angular Rock, Fill, Loose, Moist.																		
2																				
3		Weathered Basalt Bedrock, Very Dense, Gray-Brown, Fractured Surface.																		
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				

◇ Fines Content ⊗ Moisture Content ●—■ Plastic Limit and Liquid Limit

Soil Map—Tillamook County, Oregon
(Tax Lot 3500)



MAP LEGEND

	Area of Interest (AOI)		Spoil Area
	Area of Interest (AOI)		Stony Spot
	Soils		Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
	Special Point Features		Water Features
	Blowout		Streams and Canals
	Borrow Pit		Transportation
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow		Background
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Tillamook County, Oregon
Survey Area Data: Version 12, Jun 11, 2020

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

Date(s) aerial images were photographed: May 28, 2020—Jun 22, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
99	Beaches	0.1	0.5%
180E	Salander-Necanicum complex, 30 to 60 percent slopes	6.9	41.7%
181F	Neskowin-Rock outcrop- Necanicum complex, 60 to 100 percent slopes	7.1	43.0%
Totals for Area of Interest		16.5	100.0%

Tillamook County, Oregon

180E—Salander-Necanicum complex, 30 to 60 percent slopes

Map Unit Setting

National map unit symbol: n8dq
Elevation: 50 to 1,800 feet
Mean annual precipitation: 80 to 110 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 120 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Salander and similar soils: 60 percent
Necanicum and similar soils: 25 percent
*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Description of Salander

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Lower third of
mountainflank, center third of mountainflank
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Parent material: Colluvium and residuum derived from igneous rock

Typical profile

O_i - 0 to 2 inches: slightly decomposed plant material
A₁ - 2 to 14 inches: medial loam
A₂ - 14 to 25 inches: medial loam
B_w1 - 25 to 41 inches: medial loam
B_w2 - 41 to 52 inches: paragravelly medial loam
B_w3 - 52 to 66 inches: paragravelly medial clay loam

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
*Capacity of the most limiting layer to transmit water
(K_{sat}):* Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very high (about 19.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Other vegetative classification: Sitka spruce/oxalis, swordfern-
moist (902)

Hydric soil rating: No

Description of Necanicum

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Footslope, backslope

Landform position (three-dimensional): Lower third of
mountainflank, upper third of mountainflank

Down-slope shape: Linear, convex

Across-slope shape: Convex, linear

Parent material: Colluvium derived from igneous rock

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A1 - 1 to 10 inches: very gravelly medial loam

A2 - 10 to 18 inches: very gravelly medial loam

Bw1 - 18 to 27 inches: very gravelly medial loam

Bw2 - 27 to 49 inches: extremely cobbly medial loam

Bw3 - 49 to 71 inches: extremely cobbly medial loam

Properties and qualities

Slope: 30 to 60 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Other vegetative classification: Sitka spruce/oxalis, swordfern-
moist (902)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Tillamook County, Oregon

Survey Area Data: Version 12, Jun 11, 2020

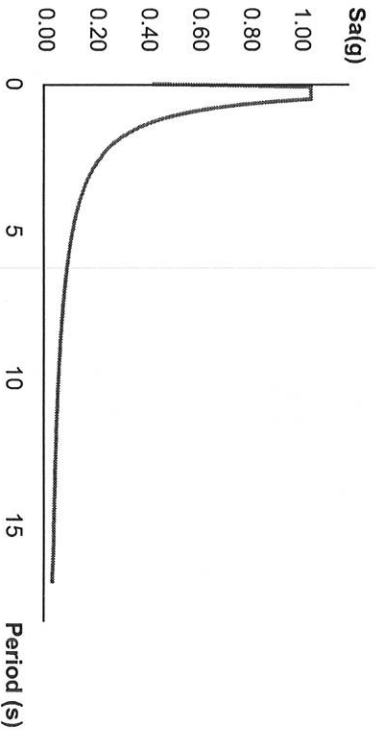
ATC Hazards by Location

Search Information

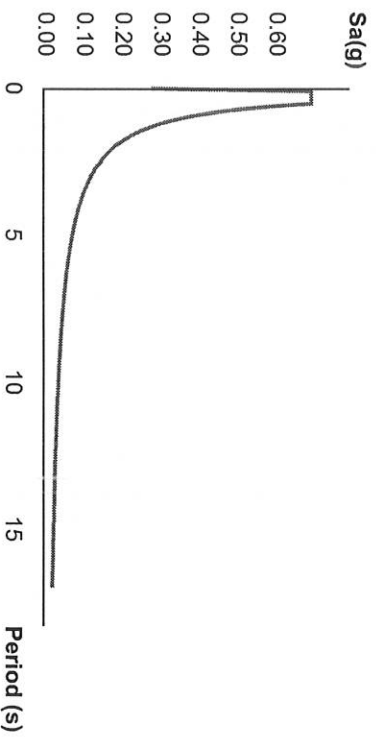
Coordinates: 45.092632999872701, -123.99105159555359
Elevation: 236 ft
Timestamp: 2021-02-19T22:36:40.146Z
Hazard Type: Seismic
Reference Document: ASCE7-16
Risk Category: II
Site Class: A



MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
SS	1.3	MCER ground motion (period=0.2s)
S1	0.678	MCER ground motion (period=1.0s)
SMS	1.04	Site-modified spectral acceleration value
SM1	0.542	Site-modified spectral acceleration value

SD1	0.361	Numeric seismic design value at 1.0s SA
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Additional Information

