

Oregon Parks & Recreation Department
Ocean Shore Permit Application

Lincoln Beach/Pacific Panorama Properties
13-LUCS-22 – DeSlyvia – 4755 Lincoln Avenue

Oregon Parks & Recreation Department
Ocean Shore Permit Application

OPRD Permit Application

DE SYLVIA - 4755 LINCOLN AVE



**OREGON PARKS AND RECREATION DEPARTMENT
OCEAN SHORE PERMIT APPLICATION**

SHORELINE PROTECTION STRUCTURES

FOR OFFICIAL USE ONLY

OPRD PERMIT #: _____
APPLICATION DATE: _____
DATE POSTED: _____
COORDINATOR: _____
60 DAY DUE DATE: _____

Section 1. Proposed Project

Project type:

☒ Riprap Revetment ☐ Vegetative Stabilization
☐ Seawall ☐ Other

Provide a brief description of the project:

Construction of a riprap revetment along the oceanfront bluff to mitigate the threat to the house caused by recent rapid erosion.

Estimated project start date 8/1/22 Estimated project completion date 10/1/22

Section 2. Applicant Information

Owner	Terry and Janice DeSylvia	Agent	Richard Grant
Mailing Address	PO Box 806	Mailing Address	P.O. Box 139
City	Depoe Bay	City	Powell Butte
State	OR	State	Oregon
Zip	97341	Zip	97753
Phone	(503) 706-2993	Phone	(206) 920-6234
Fax		Fax	
Email	td@brownrask.com	Email	rgrant7245@aol.com

Primary Contact ☐ Owner ☒ Agent

Section 3. Property Location and Information

Situs Address 4755 Lincoln Avenue
City/Town Depoe Bay County Lincoln
Township 08 Range 11W Section 21 Subsection CD Tax Lot 14800

Current Use

☒ Residential ☐ Commercial/Industrial ☐ Public
☐ Vacant (unbuilt) ☐ Other (explain)

City/County Zoning Designation R-1 Year main structure was built 1993

Lot Dimensions

Lot Size 0.44 acres Oceanfront footage (in feet) ~65
Street front footage (in feet) 65 East-West footage (in feet) ~280

Setbacks

Distance from eastern (or landward) property line to nearest building (in feet) ~44 feet
Distance from seaward dune crest or bluff edge to nearest building (in feet) ~33 feet
Approximate height of oceanfront bluff, dune or escarpment (in feet) ~14

List the names, situs and mailing addresses of oceanfront landowners with property boundaries common to those of the property or properties described in the application.

Name	Property situs address	Mailing address
Peter and Anna Sam	4745 Lincoln Avenue	9480 NW Helvetia Road Hillsboro, Oregon 97124
Shari and Peter Kain	4805 Lincoln Avenue	724 W. Cliff Drive Spokane, Washington 99204

Section 4. Project Justification and Impacts

Provide a detailed explanation of the hazards and threat to property:
Recent rapid erosion of oceanfront bluff threatening home.

Please refer to H.G. Schlicker and Associates' report #Y214560 for a more detailed explanation.

(Include documented supporting evidence, i.e. photographs, and/or chronology of bank retreat.)
Attach additional pages as necessary

Describe all potential impacts:

Reduced sand source supply, increased bluff stability and safety, minimal effect on recreation access along beach and neighboring properties. Short term impact on recreation access during construction.

Please refer to H.G. Schlicker and Associates' report #Y214560 for a more detailed explanation.

Attach additional pages as necessary

Describe measures that will be taken to minimize the impacts identified above:

The revetment was designed and the construction will be conducted to minimize impacts identified above.

Please refer to H.G. Schlicker and Associates' report #Y214560 for a more detailed explanation.

Attach additional pages as necessary

Section 5. Project Details

Total Length along shoreline (in feet)	~65	Height (in feet)	~27
Total width of project (in feet)	~50		
Slope (ratio-horizontal to vertical)	2H-1V	Total volume of all material(s) (cubic yards)	1300
Riprap Specifications:			
Armor stone type	Basalt	Armor stone source	Not Yet Determined (Upland source)
Diameter of armor stone (in feet)	3 to 7 feet	Amount of armor stone (cubic yards)	1040
Type of filter fabric	Mirafi 1100N or equivalent	Type of backing fill material	ODOT Class 200&Quarry-run
The amount of backing fill material (cubic yards)	260	Will toe be keyed into bedrock?	☐ Yes ☒ No
Elevation of toe trench	-6ft (NAVD 88)	Depth of toe trench	-10 ft (5 feet into cemented sand)

Section 6. Analysis Of Hazard Avoidance

Please verify that the attached hazard avoidance analysis includes:

- ☒ A list of hazard avoidance alternatives
- ☒ A description of why hazard avoidance alternatives are not feasible
- ☐ If an alternative was tried, explain why it did not succeed
- ☐ Is the relocation cost estimate included? *(if the cost of moving the building is listed as an unfeasible factor.)*

Section 7. Geologic Report

Please provide the following information:

Date of Report	1/24/22	Company	H.G. Schlicker and Associates Inc.
Geologist Name	James Douglas Gless	Geologist Certifications	RG, CEG, LHG
Mailing Address	607 Main Street Suite 200		
City	Oregon City	State	Oregon
		Zip	97045
Phone	(503) 655-8113	Fax	(503) 655-8173
Email address	hgasa@teleport.com		

Please verify your geologic report contains all of the following information:

- ☒ The potential impacts from the proposed project on the sand source, supply, and movement on the affected beach as well as within the same littoral cell.
- ☒ The known or suspected geologic and seismic hazards in the project area and how the proposed project may affect or be impacted by those geologic and seismic hazards.
- ☒ A review of potential non-structural solutions, including, but not limited to: vegetative stabilization; non-structural dynamic revetments and foredune enhancement.
- ☒ The bank or bluff stability and erosion rates on the subject property and adjacent properties.

Section 8. Additional Permit Requirements

List the agency and type of permit required:

☒ No additional agency permit required

Section 9. Signature Requirement

The application is hereby made for the ocean shore alteration described within this application. I certify that I am familiar with the information contained in this application, and, to the best of my knowledge and belief, this information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed alteration.

I understand that the granting of an OPRD permit does not release me from obtaining any additional permits from any/all local, state, and/or federal agencies that may be required before commencing the project.

I understand that the payment of required OPRD processing fee does not guarantee the issuance of an approved permit.

DocuSigned by:

6/7/2022 | 6:52 PM PDT

Owner Signature A225765E9C904C9...

Date

☒ I (Owner) authorize the Agent included in this application to act on my behalf during this application process.

6-3-2022

Agent Signature

Date

Section 10. Required Drawings

The submitted application shall be accompanied by a plan view and a cross-section of the proposed project. Neatness and accuracy are important in order for those reviewing the application to clearly understand the proposal. Copies of county assessor's maps may not be used as site plan maps.

For consistency and quality please follow these format specifications:

- **All Drawings shall be:**

- o On 8.5 X 11 inch white paper
- o In black ink or clear legible photocopy of plan(s)
- o Printed or typed (no cursive) minimum size 10 point font
- o Drawn with a straight-edge and not freehanded.
- o Drawn accurately to scale
- o Be labeled appropriately

- **Plan view drawing shall include:**

- o Scale of drawing and north arrow
- o All lot lines with dimensions
- o Existing structures
- o Roads, driveways, etc. (existing, proposed, or temporary access roads)
- o Setback distance from nearest structure or infrastructure to upper edge of bluff or dune edge
- o Location of proposed improvements in relation to Statutory Vegetation Line and Actual Vegetation Line
- o Location of proposed project in relation to all property lines
- o Location of the proposed project in relation to the top of the bluff or dune and the existing toe of bluff or dune

- **Cross-section (side view) drawing shall include:**

- o Scale of drawing
- o Location of the existing base of bluff or dune
- o Location of top of bluff or dune
- o Location of proposed project in relation to base and top of bluff or dune
- o Approximate length, in feet, the project will occupy beyond the existing toe of bluff or dune, include buried toe of proposed shoreline protection structure.
- o Depth of toe trench or footing
- o Slope of the project (width/height ratio (i.e. 2:1))
- o Overall height of the project from bottom of buried toe to the top
- o Armor stone layer with rock size accurately depicted
- o Thickness of armor stone
- o Backing fill layer with thickness accurately depicted
- o Type of filter fabric, if applicable

Section 11. Application Fees and Calculation Worksheet (to be submitted with application)

Each application filed under ORS 390.640, for an alteration on the ocean shore shall be accompanied by a processing fee for the purpose of partial recovery to the Department of its administrative costs. The fee shall be determined according to the construction value of the project.

The application processing fee shall be:

- (a) \$400 for projects with a construction value less than \$2,500; or
- (b) \$400 plus three percent of the construction value over \$2,500 for projects with a construction value equal to or greater than \$2,500.

Please use the formula below to determine total application fees.

Total construction value of project	\$	
Base construction value (Subtractable allowance)	-	\$ 2500.00
Subtotal (construction value minus base fee)	=	\$ (x .03 =)
3% of subtotal	\$	
Add Base Fee	+	\$ 400.00
TOTAL APPLICATION FEE	=	\$

EXAMPLE

Total construction value of project	\$	10,000.00
Base construction value (Subtractable allowance)	-	\$ 2,500.00
Subtotal (construction value minus base fee)	=	\$ 7,500.00 (x .03 = 225.00)
3% of subtotal	\$	225.00
Add Base Fee	+	\$ 400.00
TOTAL APPLICATION FEE	=	\$ 625.00

**Submitted Ocean Shore Permit Application shall include this completed fee worksheet,
as well as, evidence of construction value**

Oregon Parks & Recreation Department
Ocean Shore Permit Application

Lincoln County Affidavit
February 3, 2022

DESILVIA - 4755 LINCOLN AVE

CITY/COUNTY PLANNING DEPARTMENT AFFIDAVIT

Applicant

Last DeSylvia First Terry and Janice MI

Property Details

Township 8S Range 11W Section 21 Subsection CD
Tax Lot 14800

County

☐ Clatsop ☐ Tillamook ☒ Lincoln ☐ Lane
☐ Douglas ☐ Coos ☐ Curry

Project Type

☒ Shorefront Protection ☐ Access/Other Misc. ☐ Sand Alteration
☐ Pipeline/Cable/Conduit ☐ Natural Product Removal

Planning Department Certification (To be completed by local planning official)

Part I

In accordance with Statewide Planning Goal #18, Beaches and Dunes alteration permits for beachfront protective structures may be issued only where development existed on January 1, 1977, or where an exception to this Goal 18 implementation requirement has been approved by the appropriate local jurisdiction. For the purpose of this requirement, the definition of "development" means houses, commercial and industrial buildings, and vacant subdivision lots which are physically improved through the construction of streets and provisions of utilities to the lot.

Above property meets Goal 18 Eligibility? ☒ Yes ☐ No ☐ Not Applicable

Part II

I have reviewed the proposed project application and have determined that:

- ☐ This project is not regulated by the local comprehensive plan and zoning ordinances.
- ☒ This project has been reviewed and is consistent with the local comprehensive plan and zoning ordinance.
- ☐ This project has been reviewed and is not consistent with the local comprehensive plan and zoning ordinance.
- ☐ The consistency of this project with the local planning ordinance cannot be determined until the following local approvals are obtained:
- ☐ Conditional Use Approval ☐ Zone Change ☐ Plan Amendment
☐ Development Permit ☐ Other (Specify)

Comments:

*OK Per case File 03-LVPC-21

Megan Hoff
Local Planning Official Name (Please Print)

Associate Planner
Title

Signature

Date

2/3/22

The completed/signed form shall be submitted with the completed Ocean Shore Permit Application



Transaction Receipt
Record ID: 519-22-000029-PLNG
IVR Number: 519095508634

Lincoln County Planning Department

210 SW 2nd Street
Newport, OR 97365
541-265-4192
Fax: 541-265-6945
lincolncountybldgdiv@co.lincoln.or.us

Receipt Number: 88585

Receipt Date: 2/4/22

Worksite address: 4755 LINCOLN AVE, DEPOE BAY, OR
Parcel: 08-11-21-CD-14800-00

Fees Paid					
Transaction date	Units	Description	Account code	Fee amount	Paid amount
2/4/22	1.00 Lots	Land use compatibility statement	101-003-32755	\$140.00	\$140.00

Payment Method:	Credit card authorization: 04246D	Payer: TERRY DESYLVIA		Payment Amount:	\$140.00

Paid through ePermitting website				Receipt Total:	\$140.00

Oregon Parks & Recreation Department
Ocean Shore Permit Application

OPRD Response to Initial 3/21/2022 Application

DESYLVIA - 4755 LINCOLN AVE



Oregon

Kate Brown, Governor

Parks and Recreation Department

725 Summer St. NE, Suite C

Salem, OR 97301-1271

(503) 986-0980

Fax (503) 986-0794

www.oregonstateparks.org



April 20, 2022

Terry and Janice DeSylvia
PO Box 806
Depoe Bay, OR 97341

Richard Grant
PO Box 139
Powell Butte, OR 97753

RE: Application for Shoreline Protective Structure – # 3006 Incomplete

Dear applicant,

Thank you for submitting your application to Oregon Parks and Recreation Department (OPRD) with information about a project at 4755 Lincoln Avenue in Depoe Bay. You describe the project as the construction of a riprap revetment on the ocean shore in conjunction with neighbors.

The project is located within the ocean shore and is subject to the statutes and rules that govern the ocean shores including OAR 736-020-0001 through 736-020-0122 and the requirement for project to be consistent with local, state, and federal regulations.

The intent of this letter is to provide notice that your application is currently incomplete. Below are the findings from the staff review. This review was based on the electronic records in our files, there is a chance that some materials may have been missed during staff transition. While comments are property specific, due to the nature of this bundled request some statements apply to multiple projects. If you have any questions or want to discuss any portion please reach out prior to your resubmittal. Please note: I will be on leave April 25th to May 6th.