Name	Value	Description
SDC	D	Seismic design category
F _a	0.8	Site amplification factor at 0.2s
F _v	0.8	Site amplification factor at 1.0s
CR _s	0.863	Coefficient of risk (0.2s)
CR ₁	0.859	Coefficient of risk (1.0s)
PGA	0.644	MCEg peak ground acceleration
F _{PGA}	0.8	Site amplification factor at PGA
PGAM	0.515	Site modified peak ground acceleration
T _L	16	Long-period transition period (s)
SsRT	1.3	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.507	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.901	Factored deterministic acceleration value (0.2s)
S1RT	0.678	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.789	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.984	Factored deterministic acceleration value (1.0s)
PGAD	0.893	Factored deterministic acceleration value (PGA)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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March 16, 2021

Thanh Tran
Via Email: thtran@thranlaw.com

RE: DESIGN PLAN COMPLIANCE LETTER
MAP 5s, 11W, 35DA
TAX LOT 3500
NESKOWIN HEIGHTS DEVELOPMENT
NESKOWIN, TILLAMOOK COUNTY, OREGON 97149
Branch Engineering Inc Project No. 21-086

As requested by Tillamook County, Branch Engineering Inc. (BEI) has reviewed the following site design plans that you have provided for conformance with our March 8, 2021 Geologic Hazard Assessment and Geotechnical Evaluation for the subject site.

- Site plan by Cole Surveying LLC dated February 23, 2021
- Architectural drawings by HD Dang Development LLC dated March 3, 2021

The bearing capacity is 4,000 psf, as stated in our report, and is more than adequate for typical residential construction. These design plans are in conformance with our site recommendations and site development is not expected to cause any geologic or environmental impacts to the site or adjacent properties beyond those imposed by typical residential construction activities.

Sincerely,
Branch Engineering Inc,



Digitally signed by Ronald J. Derrick
Date: 2021.03.16 09:58:31 -07'00'

EXPIRES: 12/31/2021
Ronald J. Derrick P.E., G.E.
Principal Geotechnical Engineer



April 14, 2021

Thanh Tran
Via Email: thtran@thranlaw.com

**RE: ADDENDUM TO THE GEOLOGIC HAZARD ASSESSMENT AND GEOTECHNICAL EVALUATION
 MAP 5s, 11W, 35DA
 TAX LOT 3500 - NESKOWIN HEIGHTS DEVELOPMENT
 NESKOWIN, TILLAMOOK COUNTY, OREGON 97149
 Branch Engineering Inc Project No. 21-086**

As requested by the client and Tillamook County, Branch Engineering Inc. (BEI) is providing this Addendum to our March 8, 2021 Geologic Hazard Assessment and Geotechnical Evaluation for the above referenced site. Although, most were covered within the body of our March 8, 2021 report, this addendum specifically lists the items outlined Section 3.570 Neskowin Coastal Hazards Overlylay Zone (NESK-CH) of the Tillamook County Land-Use Ordinance Article 3.500.

(A) Site Description

(i) The history of the site and surrounding areas, such as previous riprap or dune grading permits, erosion events, exposed trees on the beach, or other relevant local knowledge of the site.

The site is located on a rocky headland, no dune grading or riprap has occurred on the site or in the site vicinity. No landslides are mapped underlying the subject site on the DOGAMI SLIDO website, the closest mapped landslide is a pre-historic (>150 years ago) debris flow, approximately 0.2-miles to the south. From aerial photos and a surface reconnaissance two unmapped, but well known, recent debris flows exist in the project vicinity. The closest slide is located approximately 450-feet to the south near Tax Lot 4800, and appears to consist of unstable slopes undergoing gradual undercutting due to wave action and loss of mature vegetation from the development. Another slide located approximately 800-feet to the north of the project site has a disputed origin; however, based on aerial imagery the location appears to have been experiencing erosion (slopes are free of vegetation and steeper than the materials natural angle of repose) since at least 2005. Numerous attempts to repair and armor this slope have failed and continued erosion has caused a head scarp to form within 30-feet of a nearby residence, but not the subject site. A more complete site description and history of erosion events is available in the sections "Site Location and Description" and "Geologic Hazard Mapping and Slope Stability" our March 8, 2020 report.

(ii) Topography, including elevations and slopes on the property itself.

The site is situated on a rocky headland which initially had varied topography of ridges and swales. When Neskowin Shores was developed the site itself was graded flat, a retaining wall along the north and western property lines indicates that site slopes dropped off steeply in those directions. Site elevation in the area of the proposed residence is 237-feet above mean sea level (MSL).

(iii) Vegetation cover.

The project site is covered in manicured lawn grass with a perimeter boarder of Salal.

EUGENE-SPRINGFIELD ALBANY-CORVALLIS-SALEM

p: 503.779.2577 | www.branchengineering.com

(iv) Subsurface materials – the nature of the rocks and soils.

Four exploratory test pit excavations were performed on the project site during the site visit on February 4, 2021 (see Figure 1 Site Plan for test pit locations; and attached documents for logged test pit conditions). Materials encountered in three of the test pit excavations were generally consistent, however, Test Pit 4 performed near the retaining wall was documented with fill overlying bedrock. The typical soil profile found is as follows: A shallow (<5-inches) horizon of brown sandy silt topsoil overlying weathered basalt that varies in hardness and fracturing due to the effects of in-situ weathering. In Test Pit 4 approximately 2.5-feet of native soil with angular rock was found overlying the weathered basalt. No static or perched groundwater was encountered in the subsurface exploration. The USDA NRCS PNW Soils website maps Salander-Necanicum complex on the parcel, described as mountain slope deposits of medial loam and para-gravelly medial clay loam colluvium and residuum derived from igneous rock. The NRCS soil mapping of the site is generally consistent with observations made by BEI.

(v) Conditions of the seaward front of the property, particularly for sites having a sea cliff.

The seaward front of the property wall consists of a CMU retaining wall. The property is situated a minimum distance of 170-feet from the edge of the cliffs and has a least one property between the subject site and sea cliffs.

(vi) Presence of drift logs or other flotsam on or within the property.

The subject site is approximately 237-feet above the ocean and no drift logs or flotsam were observed.

(vii) Description of streams or other drainage that might influence erosion or locally reduce the level of the beach.

No streams or springs were observed at the subject site that might influence erosion or locally reduce the level of the beach.

(viii) Proximity of nearby headlands that might block the longshore movement of beach sediments, thereby affecting the level of the beach in front of the property.

The project site is located on a rocky headland above any influence it may have on beaches to the north of the site.

(ix) Description of any shore protection structures that may exist on the property or on nearby properties.

No shore protection structures were observed on the subject site or on adjacent properties. BEI was unable to observe the seaward facings of residence to the north and west.

(x) Presence of pathways or stairs from the property to the beach.

No pathways or stairs to the beach from the property exist.

(xi) Existing human impacts on the site, particularly any that might alter the resistance to wave attack.

The subject site has undergone some mass grading to create a flat building pad and a CMU retaining wall was built along the north and western borders. As the site is elevated well above the ocean there will be no wave attack.

(B) Description of the fronting beach

The subject site is situated at the approximate elevation of 237-feet MSL on a rocky headland and is not subject to influences of erosion of the sandy beach located north of the site.

(C) Analysis of Erosion and Flooding Potential

(i) Analysis of DOGAMI beach monitoring data for the site (if available).

The subject site is situated on a rocky headland with no DOGAMI monitoring data.

(ii) Analysis of human activities affecting shoreline erosion.

From aerial photos and a surface reconnaissance two unmapped, but well known, recent debris flows exist in the project vicinity. The closest slide is located approximately 450-feet to the south near Tax Lot 4800, and appears to consist of unstable slopes undergoing gradual undercutting due to wave action and loss of mature vegetation from the development. Another slide located approximately 800-feet to the north of the project site has a disputed origin; however, based on aerial imagery the location appears to have been experiencing erosion (slopes are free of vegetation and steeper than the materials natural angle of repose) since at least 2005. Numerous attempts to repair and armor this slope have failed and continued erosion has caused a head scarp to form within 30-feet of a residence.

(iii) Analysis of possible mass wasting, including weathering processes, landsliding or slumping.

A Complete discussion is available in our March 8, 2021 report under Geologic Hazard Mapping and Slope Stability. The deep landslide hazard in the site vicinity is classified as moderate - landsliding is possible, and the shallow landsliding hazard is also classified as moderate. The DOGAMI HazVu website rates the site vicinity likely to feel severe shaking in the event of a Cascadian Subduction Zone earthquake and strong shaking in the event of smaller or more distant earthquakes, with no soil liquefaction hazard. Many geologists believe a Cascadian Subduction Zone earthquake could re-mobilize existing landslides and generate new landslides in areas prone to landsliding, particularly if the earthquake occurs at a time of high soil saturation.

(iv) Calculation of wave run-up beyond mean water elevation that might result in erosion of the sea cliff or foredune.¹

Waves actively hit the sea cliff to the north and west of the residence during most high tides. The headland is composed of wave resistant basalt and the subject site is located at 170-feet back from the edge of any sea cliffs.

(v) Evaluation of frequency that erosion-inducing processes could occur, considering the most extreme potential conditions of unusually high-water levels together with severe storm wave energy.

BEI does not consider wave erosion processes to be a potential site impact during the life span of the residence.

(vi) For dune-backed shoreline, use an established geometric model to assess the potential distance of property erosion, and compare the results with direct evidence obtained during site visit, aerial photo analysis, or analysis of DOGAMI beach monitoring data.

The subject site is not a dune-backed shoreline.

(vii) For bluff-backed shorelines, use a combination of published reports, such as DOGAMI bluff and dune hazard risk zone studies, aerial photo analysis, and fieldwork to assess the potential distance of property erosion.

The subject site is not a bluff-backed shoreline.

(vii) Description of potential for a sea level rise, estimated for local area by combining local tectonic subsidence or uplift with global rates of predicted sea level rise.

Risk to the subject site from tectonic activity is available in our March 8, 2021 report. The subject site is 237-feet above the ocean and will not likely be subject to sea level rise.

(D) Assessment of Potential Reactions to Erosion Episodes

Items (i) and (ii) are addressed in the March 8, 2021 BEI report under the Conclusions and Recommendations headings.

(E) Recommendations

Items (i) through (v) are addressed in the March 8, 2021 BEI report under the Recommendations heading that address preparation of the building pad area and foundation design. The current site vegetation is minimal and is recommended to be preserved as best as possible outside the building area and is expected to be enhanced with landscaping after completion of the residence. No variation to building setbacks is requested.

The "Conclusions" section of our March 8, 2021 report addresses the risk of landsliding, soil liquefaction, and tsunami inundation to the subject site as low. However, the risk for strong to severe shaking during a Cascadia Subduction Zone (CSZ) earthquake is high; building code requirements for this zone are designed to provide the sufficient structural integrity of the residence to allow for evacuation of the structure, if necessary. The site poses no additional risk of CSZ impacts beyond those of the surrounding developed properties. The level of "acceptable risk" is subjective and the reoccurrence and timing of a CSZ earthquake is speculative; by acceptance of this report, developer/owner of the subject site assumes the inherent risk of building in a coastal area.