When you believe you have addressed the following issues and have a complete application, please submit a single hard copy version of the application and all attachments to Allision Mangini at PO Box 2139, Waldport, OR 97394.

Please work with your agent to coordinate resubmission at the same time as the other associated projects, this will simplify and better facilitate the public review of these conjoined projects. It would be best to do the notification for all projects at once. Once your application has been determined to be complete OPRD will initiate a 30-day public notification process. Please do not include the three pages of application instructions with your final submission.

Sincerely,


Kevin Herkamp
Ocean Shores Coordinator
kevin.a.herkamp@oprds.oregon.gov
971-376-1509

Completeness Review and staff comments

1. Section 1.
 - a. The brief description is acceptable but very brief, you may want to make sure it is clear what you are proposing to anyone not familiar with your project. Examples of a more detail response could include "Build XX feet of new riprap revetment to a height of YY feet in front of 123 Oceanfront Street at the same time as the properties to the north and south construct theirs" or "Obtain permanent authorization for the XX feet of riprap revetment constructed in front of 123 Oceanfront Street during as part of the ZZ feet of revetment constructed during an emergency event in month/year".
 - b. The project start and end dates have passed, or will pass before issuance, please update.
2. Section 2.
 - a. Since the agent box is checked as the primary contact, correspondence and coordination will occur through your agent.
3. Section 3.
 - a. If there will be associated alteration or temporary impacts on the ocean shore please provide the same information identified in section 3 for those locations.
 - b. Both boxes "residential" and "unbuilt" are checked. The lot appears to be built with a residential structure. Please correct if this is an error or explain why "unbuilt" is appropriate.
4. Section 4.
 - a. While technically complete the explanation of the hazards and threat to the property is currently insufficient.
 - i. The applicant is encouraged to provide a more robust summary on the application form of the hazards and threats to the property. This is a critical element of the application and is one of the main sections upon which the agency determination can be made under OAR736-020-0010(1) "There shall be adequate justification for the project to occur on and alter the ocean shore area."
 - ii. Use this section to highlight what happened, when it happened, why it happened, and how much the situation or bank line changed. Present your story and demonstrate why there is need for something to happen now (or why there was a need for the emergency and why the built structure should remain).
 - iii. For this property, please make sure the need is clearly articulated and justified, especially since it was not part of the previous emergency action. Please be aware, if this is preventative construction it may not meet the review criteria in the ocean shores rules or be considered a necessary action.
 - iv. Referencing the Schlicker report for additional details is acceptable.
 - b. Please describe all potential impacts associated with the project, the current explanation is not complete or sufficient.
 - i. What will happen to the material from removal of the stairways? It needs to be hauled offsite to an appropriate disposal area. Will this access be replaced by using stepped riprap as identified in figure 8?
 - ii. While the Schlicker report describes tying into the revetment to the north and the bluff to the south Figure 3 shows the revetment as being square at the ends and stopping at the tax lot lines.
 1. Please correct this discrepancy and provide accurate drawings.
 2. If this increases the lineal feet or construction estimate please correct the application and fee amounts accordingly.
 3. As described in the report, work to tie in the structures on the north and south ends will likely occur on the land beyond what is currently identified in the application.
 - a. Please provide information on those properties and documentation that you have landowner permission to perform the proposed work on those properties.
 - b. This will also necessitate notification of the landowners an additional tax lot

north and south, that information will need to be provided in section 3.

- iii. While OPRD supports the idea of bundling adjoining properties during review and construction, each application is a separate and distinct request associated with a specific tax lot. As such each application needs to stand alone with all attachments.
 - 1. Alternatives discussed should identify what would happen if a given project in a bundle is not permitted. Example: describe if the entire project would be postponed, or if the ends of the revetment on remaining properties would end and be tied into the bank on either side with no work done on the denied property (make sure to have drawings identifying the contingencies – i.e. typical for tying in ends).
- iv. While the Schlicker report includes designs and analysis for the project, there are construction specific details and impacts that must also be identified. For any proposed construction activities, please identify the location of all impacts and alterations to the ocean shore associated with construction of the revetment. These could include proposed construction access routes, construction work area, and equipment and material staging areas.
 - 1. If construction activities are proposed to occur on the ocean shore (westward of Statutory Vegetation Line or Line of Established Upland Vegetation) please provide specific details on those activities. Drawings including plan views and cross sections for any grading or shoreline manipulation required to create and restore construction access routes or staging areas. These should include pre-construction, during construction, and post construction (site restoration) conditions as well as information identified in application. Be sure to include jurisdictional boundaries (Statutory Vegetation Line or Line of Established Upland Vegetation, and High Tide Line).
- v. Staging of materials should occur in upland areas if possible. If staging will occur within the Ocean Shores (westward of Statutory Vegetation Line or Line of Upland Vegetation) please identify:
 - 1. Description of the need for staging on the beach and why upland staging is not possible. Describe how the proposal minimizes impacts to the beach and the public.
 - 2. Volumes and types of materials to be staged or used in temporary construction. This includes new material hauled in and staging of existing materials.
 - 3. Proposed location of material staging, haul routes, frequency of hauling.
 - 4. Proposed location for signage and exclusion fencing for public safety.
 - 5. Site restoration following construction.
- c. The application is missing some of the measures to minimize the impacts of the project. Please identify the best practices, construction methods and techniques, and design considerations that will be used to minimize impacts from all aspects of the project and construction not just the final built structure. Per rule, the topics that need to be covered include:
 - i. Per OAR736-020-00010(5) “Public Costs — There are no reasonable special measures which might reduce or eliminate significant public costs. Prior to submission of the application, the applicant shall consider alternatives such as nonstructural solutions, provision for ultimate removal responsibility for structures when no longer needed, reclamation of excavation pits, mitigation of project damages to public interests, or a time limit on project life to allow for changes in public interest.”
 - 1. This was addressed in the Schlicker report for the revetment but not for construction activities.
 - ii. Per OAR 736-020-0015 “Scenic Standards- Projects on the ocean shore shall be designed to minimize damage to the scenic attraction of the ocean shore area.” This includes natural features, vegetation, views, and blending in with existing scenery.
 - 1. This section was addressed by the Schlicker report.

- iii. Per OAR 736-020-0020 “(1) Recreation Use — The project shall not be a detriment to public recreation use opportunities within the ocean shore area”.
 - 1. This was addressed in the Schlicker report for the revetment but not for construction activities.
- iv. Per OAR 736-020-0020 “(2) Recreation Access — The project shall avoid blocking off or obstructing public access routes within the ocean shore area”.
 - 1. This was addressed in the Schlicker report for the revetment but not for construction activities.
- v. 736-020-0025 “Safety Standards – The project shall be designed to avoid or minimize safety hazards to the public and shoreline properties.”
 - 1. This was addressed in the Schlicker report for the revetment but not for construction activities.
- vi. 736-020-0025 “(1) Structural Safety — The project shall not be a safety hazard to the public due to inadequate structural foundations, lack of bank stability, or the use of weak materials subject to rapid ocean damage.”
 - 1. This was addressed in the Schlicker report.
- vii. 736-020-0025 (2) “Obstructional Hazards — The project shall minimize obstructions to pedestrians or vehicles going onto or along the ocean shore area.”
 - 1. This was addressed in the Schlicker report for the revetment but not for construction activities.
 - 2. Please identify techniques used to maintain north south travel and access to the beach during construction, isolate work areas from public access, and ensure hauling operations do not endanger the public. Including such things as proposed signage, spotters, and exclusion fencing.
 - 3. Will pathway steps identified in figure 8 of the Schlicker report be installed at the existing public ROW to incorporate improved access? Even if not currently used for access this could provide a future opportunity for public access, please explain.
- viii. 736-020-0025 (3) “Neighboring Properties — The project shall be designed to avoid or minimize ocean erosion or safety problems for neighboring properties.”
 - 1. This was addressed in the Schlicker report for the revetment but not for construction activities.
- ix. “736-020-0025 (4) Property Protection — Beachfront property protection projects shall be designed to accomplish a reasonable degree of increased safety for the on-shore property to be protected.”
 - 1. This was addressed in the Schlicker report.

5. Section 5

- a. The source of armor stone states “not yet determined”. Is there is a likely or known source? If so, you may want to identify that.
- b. Please identify the source of sand for top dressing of rip rap for planting. If using sand excavated from the toe please identify the volume necessary to top dress compared to the volume available from toe excavation. Please describe the source for any remaining material, this should be from an upland source unless justified. If beach scalping is proposed you must include information on the location, timing and volumes of material requested. Note, beach scalping or work below the High Tide Line may require a permit from the USACE as described in comments for section 8.

6. Section 6.

- a. While the Schlicker report includes an alternatives analysis comparing structural to non-structural methods it does not evaluate the alternative for relocation of the structure. This is a lot specific analysis. Please identify the options to relocate the structure and justify why relocation is not a viable alternative.

- If cost is used as justification, an estimate from a contractor must be included.
- b. OAR 736-020-0003(2(b)) "If for an ocean front protective structure, shall be accompanied by an analysis of hazard avoidance alternatives, including relocation of existing buildings or other infrastructure, or increased setbacks for new buildings or infrastructure. Such analysis shall describe why hazard avoidance alternatives are not feasible, or if tried, why they were not successful. Relevant factors may include topographic limitations, limits of area for relocation, or cost. If the cost of moving a building or infrastructure is listed as a factor which makes hazard avoidance unfeasible, then the application shall include cost estimate(s) from licensed contractors specializing in building relocation"
7. Section 7.
 - a. The Schlicker report completes this section, make sure to attach to all applications.
 8. Section 8 - Per OAR736-020-0003(12) the application must include appropriate information regarding other necessary permits.
 - a. The no additional permits box is checked, please see below and verify that no permit from the USACE would be needed for construction activities.
 - b. Any temporary or permanent work below the statutorily defined High Tide Line (as identified at <https://www.nwp.usace.army.mil/Missions/Regulatory/Jurisdiction/>) may require authorization through the US Army Corps of Engineers. Please contact the USACE (<https://www.nwp.usace.army.mil/Missions/Regulatory/Contact/>) to determine your permitting options and determine if work will occur below HTL. Note: this is a regulatory defined term, working above the wet sand or daily high tide mark may still be below the High Tide Line.
 - c. Per OAR 736-020-00010 (3) "Public Laws — The applicant shall comply with federal, state, and local laws and regulations affecting the project." Applicants must either avoid work in jurisdictional areas or secure the necessary permits. Identifying these early can help with finalizing design and implementation planning.
 9. Section 9.
 - a. This is complete.
 10. Section 10.
 - a. Reminder any additional drawings need to include the elements identified in section 10 and be project specific.
 11. Section 11
 - a. According to our records your application fee of \$4,273.75 has not been received. This may change based on response to 4b above. While payment can be made at any time, it is preferred to receive payment once the application is determined complete.
 12. Planning Department Affidavit
 - a. This is complete, please include the 2/3/22 version with your resubmittal package.

Oregon Parks & Recreation Department
Ocean Shore Permit Application

OPRD Permit Application Amendment

DESUYLVIA - 4155 LINCOLN AVE.



Project #Y214560

June 2, 2022

**To: Mr. Richard Grant
P.O. Box 139
Powell Butte, Oregon 97753**

**Subject: Response to Oregon Parks and Recreation Department's
April 20, 2022 Letter
RE: Application for Shoreline Protective Structure - #3006 Incomplete
Terry and Janice DeSylvia
PO Box 806
Depoe Bay, Oregon 97342**

Dear Mr. Grant:

H.G. Schlicker and Associates, Inc. (HGSA) is providing this letter to address issues identified in Oregon Parks and Recreation Department's (OPRD) April 20, 2022 staff review letter in reference to the *Application for Shoreline Protective Structure - #3006 Incomplete* for Tax Lot 14800, Map 8-11-21CD; 4755 Lincoln Avenue, owned by Mr. and Mrs. DeSylvia. Five tax-lot-specific letters were issued by OPRD for each of the lots that comprise the subject site detailed in our January 24, 2022, Engineering Geologic Investigation report (HGSA #Y214560). Listed below are items identified in OPRD's letter with our response, referenced to specific parts of HGSA's January 24, 2022 report, which addressed the item topic(s), and our additional analysis/discussion as applicable.

Section 1:

- a) We have updated the brief description section on the permit application form. As noted in OPRD's letter, the previous brief description was acceptable but brief. A more detailed description of the project is provided in our January 24, 2022 report.
- b) The estimated project start and completion dates have been updated. The estimated start date is based on our understanding of the permit processing timeline; however, we anticipate that construction will begin soon after the approval of this permit.

Section 2:

- a) No changes were necessary. It is our understanding that you, Mr. Richard Grant, will serve as the agent for the project and the five OPRD permit applications.

Section 3

- a) Individual permit applications are site-specific for the construction of a shoreline protective structure on one tax lot, as described in the Permit Instructions. The instructions state, "Do not list multiple tax lots in this section, as each individual tax lot requires a separate Ocean Shore Permit Application." If OPRD requests that additional information or permit applications be submitted for other tax lots due to "associated alteration or temporary impacts," we recommend that they provide guidance on which type of permit application form would be appropriate for such a submission.
- b) The "Vacant (unbuilt)" radio button (check box) has been unchecked. A programming issue exists on the fillable PDF form wherein when the radio button in Section 8 for "no additional agency permit required" is checked, the "Vacant" radio button populates. OPRD was notified of this issue in the past, and it has not been corrected yet.

Section 4:

- a) Described as "technically complete" but "currently insufficient."
 - i. Updates have been made on the permit application form. Sections 2 and 4 of our January 24, 2022 report provide additional details regarding the hazards and threats to the property.
 - ii. Details regarding the project justification and need are provided in our January 24, 2022 report.
 - iii. Shoreline erosion at the five lots that comprise the subject site has accelerated recently. Emergency actions were taken to protect three of the four houses at the subject site and mitigate the severe erosion that placed these structures in imminent peril. Based on our observations and analysis of lidar data, rapid erosion since 2009 at Tax Lot 14800 has resulted in shifting the top edge of the bluff approximately 15 feet eastward, as seen in Figure 5 of our report. Revetment construction, as permitted through the OPRD Shoreline Protection Structure application process, is preventative in nature in order to protect threatened structures before they are in imminent peril and thus require emergency actions. Details of the conditions justifying the need for a revetment are provided in our January 24, 2022 report.
 - iv. As noted in OPRD's letter, referencing our report for additional details is acceptable.
- b) Potential short- and long-term impacts on neighboring properties, recreation, scenic, safety and natural resources of the ocean shore are addressed in section 8.1 of our January 24, 2022 report.

- i. All construction and demolition debris will need to be cleared from the beach for disposal. If the property owner would like to incorporate a “pathway” into the revetment to improve access to the beach from their property, we have provided a design that can be incorporated at the time of construction.
- ii. The “approximate location of proposed revetment” shown on Figure 3 is approximate, and the as-built footprint may be slightly different. Based on our observations, the geology at the site will allow the construction to stop along the tax lot lines.
 1. We have attached an updated Figure 3 with rounded corners on the northwest and southwest corners of the proposed revetment. This design feature indicates the wrapping and tapering of the armor stone to a stable configuration where it meets the property boundary; however, as-built conditions may vary.
 2. No changes in the lineal feet of the proposed revetment due to the slight modification to Figure 3.
 3. Based on our site observations, the toe of the existing adjacent revetment north of the project site extends south onto Tax Lot 15100. No work is required on the neighboring properties to construct the proposed revetment and tie it into the toe of the adjacent revetment.
 - a.) It is our understanding that a geologic report is not required for maintenance or repairs to previously permitted shoreline protective structures. Our report does not provide recommendations for maintenance, repairs, or modification to the existing revetment north of the subject site. If the adjacent property owner of the lot north of Tax Lot 15100 would like to perform maintenance or repair their revetment simultaneously as construction of the new revetment takes place, an additional permit may be required.
 - b.) Construction of the proposed revetment will not occur on the adjacent tax lots.
- iii. Each application stands alone and is supported by the information presented in our January 24, 2022 report.
 1. We recommend that the four residential properties and the public walkway/utility access easement be built together. If OPRD chooses not to permit any one part of the project, an alternative design may need to be developed as a condition of the approved permits.
- iv. Construction details and logistics are outside the scope of our Engineering Geologic expertise and are the responsibility of the construction contractor. However, permit conditions for previously approved Ocean Shore Alteration Permits (available to view on OPRD’s webpage; e.g., Permits #2953-21,

- #2934-20, #2968-21) include requirements addressing construction equipment access, construction of roads or temporary access improvements, maintaining safe emergency and pedestrian access, and returning the beach and beach access to pre-existing condition. Previously approved permit applications indicate that construction access related activities are subject to conditions of Equipment Access Permits, as necessary.
- v. Construction details and logistics are outside the scope of our Engineering Geologic expertise and are the responsibility of the construction contractor. However, permit conditions for previously approved Ocean Shore Alteration Permits (available to view on OPRD's webpage; e.g., Permits #2953-21, #2934-20, #2968-21) include requirements addressing construction equipment access, construction of roads or temporary access improvements, maintaining safe emergency and pedestrian access, and returning the beach and beach access to pre-existing condition. Previously approved permit applications indicate that construction access related activities are subject to conditions of Equipment Access Permits, as necessary.
 - c) i.-ix. These sections were discussed in our January 24, 2022 report. However, additional information regarding construction activities is requested by OPRD. Construction details and logistics are outside the scope of our Engineering Geologic expertise and are the responsibility of the construction contractor.
 - vii. (3) The public walkway/utility access easement, referred to as the "public ROW" in OPRD's letter, is five feet wide and occupied by a community stormwater pipe and outlet which will discharge to the proposed revetment. Constructing the revetment to provide public access, based on the design identified in Figure 8 of our report, is not recommended due to water discharge in this location.

Section 5:

- a) There are several upland sources of armor stone that have been approved by HGSA to be used in the construction of revetments. The source is not generally determined prior to the start of construction due to price fluctuations and supply variability. Additionally, HGSA will approve or reject the use of armor stone based on the specifications provided in our report.
- b) Details about the sand source supply or volumes of sand are not required by Section 5 of the permit application. However, typically an adequate supply of sand is excavated from the area of the toe trench to cover the revetment above the wave swash line. Based on survey data, work will occur east of the jurisdictional limits of the US Army Corps of Engineers, and an additional permit will not be required.

Section 6:

- a) Alternatives analysis of non-structural methods, including relocation of the homes, are discussed in Section 8.2 of our January 24, 2022 report.
- b) As discussed in Section 8.2.1 (6) Relocation of the Homes of our report, relocation of the homes is not a viable option due to topographic limitations and limits of area for relocation, which are listed as relevant factors in OAR 736-020-0003(2(b)). Additionally, “relocation of the existing structures at the site would provide little additional protection from bluff erosion, as ocean wave erosion in the subject site vicinity is so severe.”

Section 7:

- a) No changes are necessary. Our report completes this section.

Section 8:

- a) No changes are necessary. Based on survey data and information regarding the jurisdiction of the US Army Corps of Engineers (USACE), no additional permit would be required.
- b) Based on our conversations with the USACE, a permit may be required if work will occur below the High Tide Line or Mean High Water. The highest observed tide (Max Tide) at the nearest NOAA gauging station, Depoe Bay (Station #9435827), was at 11.59 feet (NAVD88). The proposed location of the revetment will be constructed east of this elevation based on the survey completed by Nyhus Surveying Inc. and, therefore not require a permit from USACE.
- c) Based on our understanding of the federal, state and local regulations and past precedent in permitting the construction of Shoreline Protective Structures, the proposed riprap revetment can be completed in a manner in which no additional permits are required.

Section 9:

- a) This section is complete per the April 20, 2022 letter from OPRD.

Section 10:

- a) Project-specific design drawings are provided as Figures 2 through 8 in our January 24, 2022 report.

Section 11:

- a) The application fee of \$4,273.75 will need to be paid to OPRD when submitting the application to begin the 30-day public response period.

Section 12:

- a) This section is complete per the April 20, 2022 letter from OPRD. Please include the previously completed Affidavit with the updated permit application.

This letter intends to complete the Shoreline Protective Structure application for Tax Lot 14800, Map 8-11-21CD; 4755 Lincoln Avenue, owned by Mr. and Mrs. DeSylvia. This letter is our formal response to the issues identified in the April 20, 2022, staff review letter from OPRD regarding the incomplete application submitted.

HGSA has previously assisted property owners with completing the permit applications for numerous approved shoreline protective structures along the Oregon coast. Based on HGSA's experience completing Engineering Geologic Investigations and reports with recommendations and design specifications for the construction of riprap revetments along the Oregon coast, our January 24, 2022 report (HGSA #Y214560) provides adequate justification for the need to construct a shoreline protective structure at the subject site. Additionally, we will provide response letters addressing the specific issues identified for the four other properties that comprise the subject site of our report.

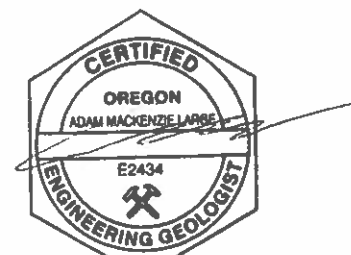
If you have any questions concerning this letter or the site, please contact us.

Respectfully submitted,

H.G. SCHLICKER AND ASSOCIATES, INC.



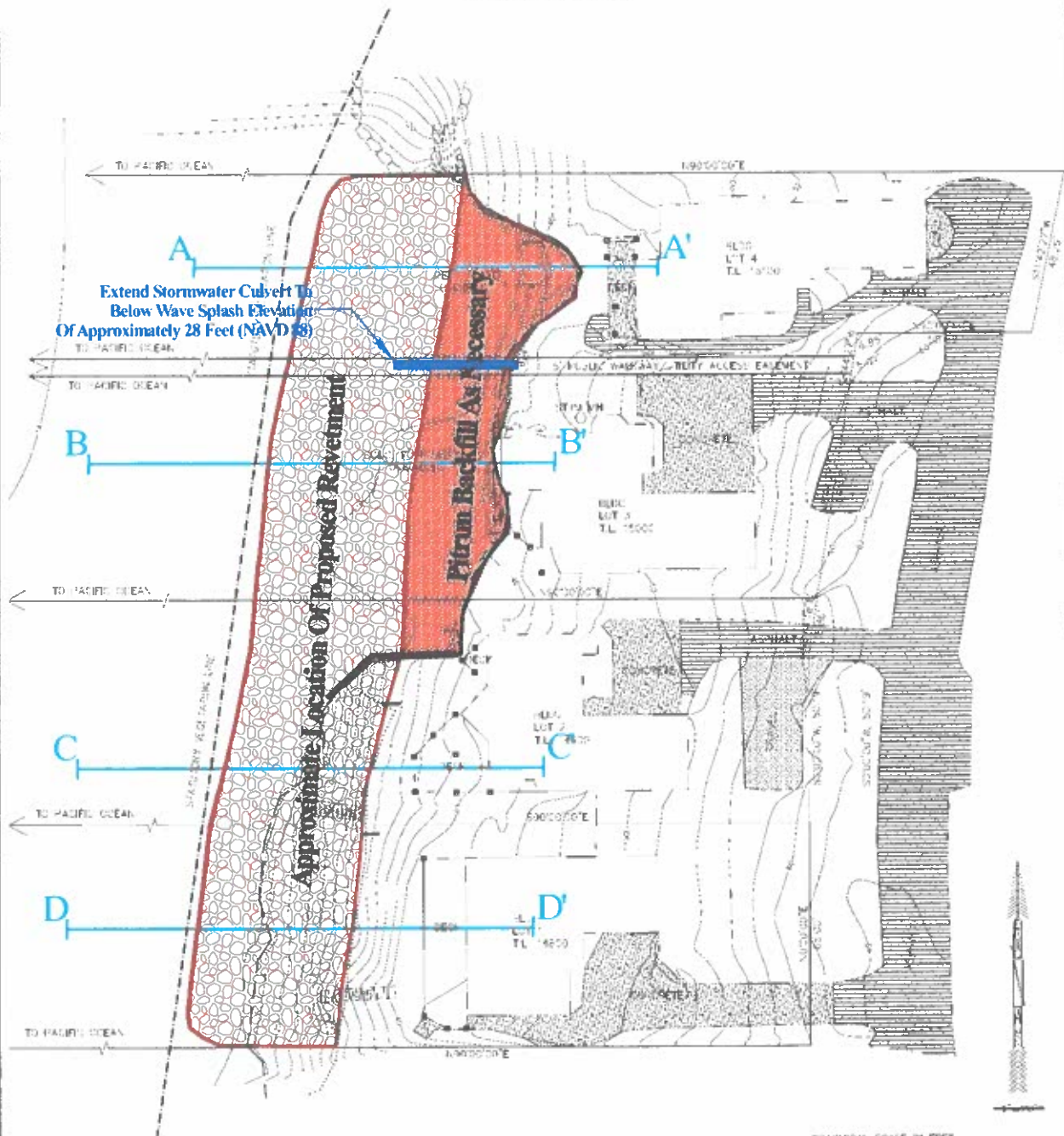
J. Douglas Gless, MSc, RG, CEG, LHG
President/Principal Engineering Geologist
JDG:aml



Adam M. Large, MSc, RG, CEG
Project Engineering Geologist

ATTACHED: Revised Figure 3 – Site Topographic Map With Proposed Revetment Shown

SITE SURVEY OF LOTS 1, 2, 3, & 4, BLOCK 3, "PACIFIC PANORAMA", PREPARED FOR H.G. SCHLICHER & ASSOCIATES, INC.
 LOCATED IN THE SW 1/4, SEC. 21, T8S, R11W, W.M., IN LINCOLN COUNTY, OREGON
 (B-11-21-CB T.L. 14800, 14900, 15000, 15100)
 SURVEYED ON AUGUST 23, 2021



Extend Stormwater Culvert To Below Wave Splash Elevation Of Approximately 28 Feet (NAVD 83)

Pitram Rockfill As Necessary

Approximate Location Of Proposed Revetment

LEGEND
 ■ NECK POINT
 — MAIN LINE
 - - - - - HEARTRILE
 & D CULVERT
 - - - - - TOP OF BLUFF/NEAR VEGETATION LINE
 - - - - - TIE OF BLUFF
 - - - - - EXISTING REVELMENT

NOTE: ELEVATIONS SHOWN ARE NAVD83(2011) BASED ON GPS OBSERVATIONS ON THE DATE TAKEN WITH A LEICA CHS4 GNSS RECEIVER

A A' = Approximate trend of profile line

— Approximate location of proposed revetment

— Area of quarry-run rock for bluff stabilization and backing revetment.

NYHUS SURVEYING INC.
 GARY NYHUS/STEVEN NYHUS/ERIC NYHUS
 PROFESSIONAL LAND SURVEYOR
 P.O. BOX 206
 740 E. THISSELL RD. TIDEWATER, ORE 97390
 (541) 528-3234

CHECKED BY: JDN
 DRAWN BY: EDN
 DATE: 9-1-2021
 SCALE: 1"=30'
 PROJECT: 21194

Revised: 05/26/2022

Date: 01/24/2022

Scale: 1"=30'

Project #Y214560

Prepared by: AML

Approved by: JDG

Site Topographic Map with Proposed Revetment Shown
 Tax Lots 14800, 14900, 15000, Public Way/Utility Access Easement, and 15100,
 Map B-11-21CD; 4735, 4805, 4815 and 4825 Lincoln Avenue, Lincoln County, Oregon

H.G. Schlicker & Associates, Inc.