Sincerely,
Branch Engineering Inc,

Ronald J. Derrick



Digitally signed by Ronald J. Derrick

Date: 2021.04.14 09:37:52 -07'00'

Ronald J. Derrick P.E., G.E.
Principal Geotechnical Engineer

EXPIRES: 12/31/2021

Branch Engineering, Inc.



May 25, 2021

Thanh Tran
Via Email: thtran@thranlaw.com

**RE: ADDENDUM TO THE GEOLOGIC HAZARD ASSESSMENT AND GEOTECHNICAL EVALUATION
 MAP 5S, 11W, 35DA
 TAX LOT 3500 - NESKOWIN HEIGHTS DEVELOPMENT
 NESKOWIN, TILLAMOOK COUNTY, OREGON 97149
 Branch Engineering Inc Project No. 21-086**

As requested by the client and Tillamook County, Branch Engineering Inc. (BEI) is providing this Addendum to our March 8, 2021 Geologic Hazard Assessment and Geotechnical Evaluation for the above referenced site. Although, most were covered within the body of our March 8, 2021 report, this addendum specifically lists the items outlined Section 3.570 Neskowin Coastal Hazards Overlay Zone (NESK-CH) of the Tillamook County Land-Use Ordinance Article 3.500.

(A) Site Description

(i) The history of the site and surrounding areas, such as previous riprap or dune grading permits, erosion events, exposed trees on the beach, or other relevant local knowledge of the site.

The site is located on a rocky headland, no dune grading or riprap has occurred on the site or in the site vicinity. No landslides are mapped underlying the subject site on the DOGAMI SLIDO website, the closest mapped landslide is a pre-historic (>150 years ago) debris flow, approximately 0.2-miles to the south. From aerial photos and a surface reconnaissance two unmapped, but well known, recent debris flows exist in the project vicinity. The closest slide is located approximately 450-feet to the south near Tax Lot 4800, and appears to consist of unstable slopes undergoing gradual undercutting due to wave action and loss of mature vegetation from the development. Another slide located approximately 800-feet to the north of the project site has a disputed origin; however, based on aerial imagery the location appears to have been experiencing erosion (slopes are free of vegetation and steeper than the materials natural angle of repose) since at least 2005. Numerous attempts to repair and armor this slope have failed and continued erosion has caused a head scarp to form within 30-feet of a nearby residence, but not the subject site. A more complete site description and history of erosion events is available in the sections "Site Location and Description" and "Geologic Hazard Mapping and Slope Stability" our March 8, 2020 report.

(ii) Topography, including elevations and slopes on the property itself.

The site is situated on a rocky headland which initially had varied topography of ridges and swales. When Neskowin Shores was developed the site itself was graded flat, a retaining wall along the north and western property lines indicates that site slopes dropped off steeply in those directions. Site elevation in the area of the proposed residence is 237-feet above mean sea level (MSL).

(iii) Vegetation cover.

The project site is covered in manicured lawn grass with a perimeter boarder of Salal.

(iv) Subsurface materials – the nature of the rocks and soils.

Four exploratory test pit excavations were performed on the project site during the site visit on February 4, 2021 (see Figure 1 Site Plan for test pit locations; and attached documents for logged test pit conditions). Materials encountered in three of the test pit excavations were generally consistent, however, Test Pit 4 performed near the retaining wall was documented with fill overlying bedrock. The typical soil profile found is as follows: A shallow (<5-inches) horizon of brown sandy silt topsoil overlying weathered basalt that varies in hardness and fracturing due to the effects of in-situ weathering. In Test Pit 4 approximately 2.5-feet of native soil with angular rock was found overlying the weathered basalt. No static or perched groundwater was encountered in the subsurface exploration. The USDA NRCS PNW Soils website maps Salander-Necanicum complex on the parcel, described as mountain slope deposits of medial loam and para-gravelly medial clay loam colluvium and residuum derived from igneous rock. The NRCS soil mapping of the site is generally consistent with observations made by BEI.

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6 Additional Development Limitations in Coastal Hazard Areas

(a) Moveable structure design: Except for non-habitable accessory structures (e.g. garages, storage buildings), to facilitate the relocation of structures that become threatened by coastal hazards.

The proposed structure is designed and will be built with four (4) mounted anchor hooks on a monolithic concrete structure. The structure is designed and will be built with ICF foundation and walls, which will be attached with anchor points that can be used to detach the structure for movement, if necessary.

(b) Safest site requirement: All new construction or substantial improvement shall be located within the area most suitable for development based on the least exposure to risk from coastal hazards

The proposed single-family residence will be located on a level, 0.17-acre vacant lot located within a developed subdivision. It is our opinion that this site is suitable for the proposed construction and is located in a safe position complying with local setback requirements. The siting of the structure will not adversely affect neighboring properties or unduly expose occupants to coastal hazards.