Figure 3

Oregon Parks & Recreation Department
Ocean Shore Permit Application

Engineering Geological Investigation

H.G. Schlicker & Associates Inc.

January 24, 2022

DESYLVIA - 4755 LINCOLN AVE.

**Engineering Geologic Investigation,
Recommendations for Oceanfront Protection,
and Applications for a Shoreline Protection Structure
Tax Lots 14800, 14900, 15000,
Public Walkway/Utility Access Easement
and 15100, Map 8-11-21CD; Lincoln County, Oregon**

Prepared for:

**Mr. and Mrs. Desylvia – 4755 Lincoln Avenue
Mr. and Mrs. Kain – 4805 Lincoln Avenue
Mr. and Mrs. Grant – 4815 Lincoln Avenue
Mr. Roy Kinion, Lincoln County Public Works Director – Public Walkway/Utility Access Easement
Mr. and Mrs. Tanabe – 4825 Lincoln Avenue**

In Care Of:

**Mr. Richard Grant
P.O. Box 139
Powell Butte, Oregon 97753**

Project #Y214560

January 24, 2022



Project #Y214560

January 24, 2022

**To: Mr. Richard Grant
P.O. Box 139
Powell Butte, Oregon 97753**

**Subject: Engineering Geologic Investigation,
Recommendations for Oceanfront Protection,
and Applications for a Shoreline Protection Structure
Tax Lots 14800, 14900, 15000, Public Walkway/Utility Access Easement
and 15100, Map 8-11-21CD; Lincoln County, Oregon**

Dear Mr. Grant:

The accompanying report presents the results of our engineering geologic investigation of the above subject site, recommendations for construction of a riprap revetment, and the Ocean Shore Permit Applications for a Shoreline Protection Structure. You will need to submit a copy of these applications to the Lincoln County Planning Department for their review and have them complete page 9 of 9 of the Shoreline Protection Structure applications titled "City/County Department Affidavit." Once Lincoln County has completed the forms and determined that the properties meet Goal 18 eligibility requirements and that the project is consistent with the local comprehensive plan and zoning regulations, you will need to submit this report and the completed County Affidavits along with the required funds for the Permit Application Fees. Oregon Parks and Recreation Department will require a contractor's estimate, so you must have a contractor review this report and provide you with a written estimate.

After you have reviewed our report, we would be pleased to discuss the report and answer any questions you might have.

This opportunity to be of service is sincerely appreciated. If we can be of any further assistance, please contact us.

H.G. SCHLICKE & ASSOCIATES, INC.



J. Douglas Gless, MSc, RG, CEG, LHG
President/Principal Engineering Geologist
JDG:aml

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Figure 8 – Revetment Detail – Pathway Detail

APPENDICES

Appendix A – Site Photographs

Appendix B – Oregon Parks and Recreation Department Ocean Shore Permit Application Forms (Including Application Fee Form, page 8 of 9, Planning Department Affidavit, page 9 of 9)



Project #Y214560

January 24, 2022

**To: Mr. Richard Grant
P.O. Box 139
Powell Butte, Oregon 97753**

**Subject: Engineering Geologic Investigation,
Recommendations for Oceanfront Protection,
and Applications for a Shoreline Protection Structure
Tax Lots 14800, 14900, 15000, Public Walkway/Utility Access Easement
and 15100, Map 8-11-21CD; Lincoln County, Oregon**

Dear Mr. Grant:

1.0 Introduction

At your request and authorization, representatives of H.G. Schlicker and Associates, Inc. (HGSA) visited the subject site (Figures 1 and 2; Appendix A) on August 17, September 16, and October 4, 2021 to complete an engineering geologic investigation for the proposed shoreline protection. We completed this investigation to determine whether the site needs and would benefit from the construction of shoreline protection, in this specific case, an oceanfront riprap revetment at the site. We have also visited and observed this stretch of the beach over the last few decades while completing other engineering geologic investigations, including for the construction of nearby revetments. Based on this investigation and previous experience and observations along this stretch of beach, we have determined that the site would benefit from a protective structure. We have provided designs and specifications for a riprap revetment to be constructed to mitigate additional erosion from wave attack at the site.

This report addresses the engineering geology at the subject site with respect to the construction of a revetment for shoreline protection. The scope of our work consisted of site observations and measurements, a topographic survey, construction of slope profile, a limited review of the geologic literature, interpretation of topographic maps and aerial photographs, preparation of this report of our findings, conclusions and recommendations, and preparation of Oregon Parks and Recreation Department (OPRD) Ocean Shore Permit Application Forms (Appendix B).

2.0 Site Description

The subject site is located on a marine terrace adjacent to an approximately 20 feet high oceanfront bluff in the Lincoln Beach area south of Lincoln City, Oregon (Figure 1). The site consists of four generally rectangular developed tax lots, Tax Lots 14800, 14900, 15000 and 15100 (4755, 4805, 4815 and 4825 Lincoln Avenue, respectively), and a 5 feet wide public walkway/utility easement, that extends from Lincoln Avenue west onto the beach (Figures 2 and 3). Existing homes are located on the eastern part of the developed tax lots and were built between 1990 and 2002, according to Lincoln County Property Records.

According to the Oregon Coastal Atlas Ocean Shores webpage (accessed October 2021), the subject properties are not eligible for protection in the Goal 18 eligibility inventory for a beachfront protective structure. However, it is our understanding that on September 15, 2021, the Lincoln County Board of Commissioners adopted Ordinance #522, which amended the Lincoln County Comprehensive Plan to except the subject properties (Tax Lots 14800, 14900, 15000 and 15100) from Statewide Planning Goal 18, implementation requirement 5, thereby making the sites eligible for protection due to the exception. It is our understanding that the ordinance was not appealed and is final.

The site is bounded to its west by the Pacific Ocean, to its north by the Holiday Hills Trailer Resort (Tax Lot 7001, Map 08-11-21CA), to its south by a developed lot (Tax Lot 204, Map 08-11-21CD; 4745 Lincoln Avenue), and to its east by Lincoln Avenue which provides access.

Vegetation at the site generally consists of salal, European beachgrass, landscape plants and shore pine trees. The statutory vegetation line (ORS 390.770) lies approximately 50 to 85 feet west of the actual vegetation line. Typically, along this stretch of the beach, the actual vegetation line is located at an elevation of approximately 33 feet (NAVD 88) (Figure 3).

The bluff at the site is approximately 20 feet high and is primarily composed of sandy silt, silty sand and weakly cemented sand (Appendix A). Based on our review of aerial photographs, lidar data, a recent site topographic map (Figure 3), and our site observations and measurements, more than approximately 40 feet of erosion has occurred at the site fronting Tax Lots 14900, 15000 and 15100 since 2009 (Figures 4 and 5); this is a rapid increase in the recession of the bluff which had been relatively stable in recent decades. Much of this erosion appears to have occurred after an episodic severe El Niño event in 2016, and associated high tide, surge, and storm conditions removed the more erosion-resistant sandy silt and silty sand that overlies the weakly cemented sand fronting the northern portion of Tax Lot 14900 and Tax Lots 15000 and 15100. The more erosion-resistant sandy silt and silty sand are still present on the bluff slope fronting much of Tax Lots 14800 and 14900; however, recent erosion has removed

much of the slope's toe, exposing the underlying weakly cemented sand to ocean wave attack (Appendix A). We anticipate the erosion rate of the bluff fronting Tax Lots 14800 and 14900 will accelerate as the more erosion-resistant sandy silt and silty sand is entirely eroded by wave attack.

The beach in the site area is very dynamic and can experience substantial changes in the beach sand elevation. The occurrence of rip currents and their resultant embayments that allow larger waves to run further inshore are common in this area and can significantly contribute to rapid erosion of the bluff. We understand that the combination of rip currents, king tides and a large swell contributed to high water levels and waves that were able to strip sand from the beach and directly attack the base of the bluff at the subject site.

During our August 17, 2021 site visit, we measured an approximate minimum distance of 15 feet from the bluff edge to the house foundation at Tax Lot 14800. Over time, the bluff slope fronting Tax Lot 14800 has been eroded, undermining the foundations for the wooden beach access stairs leading down the bluff slope to the beach. Google Earth imagery indicates that between August 2016 and July 2019, a significant length of the stairway was removed, and at the time of our site visits, the end of the stairway was unsupported and elevated approximately 4 feet above the bluff slope (Appendix A). At Tax Lot 14900, we measured an approximate minimum distance of 7 feet from the bluff edge to the house foundation. The bluff slope fronting Tax Lot 14900 has also been eroded over time, undermining the foundations for the concrete beach access stairs leading down the bluff slope to the beach (Appendix A). At Tax Lot 15000, the house foundation had been undermined by the recent severe erosion, and new pile had been installed to support the overhanging structure (Appendix A). We understand that the pile will be reinforced before the construction of a revetment fronting Tax Lot 15000. At Tax Lot 15100, we measured an approximate minimum distance of 15 feet from the upper bluff edge to the house foundation. The recent severe erosion removed a significant amount of material from the base of the bluff fronting Tax Lot 15100, resulting in an overhanging portion of the bluff face approximately 10 feet deep (Appendix A; Figures 3 and 4).

The bluff is actively and continuously eroding, as shown in the attached photographs (Appendix A). We understand that an emergency permit from Oregon Parks and Recreation Department (OPRD) has been approved, and construction of an emergency shorefront protective structure at the base of the bluff has begun (Appendix A). During our October 4, 2021 site visit, quarry-run rock had been placed at the base of the bluff fronting Tax Lots 15000 and 15100 to begin construction of the emergency revetment, protect the base of the bluff from additional erosion and fill the overhanging area of the bluff fronting Tax Lot 15100 (Appendix A).

In summary, the bluff on the western part of the site needs oceanfront protection to protect the houses. The proposed project is to construct a riprap revetment to protect the bluff from further recession (Figures 3 through 8).

3.0 Geology

The site lies in an area mapped as Quaternary marine terrace deposits, underlain at depth by the lower Miocene Astoria Formation (Schlicker et al., 1973; Priest and Allan, 2004). The marine terrace deposits consist of semi-consolidated, fine- to medium-grained, uplifted beach sand commonly overlain by unconsolidated, fine-grained stabilized dune deposits. The uplifted marine terrace sediments are typically high-energy nearshore marine deposits capped by beach sand (Kelsey et al., 1996). Also mapped overlying the marine terrace deposits at the site is Pleistocene to Holocene colluvium, consisting of partially consolidated debris flow deposits with local interbeds of alluvium and paleosol (Priest and Allan, 2004).

In the area of the site, the marine terrace deposits are locally underlain by the lower Miocene Astoria Formation. The Astoria Formation is mapped as the primary geologic unit southeast of the site and consists of massive to thin-bedded, very fine- to medium-grained micaceous and carbonaceous arkosic sandstone and siltstone (Schlicker et al., 1973). Locally, the Astoria Formation is below beach elevation.

At the subject site, the bluff is generally composed of weakly cemented sand overlain by sandy silt and silty sand with loose organic-rich silt and fill soils capping the bluff. Sand exposed on the beach in the area of the site is fine to coarse-grained.

3.1 Geologic Structures

Structural deformation and faulting along the Oregon Coast are dominated by the Cascadia Subduction Zone (CSZ), a convergent plate boundary extending approximately 680 miles from northern California to northern Vancouver Island. This convergent plate boundary is defined by the subduction of the Juan de Fuca plate beneath the North America Plate and forms an offshore north-south trench approximately 40 to 60 miles west of the Oregon coast shoreline. A resulting deformation front consisting of north-south oriented reverse faults is present along the western edge of an accretionary wedge east of the trench, and a zone of margin-oblique folding and faulting extends from the trench to the Oregon Coast (Geomatrix, 1995).

An inferred (concealed) fault which trends in a northwesterly direction has been mapped approximately 1 mile north of the subject site (Schlicker et al., 1973; Priest and Allan, 2004). This fault is believed to be a normal fault with its upthrown side to the southwest. The fault cuts Tertiary units with no indications of recent movement.

The nearest mapped potentially active faults are the Yaquina Head Fault, located approximately 13 miles south of the site, and the Yaquina Bay Fault, located approximately 16 miles south. The Yaquina Head Fault is an east-trending oblique fault with left-lateral strike-slip and either contractional or extensional dip-slip offset components (Personius et al., 2003). It offsets the 80,000-year-old Newport marine terrace in the area of the site by approximately 5 feet, indicating a relatively low rate of slip, if still active (Schlicker et al., 1973; Personius et al., 2003). The Yaquina Bay Fault is a generally east-northeast trending oblique fault that also has left-lateral strike-slip and either contractional or extensional dip-slip offset components (Personius et al., 2003). This fault is believed to extend offshore for approximately 7 to 8 miles and may be a structurally controlling feature for the mouth of Yaquina Bay (Goldfinger et al., 1996; Geomatrix, 1995). A 125,000-year-old platform at Yaquina Bay has been displaced approximately 223 feet up-on-the-north by the Yaquina Bay Fault. This fault has the largest component of vertical slip (as much as 2 feet per 1,000 years) of any active fault in coastal Oregon or Washington (Geomatrix, 1995). Although the age for the Yaquina Bay Fault's last movement is unknown, the fault also offsets 80,000-year-old marine terrace sediments.

4.0 Slope Stability, Erosion, and Current Site Conditions

The subject site lies along an approximately 20 feet high oceanfront bluff slope that is actively eroding. The beach at the site is very dynamic with a gently sloping summertime profile that steepens westward and a steep, narrow wintertime profile; sand elevations along the beach in the area of the site appear to vary substantially, spatially and temporally. Rip current embayments are common along this part of the Oregon coast, and storm erosion of bluffs can be severe and rapid, as observed recently at the site.

Along this part of Oregon's coast, Priest (1994) and Priest et al. (1994) have determined the average annual erosion rate for bluffs not protected by oceanfront protection as 0.62 ± 0.76 feet per year. This erosion rate was calculated by measuring the distance from existing structures in the area to the bluff and compared to distances measured on a 1939 or 1967 vertical aerial photograph (Priest et al., 1994).

Based on mapping completed by Priest and Allan (2004), the beach and bluff at the subject site lie in an area mapped as the Active Erosion Hazard Zone. The area within approximately 20 feet of the bluff edge lies in the High-Risk Coastal Erosion Hazard Zone. The area between approximately 20 and 60 feet east of the upper bluff lies in the Moderate-Risk Coastal Erosion Hazard Zone, and the area between approximately 60 and 100 feet east of the upper bluff lies in the Low-Risk Coastal Erosion Hazard Zone. Coastal erosion hazard zone definitions and methodology are provided below.

The methodology provided by Priest and Allan (2004) defines four coastal erosion hazard zones for bluffs of Lincoln County, Oregon as follows:

“The basic techniques used here are modified from Gless and others (1998), Komar and others (1999), and Allan and Priest (2001). The zones are as follows:

1) Active hazard zone: The zone of currently active mass movement, slope wash, and wave erosion.

2) The other three zones define high-, moderate-, and low-risk scenarios for expansion of the active hazard zone by bluff top retreat. Similar to the dune-backed shorelines, the three hazard zones depict decreasing levels of risk that they will become active in the future. These hazard zone boundaries are mapped as follows:

a. High-risk hazard zone: The boundary of the high-risk hazard zone will represent a best case for erosion. It will be assumed that erosion proceeds gradually at a mean erosion rate for 60 years, maintaining a slope at the angle of repose for talus of the bluff materials.

b. Moderate-risk hazard zone: The boundary of the moderate-risk hazard zone will be drawn at the mean distance between the high- and low-risk hazard zone boundaries.

c. Low-risk hazard zone: The low-risk hazard zone boundary represents a “worst case” for bluff erosion. The worst case is for a bluff to erode gradually at a maximum erosion rate for 100 years, maintaining its slope at the angle of repose for talus of the bluff materials. The bluff will then be assumed to suffer a maximum slope failure (slough or landslide). For bluffs composed of poorly consolidated or unconsolidated sand, another worst-case scenario will be mapped that assumes that the bluff face will reach a 2:1 slope as rain washes over it and sand creeps downward under the forces of gravity. For these sand bluffs, whichever method produces the most retreat will be adopted.” (Priest and Allan, 2004).

It should be noted that mapping done for the 2004 study was intended for regional planning use, not for site-specific hazard identification. Based on our observations, substantial bluff erosion has occurred since the 2004 mapping, and the mapped zones do not fully reflect the current erosive processes and risk at the site.

The subject site lies in an area mapped as experiencing critical erosion of marine terraces and sediments, and in an area of high groundwater table (Schlicker et al., 1973). The site is also mapped in an area of moderate to high landslide susceptibility, based on the DOGAMI methodology (Burns, Mickelson, and Madin, 2016).

Based on our observations, the houses on Tax Lots 14900, 15000 and 15100 are at immediate risk of damage, and the house on Tax Lot 14900 is at risk of damage in the near future due to bluff recession related to oceanfront erosion and landsliding.

5.0 Regional Seismic Hazards

Abundant evidence indicates that a series of geologically recent large earthquakes related to the Cascadia Subduction Zone have occurred along the coastline of the Pacific Northwest. Evidence suggests that more than 40 great earthquakes of magnitude 8 and larger have struck western Oregon during the last 10,000 years. The calculated odds that a Cascadia earthquake will occur in the next 50 years range from 7–15 percent for a great earthquake affecting the entire Pacific Northwest, to about a 37 percent chance that the southern end of the Cascadia Subduction Zone will produce a major earthquake in the next 50 years (OSSPAC, 2013; OSU News and Research Communications, 2010; Goldfinger et al., 2012). Evidence suggests the last major earthquake occurred on January 26, 1700, and may have been magnitude 9.0 (Clague et al., 2000).

There is now increasing recognition that great earthquakes do not necessarily result in a complete rupture along the full 1,200 km fault length of the Cascadia subduction zone, such that partial ruptures of the plate boundary have occurred in the paleo-records due to smaller earthquakes with moment magnitudes (M_w) < 9 (Witter et al., 2003; Kelsey et al., 2005). These partial segment ruptures appear to occur more frequently on the southern Oregon coast, determined from paleotsunami studies. Furthermore, the records have documented local tsunamis from Cascadia earthquakes recur in clusters (~250–400 years) followed by gaps of 700–1,300 years, with the highest tsunamis associated with earthquakes occurring at the beginning and end of a cluster (Allan et al., 2015).

These major earthquake events were accompanied by widespread subsidence of a few centimeters to 1–2 meters (Leonard et al., 2004). Tsunamis appear to have been associated with many of these earthquakes. In addition, settlement, liquefaction, and landsliding of some earth materials are believed to have been commonly associated with these seismic events.

Other earthquakes related to shallow crustal movements or earthquakes related to the Juan de Fuca plate have the potential to generate magnitude 6.0 to 7.5 earthquakes. The recurrence interval for these types of earthquakes is difficult to determine from present data, but estimates of 100 to 200 years have been given in the literature (Rogers et al., 1996).

The subject site is mapped in an area of severe expected earthquake shaking during an earthquake in a 500-year period (DOGAMI Oregon HazVu website, accessed October 2021). “Severe” is the second-highest level of a six-level gradation from “Light” to “Violent” in this mapping system.

6.0 Flooding Hazards

Based on the 2019 Flood Insurance Rate Map (FIRM, Panel #41041C0237E), the western portion of the site, including the western portion of the homes on Tax Lots 14800, 14900 and 15000, lies in an area rated as Zone VE (EL 45 Feet), which is defined as a special flood hazard area with base flood elevation (BFE) determined. Also known as coastal high hazard areas, Zone VE flood zones are subject to the 1% annual chance (base) flood limits and wave effects 3 feet or greater. The eastern portion of the site, including the eastern half of the existing homes, lies in an area rated as Zone X, which is defined as determined to be outside the 0.2% annual chance floodplain.

Based on the Oregon Department of Geology and Mineral Industries mapping, the house lies within the tsunami inundation zone resulting from an approximately 8.9 or larger magnitude Cascadia Subduction Zone (CSZ) earthquake (DOGAMI, 2013). The 2013 DOGAMI mapping is based upon five computer-modeled scenarios for shoreline tsunami inundation caused by potential CSZ earthquake events ranging in magnitude from approximately 8.7 to 9.1. The January 1700 earthquake (discussed in Section 5.0 above) has been rated as an approximate 8.9 magnitude event in DOGAMI's methodology. More distant earthquake source zones can also generate tsunamis.

7.0 Climate Change

According to most recent scientific studies, the Earth's climate is changing due to human activities altering the atmosphere's chemical composition through the buildup of greenhouse gases, primarily carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons (EPA, 1998). Although there are uncertainties about exactly how the Earth's climate will respond to enhanced concentrations of greenhouse gases, scientific observations indicate that detectable changes are underway (EPA, 1998; Church and White, 2006). Global sea-level rise, caused by melting polar ice caps and ocean thermal expansion, could lead to flooding of low-lying coastal property, loss of coastal wetlands, erosion of beaches and bluffs, and saltwater contamination of fresh groundwater. It can also lead to increased rainfall which can result in an increase in landslide occurrence. Global climate change and the resultant sea-level rise will likely impact the subject site through accelerated coastal erosion and more frequent and severe flooding.

8.0 Conclusions and Recommendations

To mitigate future ocean wave erosion and support the oversteepened bluff, we recommend constructing a riprap revetment, as detailed in Figures 3 through 8. The lateral extent of the top of the revetment should extend from the northern property boundary of Tax Lot 15100 to the southern property boundary of Tax Lot 14800, as indicated on Figure 3. The top of the armor stone should be placed up to a minimum elevation of approximately 33 feet (NAVD

88), which generally corresponds to the elevation of the actual vegetation line at the time of completion of the topographic survey of the subject site (Figures 3 through 8). The bluff area fronting Tax Lots 14900, 15000, 15100 and the public walkway/utility access easement where severe erosion has created an embayment in the bluff should be filled with compacted quarry-run rock to better align the revetment, stabilize the steeply eroded bluff slope, and provide a protective buffer area in front of the structures located on Tax Lots 15000 and 15100 (Figures 3 through 8). Compacted quarry-run backing rock should slope no steeper than 1.5H:1V, and an approximately 10 feet wide flat protective buffer area should be constructed between the quarry-run slope break and the existing structures on Tax Lots 15000 and 15100. Please note that quarry-run rock was being placed at the site at the time of our investigation and volume estimates for quarry-run backing rock are not included in the revetment material volume estimates provided in the attached permit applications (Appendix B). The new revetment should be tied into the existing revetment north of the site and be tapered down to the bluff slope south of the site. Stormwater drains should be extended to discharge no farther east than the top of the revetment.

We recommend that the revetment be embedded through the beach sand a minimum of 5 feet into dense marine terrace sand and below a maximum elevation of 6 feet (NAVD 88). The final revetment embedment depth should be as deep as “flowing/heaving” sand conditions allow at low tide. Toe trench embedment depths must be approved by a representative of HGSA at the time of construction.

Non-woven filter fabric (Mirafi® 1100N or equivalent), quarry-run bedding rock, and filter rock (aka “chunky rock”) should be placed between the riprap armor and the native soils and quarry-run fill as shown on Figures 6 through 8. The non-woven filter fabric should be installed from the top of the slope to the bottom of the toe trench and wrap the bottommost armor stone placed in the trench. An approximately 6-inch-thick layer of quarry-run bedding rock, consisting of 4 inch minus rock with minimal fines, should be placed on the filter fabric to prevent the more angular filter rock from puncturing the filter fabric. An approximately 18-inch-thick layer of filter rock, consisting of ODOT Class 200 standard riprap, should be placed between the quarry-run bedding rock and the riprap armor to dissipate wave energy and provide bedding material for armor stones.

Riprap (armor stone) should consist of hard, durable, angular, non-vesicular basalt rock from an upland source, approximately 3 to 7 feet diameter, and weighing at least 165 pounds per cubic foot. Armor stones should be individually placed with “3-point bearing” (no wobbling) on adjacent rock (Racin et al., 2000). Two layers of riprap should be installed. The riprap revetment should slope at 2H:1V. The top of the armor stone should be at approximately 33 feet elevation (NAVD 88) minimum. Constructing the top of the revetment to a higher elevation may better mitigate overtopping. Construction of a pedestrian access path formed using the riprap

armor stone should be acceptable, provided it is based on HGSA's design (Figure 8). Additional design details are provided on Figures 3 through 8.

Following revetment construction, the revetment and quarry-run fill should be covered with a minimum 2-foot-thick layer of sand above the severe wave splash elevation (approximately 28 feet elevation (NAVD 88)), being sure to infill all interstitial space between riprap boulders (Figures 6 and 7). The sand should then be planted with beach grass and fertilized. To aid vegetation establishment, beach grass planting should occur in the spring or fall and not during the drier summer months. The revetment will need to be maintained and repaired as necessary.

Construction of a riprap revetment along the entire length of the subject area will provide the greatest protection for the properties, increase the revetments' longevity, and reduce long-term costs. If the riprap revetments are not maintained and repaired as needed, we anticipate that ocean wave attack will render the revetments less effective in providing adequate protection for the houses.

Based on conversations with Lincoln County Public Works, it is our understanding that it will be the responsibility of the property owners of Tax Lots 15000 and 15100 to maintain the portion of the riprap revetment and the stormwater culvert to ensure continued safety to the public walkway/utility access easement. This is a matter to be discussed between the homeowners and the County.

8.1 Possible Adverse Impacts

The following discusses the possible adverse impacts as the result of the proposed new riprap revetment.

8.1.1 Sand Source, Supply, and Movement

Sand supplies along the Oregon coast are derived primarily from two sources, (1) from erosion of bluffs, headlands and dunes, and (2) to a lesser extent from sediments carried by streams and rivers that discharge to coastal areas.

Although the proposed revetment would prevent erosion along approximately 255 feet of bluff length and an average height above beach elevation of approximately 20 feet, we believe that the loss of sand to the beach in this littoral cell as a result of this revetment will be minimal during the life of the riprap structure.

Assuming an average annual erosion rate of 0.62 feet per year and an anticipated life of the revetment of 60 years, we estimate that the maximum total loss of sediment supply as a result of the revetment will be approximately 7,026 cubic yards in 60

years or an annual average loss of 117 cubic yards of material. The estimated total loss of material was calculated by multiplying the average annual erosion rate (0.62 feet per year) by 60 years, multiplied by the height of the bluff (20 feet) and length (255 feet) of the unprotected bluff segment. Approximately 80% of this material is sand-sized, and approximately 20% is silt and clay. Eighty percent of these 7,026 cubic yards of material has the potential to contribute to sand supply, an approximate 5,620 cubic yards total over the 60-year life of the revetment (approximately 94 cubic yards per year).

The revetment has been designed to minimize obstructions to sand movement along the beach. We do not anticipate that the riprap revetment will adversely impact sand movement along this very dynamic beach. The revetment protects a section of the bluff which was previously unprotected.

8.1.2 Post-Construction Bluff Stability and Erosion Rates

The riprap revetment will increase the stability of the bluff slope and will protect the bluff from continued ocean wave erosion. Because the northern end of the revetment will be tied into the adjacent revetment and the southern end of the riprap structure will be tapered into the bluff, end-effects will be minimized on the subject and adjacent properties. There will essentially be no erosion below the elevation of the top of the revetment if the revetment is well-maintained. However, any exposed bluff above the revetment will continue to recede due to wind and rain erosion and severe wave splash.