Sincerely,
Branch Engineering Inc,

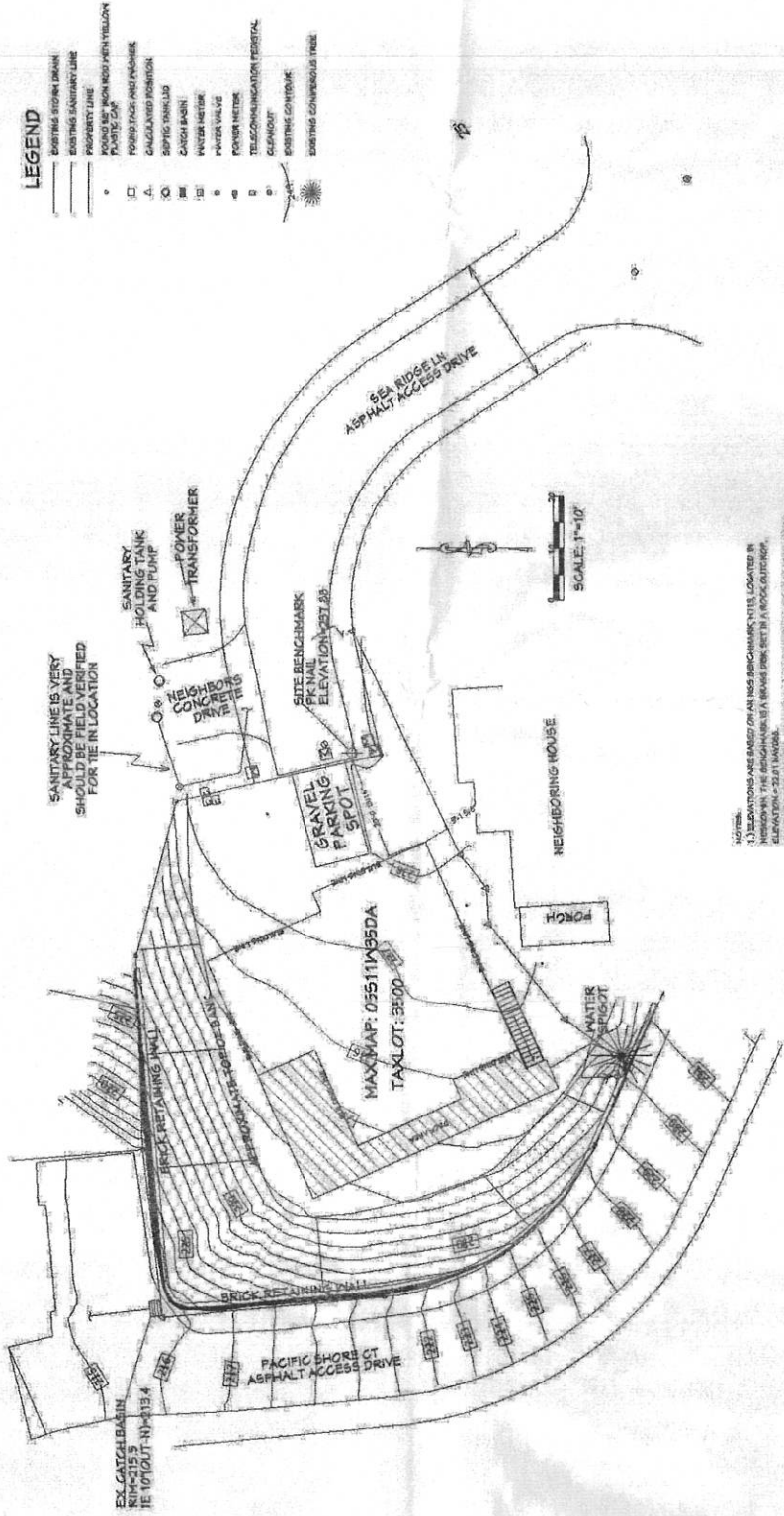


EXPIRES: 12/31/2021

Ronald J. Derrick P.E., G.E.
Principal Geotechnical Engineer

Digitally signed by Ronald J. Derrick
Date: 2021.06.08 09:19:59 -07'00'

%%UTOPOGRAPHIC SURVEY
 LOCATED ON SEA RIDGE LANE, NESKOWIN, OREGON,
 IN THE SE 1/4 OF SECTION 35, TOWNSHIP 5 SOUTH,
 RANGE 11 WEST OF THE WILLAMETTE MERIDIAN, TILLAMOOK COUNTY, OREGON
 FOR: SAMANTHA TRAN
 DATE: FEBRUARY 23, 2021



LEGEND

- EXISTING SIGNAL DRAIN
- EXISTING SANITARY LINE
- PROPERTY LINE
- BOUNDARY LINE WITH YELLOW POINTS
- POUR FACE AND FLOOR
- CALCULATED POSITION
- SEPTIC TANK/LID
- CATCH BASIN
- WATER METER
- WATER VALVE
- POWER METER
- TELECOMMUNICATION (FIBER) CABLE
- CEILING
- EXISTING CONDUIT
- EXISTING CONCREOUS FOOT

NOTES:

1. BENCHMARKS ARE BASED ON AN IRON BENCHMARK THIS, LOCATED IN THE NE 1/4 OF SECTION 35, TOWNSHIP 5 SOUTH, RANGE 11 WEST OF THE WILLAMETTE MERIDIAN, TILLAMOOK COUNTY, OREGON. THE SITE BENCHMARK IS A PK NAIL LOCATED AT THE END OF THE ASPHALT ON SEA RIDGE LANE. THE SITE BENCHMARK HEIGHT IS 257.85.
2. THERE ARE NO SUBSTANTIAL UTILITIES LOCATED. THERE SHOULD BE A UTILITY LOCATED WITHIN THE PROPERTY PERIODICALLY TO VERIFY THE LOCATION OF UTILITIES.
3. THIS IS NOT A BOUNDARY SURVEY. THIS PROPERTY LINES HERE IS ONLY THE SUBJECT OF RECORD. DO NOT RELY UPON THIS SURVEY FOR BOUNDARY INFORMATION TO DETERMINE THE APPROXIMATE LOCATION OF BOUNDARIES TO ADJACENT PARCELS.
4. THERE MAY BE EMPLOYMENT OF THIS SITE. A TITLE/OWNER REPORT SHOULD BE OBTAINED PRIOR TO ANY DEVELOPMENT. THE BOUNDARY LINES AND THE RECORD SHOULD NOT BE USED IF ANY ARE FOUND.

COLE SURVEYING, LLC
 PREPARED BY
 COLE SURVEYING, LLC
 210 BOX 1211
 CORVALLIS, OREGON 97331
 (541) 251-1014

3/3/2021

TRAN RESIDENCE
206 898 2327

TILLAMOOK
COUNTY

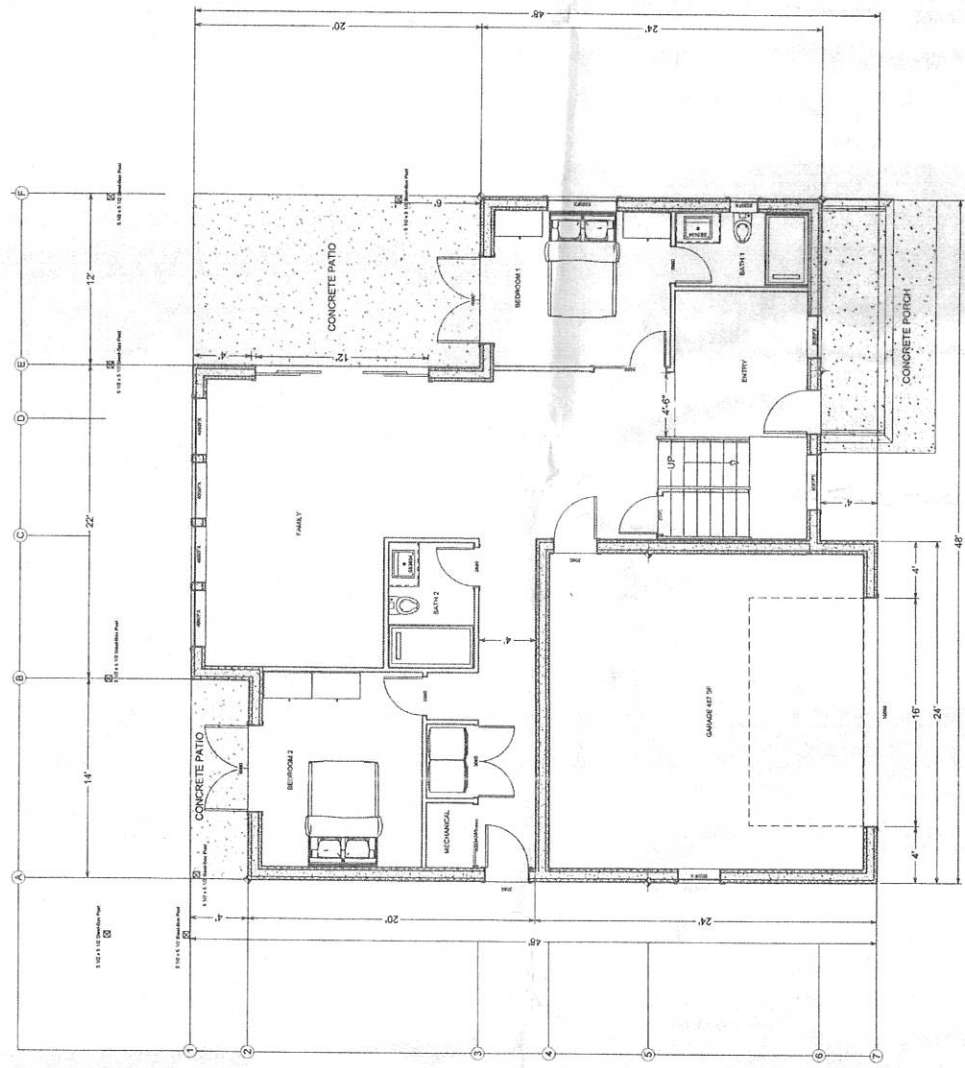
NESKOWIN

SHEET

A-3

SCALE: 1/4"=1'