8.1.3 Impacts on Recreation, Safety and Scenery

The riprap revetment has been designed to provide shoreline protection for the subject site while improving safety and minimizing the impacts on recreation and the scenic environment along this stretch of beach.

The currently unprotected bluff fronting Tax Lots 14900, 15000, 15100 and the public walkway/utility access easement is dangerously oversteepened and subject to additional failures. Erosion of the bluff slope and damage to the beach access stairs on Tax Lots 14800 and 14900 has resulted in safety concerns for accessing the beach from these sites. Construction of the riprap revetment will help stabilize the bluff slope and enable safer access to the beach from the site.

Impacts on recreation opportunities along this beach were a consideration in the design of the riprap revetment by locating the revetment as close to the bluff slope as possible to provide adequate protection for the site and minimize the encroachment onto the beach.

The construction will impact the scenic environment by changing the naturally eroding bluff slope to an armored rock slope. Riprap revetments are common in this area, and we anticipate additional nearby revetments will be constructed in the future. The establishment of vegetation above the wave swash line on the proposed revetment will minimize the impacts on the scenic environment.

8.2 Evaluation of Other Protective Measures

The following discusses other mitigation measures that were evaluated but not implemented.

8.2.1 Non-Structural Solutions

Non-structural solutions were not attempted for this site; however, non-structural solutions were considered as potential alternatives and include (1) improving stormwater control, (2) vegetation stabilization, (3) slope stabilization by regrading, (4) beach filling or nourishment and (5) dynamic structures (6) relocation of the home.

- (1) **Improving Stormwater Control** – The recent severe erosion along the bluff was primarily the result of ocean wave attack, with wind and rain activity being a relatively lesser concern. We observed no indications that stormwater runoff from the houses at the subject site had caused significant erosion along the slope; however, we did previously observe erosion in the area impacted by the discharge from the stormwater culvert located in the public walkway/utility access easement due to improper maintenance of the culvert. As described above in Section 8.0, stormwater discharge from the residential stormwater drains and the culvert located within the public walkway/utility access easement should be extended and directed to the top of the riprap revetment and not discharged to the backfill material.
- (2) **Vegetation Stabilization** - Due to the very steep nature of the failed bluff slope and the generally weak nature of the marine terrace materials, we do not believe that vegetation stabilization of the bluff could be successfully implemented, nor would it be adequate to protect the site from future ocean wave erosion.
- (3) **Slope Stabilization by Regrading** – Due to the proximity of the existing structures at the site to the bluff edge, as described in Section 2.0, grading the bluff back to a more stable slope angle is not feasible due to the limited space.

- (4) Beach Filling or Nourishment - By placing large volumes of sand along the back-beach environment, beach nourishment can temporarily protect exposed bluffs from continued ocean wave attack. However, altering the beach profile by placing or moving sand can significantly alter wave patterns along the beach. Because a natural beach profile is near the state of dynamic equilibrium with waves, currents and winds that move sediments along the beach, altering the beach profile by adding or moving sand could cause increased erosion or deposition in other areas of the beach. Additionally, the added sand in front of the bluff is likely to erode rapidly because the added sand is not in a state of equilibrium with the beach system. Therefore, beach nourishment may need to be repeated every year or after every large or prolonged storm event.
- (5) Dynamic Structures - Dynamic revetments are structures in which the movement of construction materials is a fundamental design concept (Lorang, 1994). Unlike riprap revetments designed to be static, dynamic structures consist of sand, sandbags, gravel mounds, logs, or composite materials designed to mimic the natural dynamic beach environment.

There are few examples of dynamic revetments worldwide and few studies of their long-term effectiveness (Allan et al., 2005). There remain a number of uncertainties concerning the physical design of dynamic revetments, especially on high-energy beaches such as that observed at the subject site (Allan et al., 2005). It is also unclear if dynamic revetments can be effective in a limited shoreline zone, such as a shoreline zone confined within the area of a few lots. Because of the uncertainty and lack of design methodology for dynamic revetments, we cannot recommend them at most sites at this time.

- (6) Relocation of the Homes – The existing houses are approximately 15 to 40 feet from the eastern property line; however, the ground surface between the street and the houses is generally very steep. Moving the houses would eliminate the already limited off-street parking. Relocation of the existing structures at the site would provide little additional protection from bluff erosion, as ocean wave erosion in the subject site vicinity is so severe. For these reasons moving the houses eastward is not considered a feasible alternative method of mitigation.

8.3 Potential Geologic and Seismic Hazards

Ocean wave activity along the bluff will eventually damage any riprap structures placed along the bluff. Therefore, the riprap revetment should be maintained and repaired as needed.

The site lies in an area that is subject to possible tsunami inundation hazards. In the event of a Great Subduction Zone Earthquake and possibly other large earthquakes, a tsunami may damage the riprap revetment which would require that the revetment is repaired or replaced following a tsunami event. The presence of the riprap revetment along the bluff during a tsunami event would lessen any potential erosive damage to the bluff slope resulting from the tsunami.

8.4 Construction Observations

A representative of HGSA should observe and approve all rock sources to be used in the proposed revetment at the quarry source prior to construction to ensure that appropriate materials are obtained and delivered to the project site. We should also periodically observe revetment construction operations, including toe trench excavation, fabric placement, placement of pit run materials, backing rock ("chunky rock"), and armor stone, sand covering placement, and the planting of vegetation to ensure that materials and work meet the project design and specifications. Please provide us with at least five (5) days' notice prior to any site observations. There will be additional costs for these services.

9.0 Limitations

The Oregon Coast is a dynamic environment with inherent, unavoidable risks to development. Landsliding, erosion, tsunamis, storms, earthquakes and other natural events can cause severe impacts to structures built within this environment and can detrimentally impact the health and welfare of those who choose to place themselves within this environment. The client is warned that, although this report is intended to identify the geologic hazards causing these risks, the scientific and engineering communities knowledge and understanding of geologic hazard processes is not complete. This report pertains to the subject site only and is not applicable to adjacent sites nor is it valid for types of development other than that to which it refers. Geologic conditions including materials, processes, and rates can change with time and therefore a review of the site, and this report may be necessary as time passes to assure its accuracy and adequacy.

Our investigation was based on engineering geological reconnaissance and a limited review of published information. The information presented in this report is believed to be representative of the site. The conclusions herein are professional opinions derived in accordance with current standards of professional practice and no warranty is expressed or implied. The performance of this site during a seismic event has not been evaluated. If you would like us to do so, please contact us. This report may only be copied in its entirety.

10.0 Disclosure

H.G. Schlicker & Associates, Inc. and the undersigned Certified Engineering Geologist have no financial interest in the subject site, the project or the Client's organization.

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It has been our pleasure to serve you. If you have any questions concerning this report, or the site, please contact us.

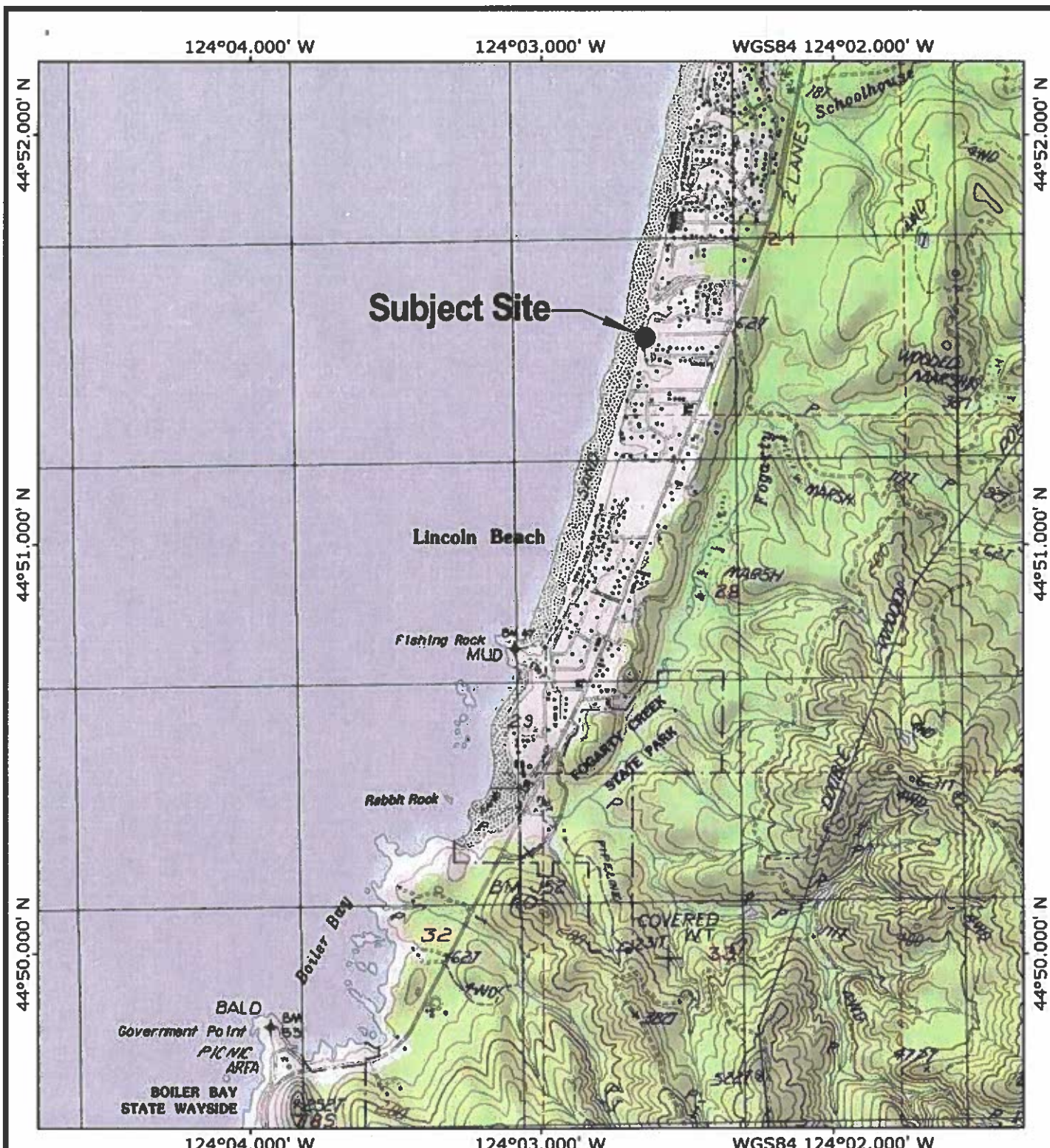
Respectfully submitted,

H.G. SCHLICKER AND ASSOCIATES, INC.



EXPIRES: 10/31/2022

J. Douglas Gless, MSc, RG, CEG, LHG
President/Principal Engineering Geologist
JDG:aml



Date: 01/24/2022	Project #Y214560	Prepared by: AML
Scale: 1" = 2,000'		Approved by: JDG
Location Map Tax Lots 14800, 14900, 15000, Public Walkway/ Utility Access Easement, and 15100, Map 8-11-21CD; 4755, 4805, 4815 and 4825 Lincoln Avenue, Lincoln County, Oregon		
 H.G. Schlicker & Associates, Inc.		Figure 1

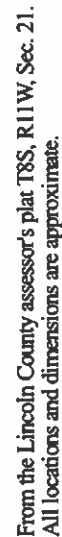
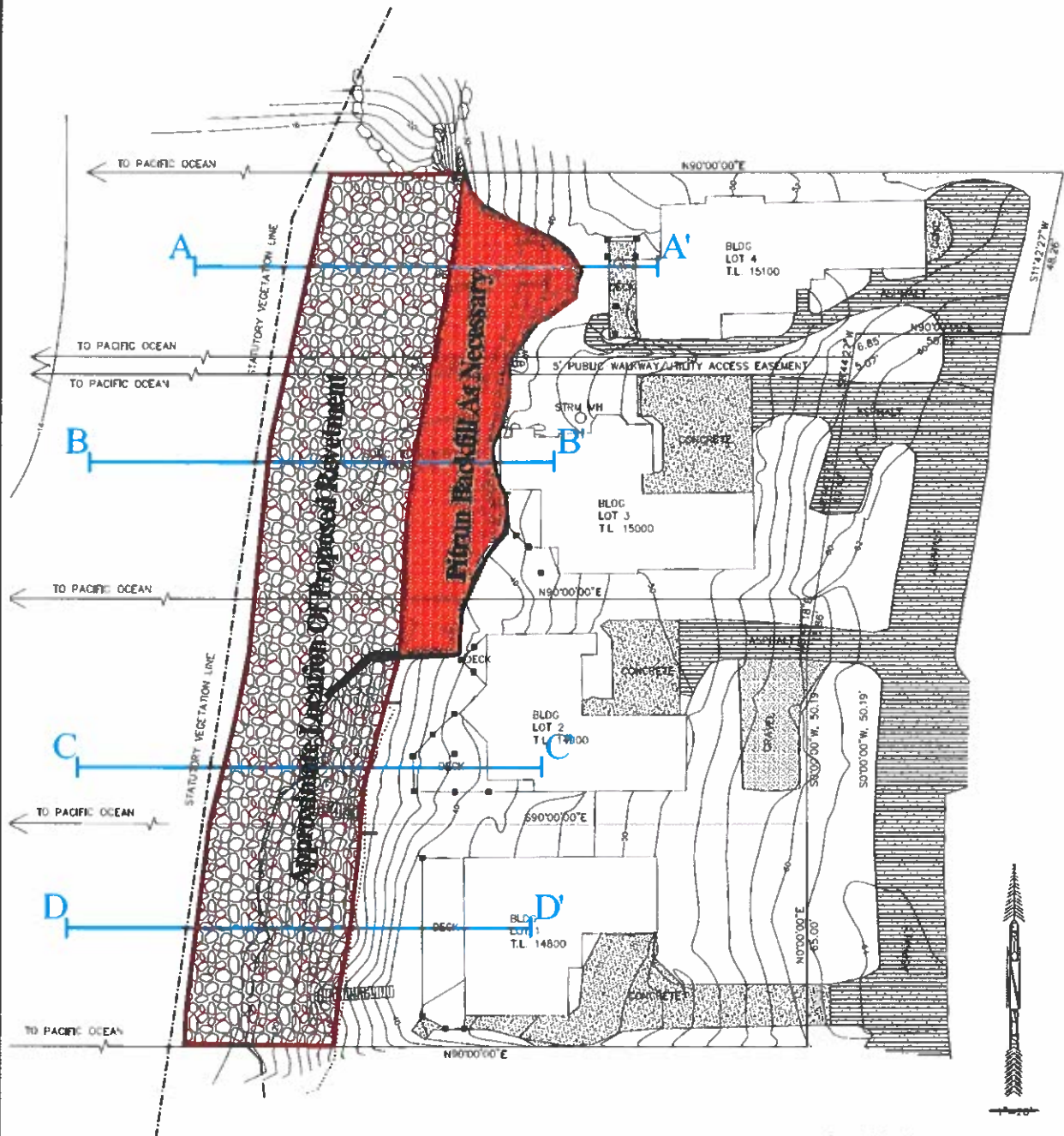


Figure 2

SITE SURVEY OF LOTS 1, 2, 3, & 4, BLOCK 3, "PACIFIC PANORAMA", PREPARED FOR H.G. SCHLICKE & ASSOCIATES, INC.
 LOCATED IN THE SW 1/4, SEC. 21, T8S, R11W, W.M., IN LINCOLN COUNTY, OREGON
 (8-11-21-CD T.L. 14800, 14900, 15000, 15100)
 SURVEYED ON AUGUST 25, 2021



- LEGEND**
- DECK POST
 - DRAIN LINE
 - H I-BEAM PILE
 - CULVERT
 - TOP OF BLUFF/REAL VEGETATION LINE
 - TOE OF BLUFF
 - EXISTING REVEMENT

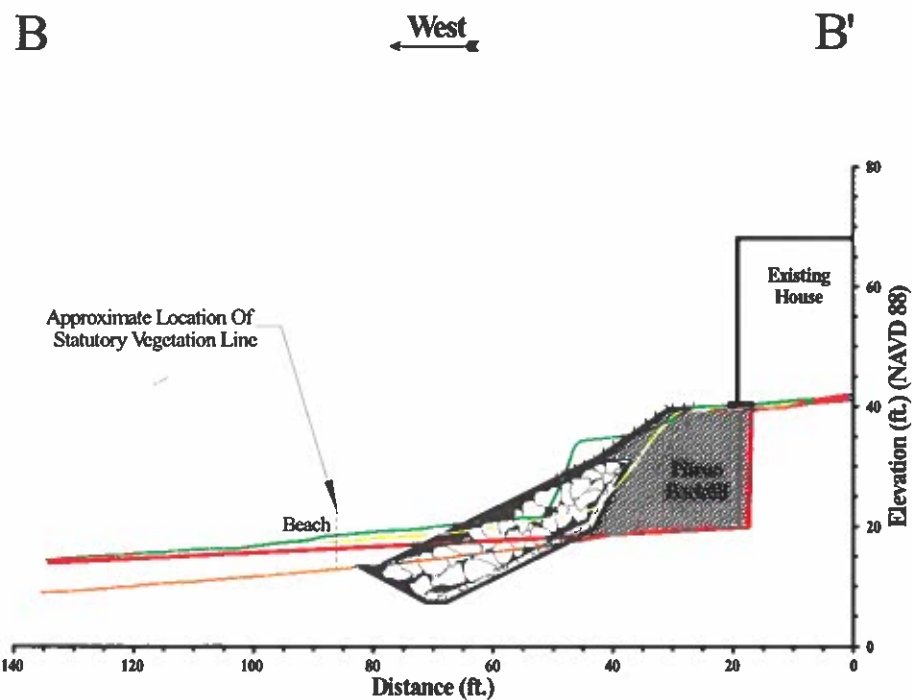
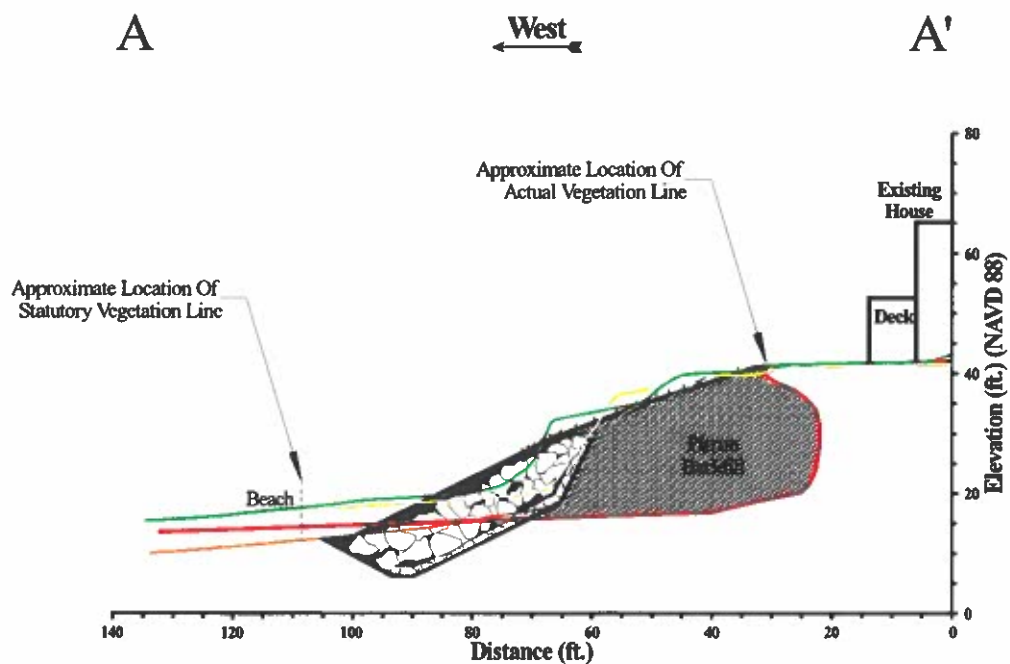
NOTE: ELEVATIONS SHOWN ARE NAVD83(2011) BASED ON GPS OBSERVATIONS ON THE SITE TAKEN WITH A LEICA CS14 GNSS RECEIVER

A — A' = Approximate trend of profile line

- = Approximate location of proposed revetment
- = Area of quarry-run rock for bluff stabilization and backing revetment.

NYHUS SURVEYING INC.		CHECKED BY: GKN
GARY NYHUS/STEVEN NYHUS/ERIC NYHUS PROFESSIONAL LAND SURVEYOR		DRAWN BY: EGN
P.O. BOX 206 740 E. THISSELL RD. TIDEWATER, ORE 97380 (541) 528-3234		DATE: 9-3-2021
		SCALE: 1" = 20'
		PROJECT: 21192

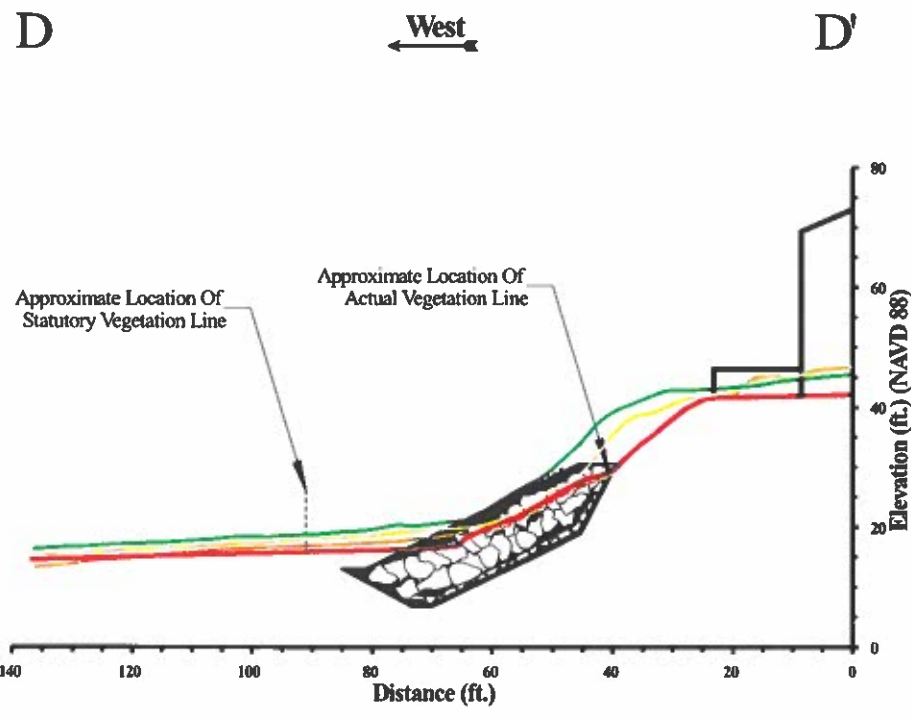
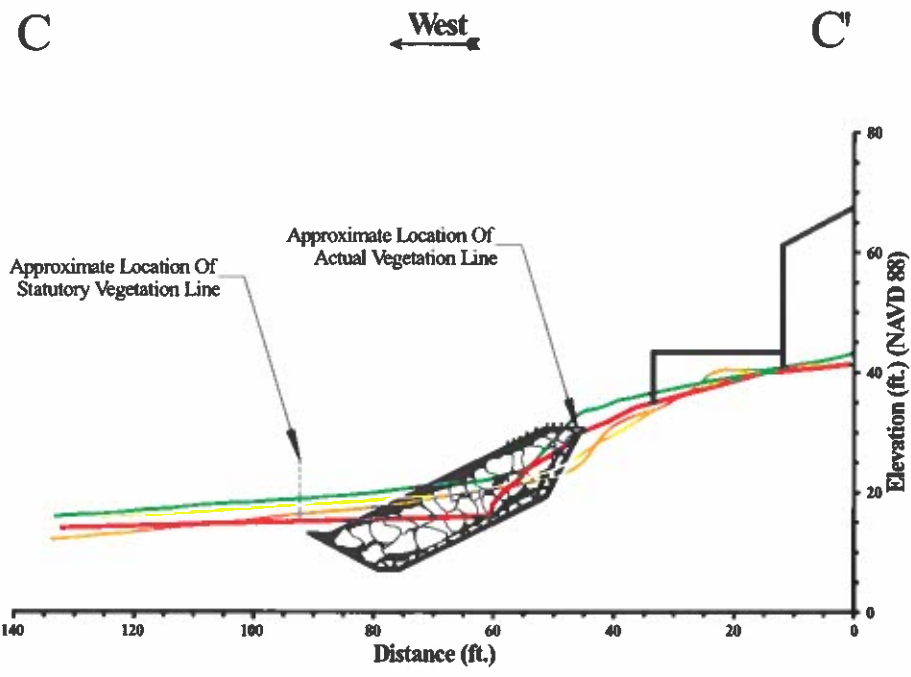
Date: 01/24/2022	Project #Y214560	Prepared by: AML
Scale: 1" = 2,000'		Approved by: JDG
Site Topographic Map with Proposed Revetment Shown Tax Lots 14800, 14900, 15000, Public Walkway/Utility Access Easement, and 15100, Map 8-11-21CD; 4755, 4805, 4815 and 4825 Lincoln Avenue, Lincoln County, Oregon		
H.G. Schlicker & Associates, Inc.		Figure 3



- Ground profile derived and modified from 2009_OLC_North_Coast Lidar provided by DOGAMI.
- Ground profile derived from 2014 USACE NCMP Topobathy Lidar provided by NOAA.
- Ground profile derived and modified from 2016 USGS West Coast El-Nino Lidar provided by NOAA.
- Ground profile derived from 9/3/2021 Topographic Survey completed by Nyhus Surveying, Inc..

All dimensions, elevations and locations are approximate.

Date: 01/24/2022	Project #Y214560	Prepared by: AML
Scale: 1" = 2,000'		Approved by: JDG
Slope Profiles A-A' and B-B' with Proposed Revetment Shown Tax Lots 14800, 14900, 15000, Public Walkway/ Utility Access Easement, and 15100, Map 8-11-21CD; 4755, 4805, 4815 and 4825 Lincoln Avenue, Lincoln County, Oregon		
 H.G. Schlicker & Associates, Inc.		Figure 4



- Ground profile derived and modified from 2009_OLC_North_Coast Lidar provided by DOGAMI.
- Ground profile derived from 2014 USACE NCMP Topobathy Lidar provided by NOAA.
- Ground profile derived and modified from 2016 USGS West Coast El-Nino Lidar provided by NOAA.
- Ground profile derived from 9/3/2021 Topographic Survey completed by Nyhus Surveying, Inc..

All dimensions, elevations and locations are approximate.