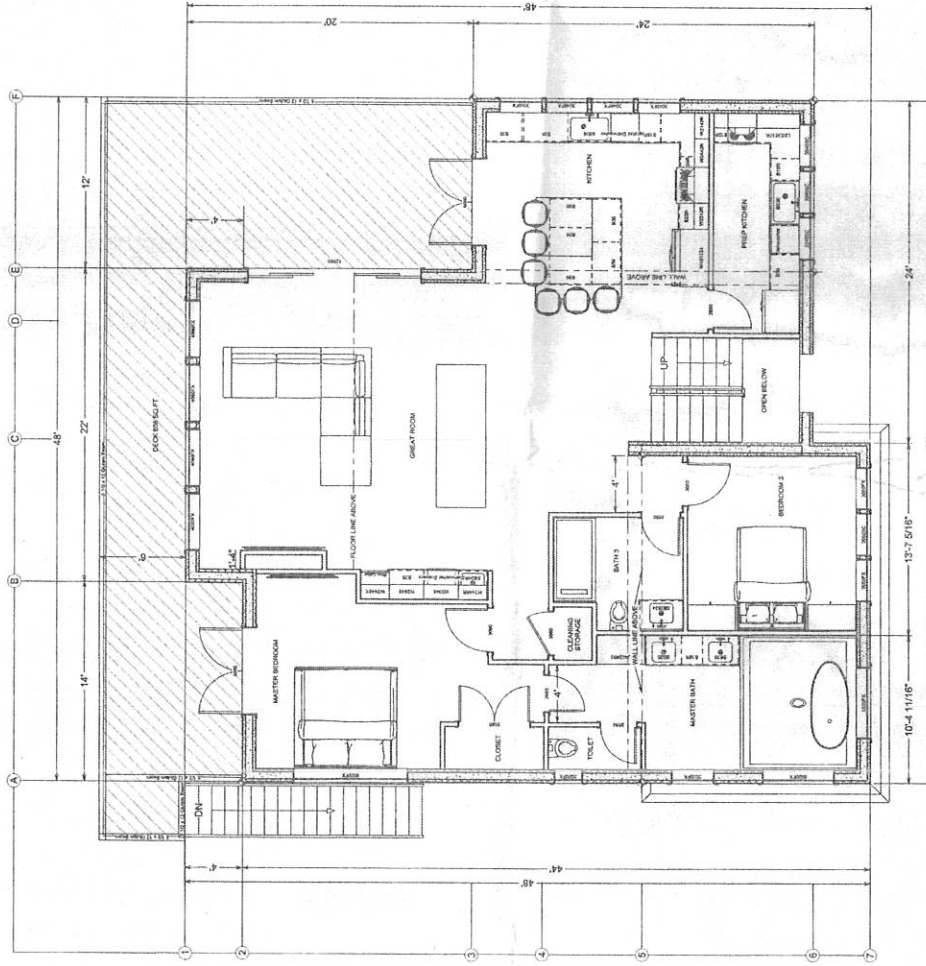
MAIN FLOOR PLAN



LIVING AREA
1378 SQ. FT.

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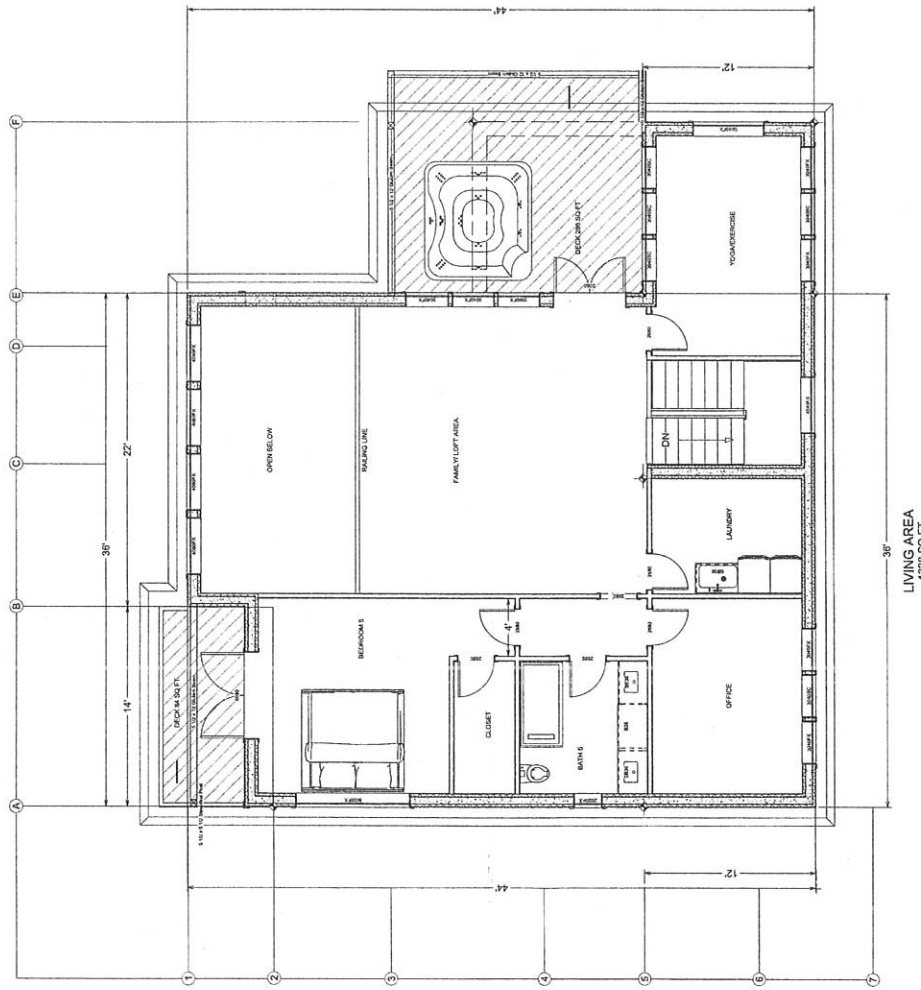
MIDDLE FLOOR PLAN



LIVING AREA
1832 SQ. FT.

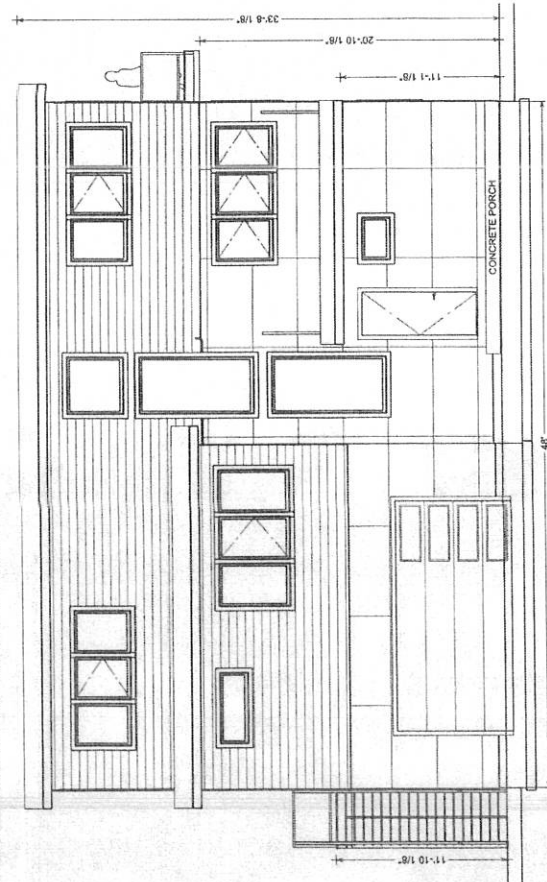
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UPPER FLOOR PLAN

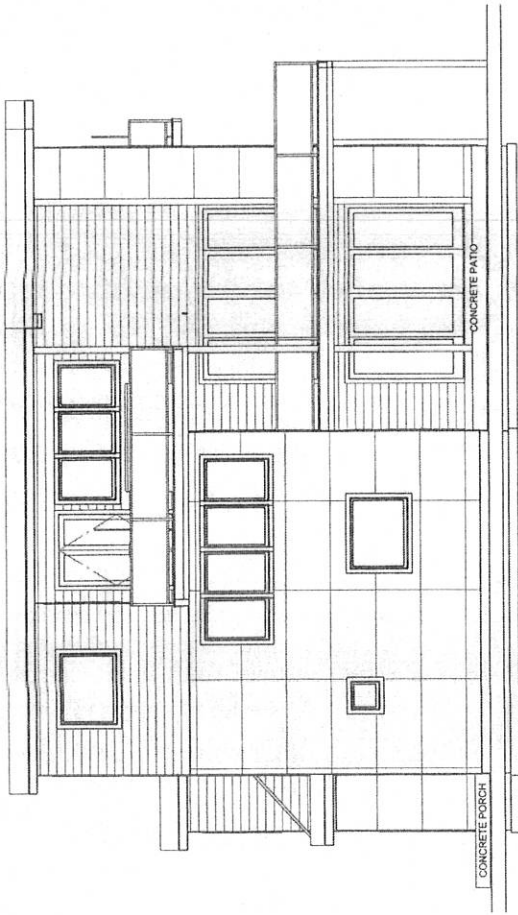


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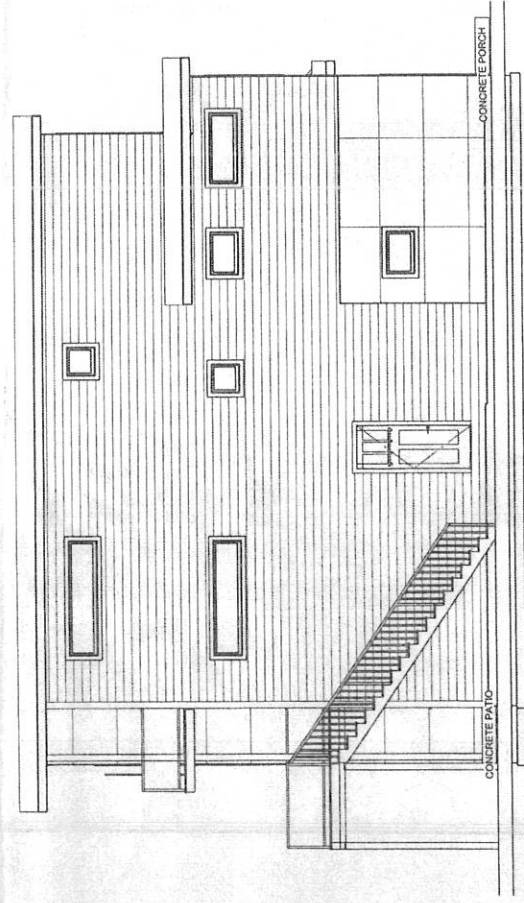
ELEVATION VIEWS



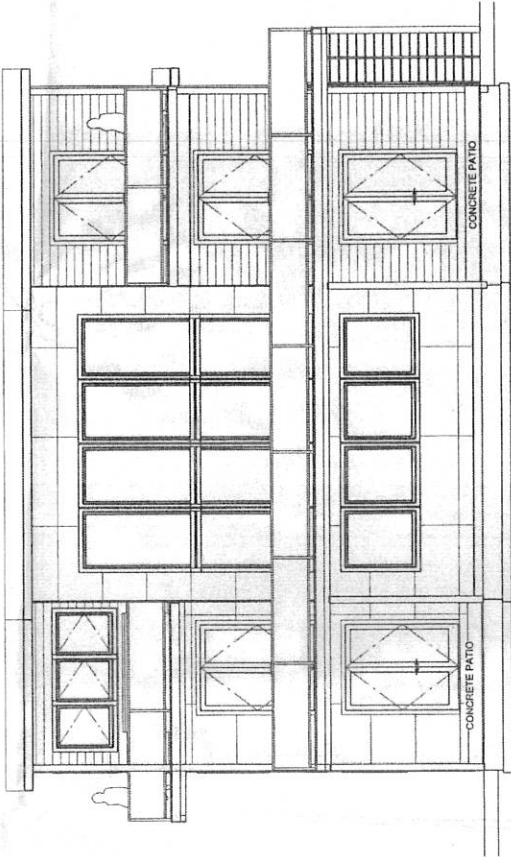
FRONT VIEW



RIGHT VIEW



LEFT VIEW



REAR VIEW