Date: 01/24/2022	Project #Y214560	Prepared by: AML
Scale: 1" = 2,000'		Approved by: JDG
Slope Profiles C-C' and D-D' with Proposed Revetment Shown Tax Lots 14800, 14900, 15000, Public Walkway/ Utility Access Easement, and 15100, Map 8-11-21CD; 4755, 4805, 4815 and 4825 Lincoln Avenue, Lincoln County, Oregon		
H.G. Schlicker & Associates, Inc.		Figure 5

1. Base of the riprap should be embedded at approximately 6 feet elevation (NAVD 88) maximum. The final revetment embedment depth should be as deep as "flowing/heaving" sand conditions at low tide allow.
2. If the minimum embedment cannot be achieved due to heaving or flowing sands at low tide, then the contractor should contact HCSA.
3. Top of the riprap armor stone should be at approximately 33 feet elevation (NAVD 88) minimum.
4. Riprap Armor should consist of hard, durable, fresh, angular basaltic rock, interlocked with a minimum of three points of contact. Larger stones should be placed at the base, and smaller stones toward the top. The largest stones should be placed at the toe of the revetment.
5. Non-woven filter fabric (Mirafi 1100N or equivalent) should be placed between the quarry run bedding and the native soils.
6. Riprap slopes should be 2 horizontal to 1 vertical (2H:1V).
7. Following construction, the revetment should be covered with a minimum of 2 feet of sand and planted with European Beachgrass above approximately 28 feet elevation.
8. Quarry-Run Fill (as necessary) should consist of well-graded ~ 4 inch minus, placed and equipment compacted in 12 inch lifts.
9. See Section 8.1 and Section 8.2 of this report for additional design considerations and specifications.

GRADATIONS		
Armor Stone		
Stone Size (ft)*	Stone Weight (tons)	% Smaller Than Or Equal To
7+	10 to 14	100
5	6 to 10	80
4	3 to 5	50
3	.5 to 2	10
* Long Dimension < 2.5x Short Dimension		
Filter Rock (Underlayer Stone)		
OOOT Class 200 Standard Riprap Bedding Rock / Fill		
Quarry Run 4" minus with minimal fines		
Trip Tickets Should Be Provided For All Material Brought Onsite		

= Non-Woven Filter Fabric
(Mirafi 1100N or equivalent)

Well Compacted Quarry-Run Fill (As Necessary)
To Extend Up Slope To ~40' Elevation
No Steeper Than 1.5H:1V

Top Of Riprap Armor At
Approximately 33' Elevation
(NAVD 88) Minimum

Beach Sand Topping
(minimum 2 feet thick)

Beach Grass Planted
Above ~28' Elevation

Well Compacted
Quarry-Run Fill
(As Necessary)

Riprap Armor
(Two layers of interlocked armor
stone, ~ 7 feet thick minimum)

Beach

Non-Woven Filter Fabric
(Mirafi 1100N or equivalent)

Filter Rock (aka underlayer stone
locally referred to as "chunky rock")
(~ 18 inches thick minimum)

Quarry-Run Bedding
~ 4 Inch Minus
(~ 6 inches thick minimum)

Bottom Of Toe Trench Embedded
At Approximately 6' Elevation Maximum
(NAVD 88) Or As Deep As
"Flowing/Heaving" Sand Allows

~54'

min. 4'

Date: 01/24/2022
Scale: 1" = 5'

Project #Y214560

Prepared by: AML
Approved by: JDG
Revetment Detail - B-B'
Tax Lots 14800, 14900, 15000, Public Walkway/Utility Access Easement, and 15100,
Map 8-11-21CD-4755, 4805, 4815 and 4825 Lincoln Avenue, Lincoln County, Oregon

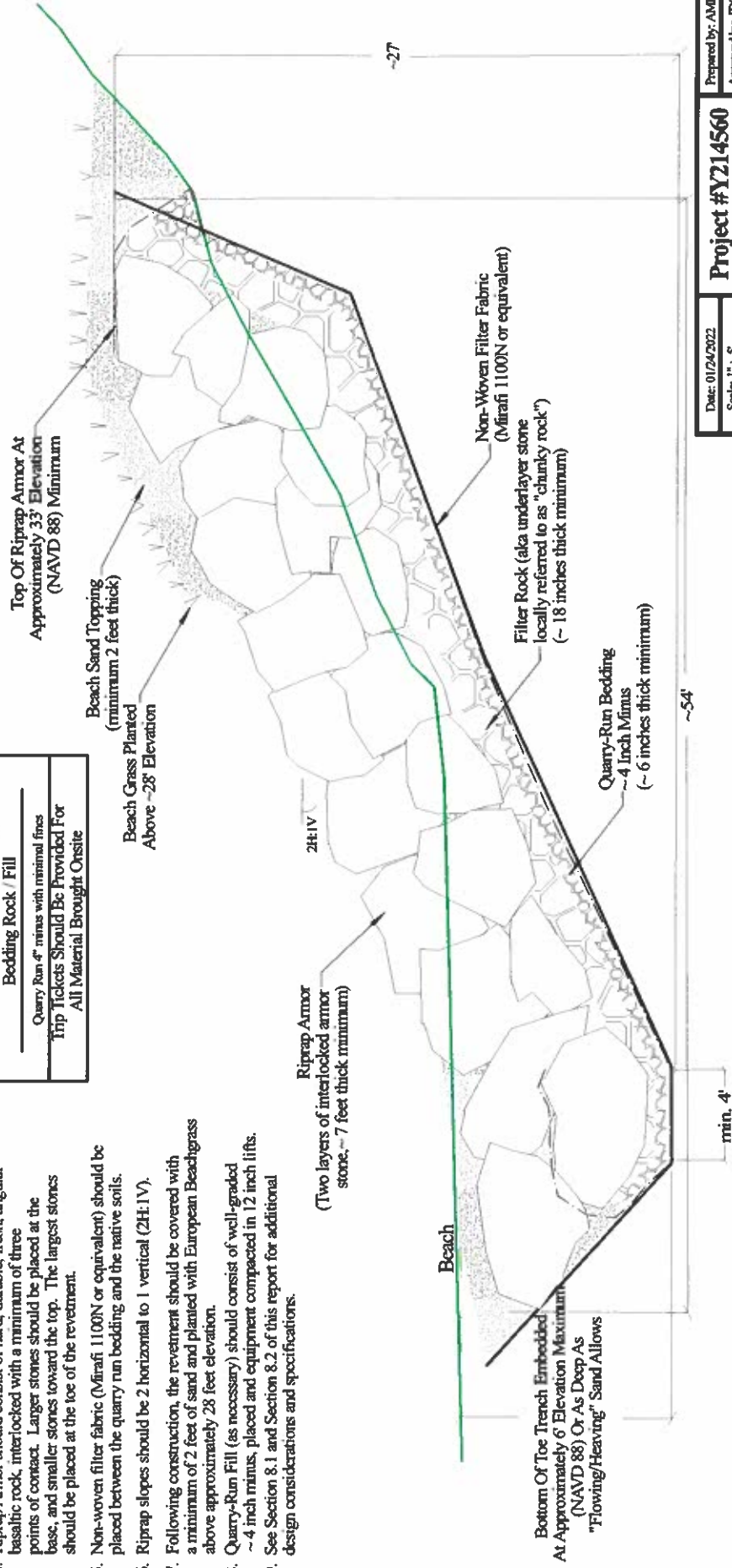
As built dimensions may vary depending on site conditions actually encountered.

H.G. Schilder & Associates, Inc.
Figure 6

1. Base of the riprap should be embedded at approximately 6 feet elevation (NAVD 88) maximum. The final revetment embedment depth should be as deep as "flowing/heaving" sand conditions at low tide allow.
2. If the minimum embedment cannot be achieved due to heaving or flowing sands at low tide, then the contractor should contact HCSA.
3. Top of the riprap armor stone should be at approximately 33 feet elevation (NAVD 88) minimum.
4. Riprap Armor should consist of hard, durable, fresh, angular basaltic rock, interlocked with a minimum of three points of contact. Larger stones should be placed at the base, and smaller stones toward the top. The largest stones should be placed at the toe of the revetment.
5. Non-woven filter fabric (Mirafi 1100N or equivalent) should be placed between the quarry run bedding and the native soils.
6. Riprap slopes should be 2 horizontal to 1 vertical (2H:1V).
7. Following construction, the revetment should be covered with a minimum of 2 feet of sand and planted with European Beachgrass above approximately 28 feet elevation.
8. Quarry-Run Fill (as necessary) should consist of well-graded ~4 inch minus, placed and equipment compacted in 12 inch lifts.
9. See Section 8.1 and Section 8.2 of this report for additional design considerations and specifications.

GRADATIONS		
Armor Stone		
Stone Size (ft)*	Stone Weight (tons)	% Smaller Than Or Equal To
7+	10 to 14	100
5	6 to 10	80
4	3 to 5	50
3	.5 to 2	10
* Long Dimension < 2.5* Short Dimension		
Filter Rock (Underlayer Stone)		
ODOT Class 200 Standard Riprap		
Bedding Rock / Fill		
Quarry Run 4" minus with minimal fines		
Trip Tickets Should Be Provided For All Material Brought Onsite		

 = Non-Woven Filter Fabric (Mirafi 1100N or equivalent)
 = Ground Profile Derived From 9/3/2021 Topographic Survey Completed By Nylus Surveying, Inc.



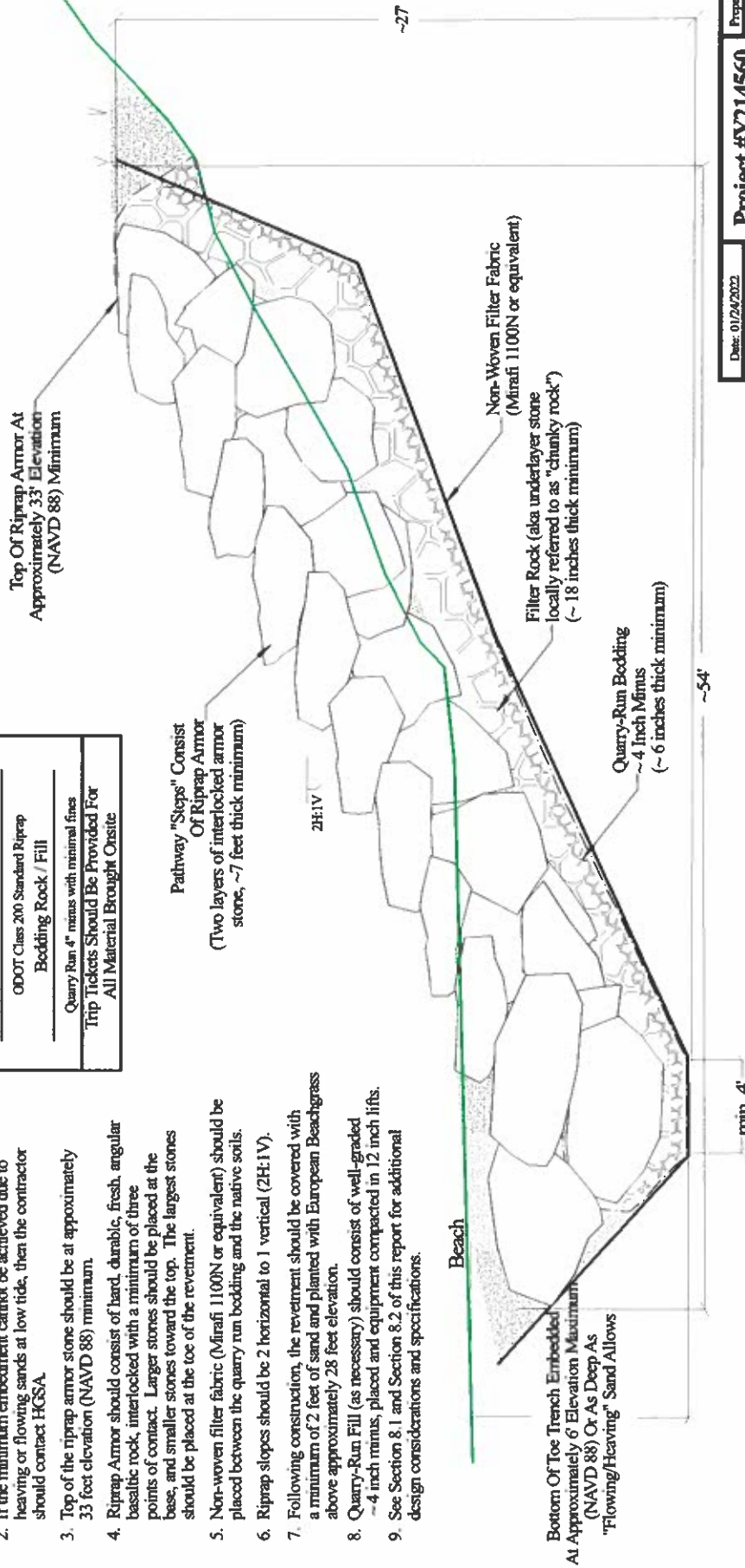
Date: 01/24/2022	Project #Y214560	Prepared by: AML
Scale: 1" = 5'	Revetment Detail - D-D'	Approved by: JDG
Tax Lots 14800, 14900, 15000, Public Walkway/Utility Access Easement, and 15100, Map E-11-21CD-4755, 4805, 4815 and 4825 Lincoln Avenue, Lincoln County, Oregon  H.G. Schilder & Associates, Inc.		
Figure 7		

As built dimensions may vary depending on site conditions actually encountered.

Non-Woven Filter Fabric
(Mirafi 1100N or equivalent)

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* Long Dimension < 2.5x Short Dimension	
Filter Rock (Underlayer Stone)	
ODOT Class 200 Standard Riprap	
Bedding Rock / Fill	
Quarry Run 4" minus with minimal fines	
Trip Tickets Should Be Provided For All Material Brought Onsite	



As built dimensions may vary depending on site conditions actually encountered.

Project #Y214560

Appendix A
- Site Photographs -



Photo 1 – Easterly view of the bluff slope fronting Tax Lot 14800. Note the wooden access stairs are hanging above the slope and the erosion scarp at the toe of the slope. Photograph taken August 17, 2021.



Photo 2 – Easterly view of the bluff slope fronting Tax Lot 14900. Note the erosion is undermining the concrete access stairs and the erosion scarp at the toe of the slope. Photograph taken August 17, 2021.



Photo 3 – Southeasterly view of the bluff slope fronting Tax Lot 14900. The recent severe erosion undercut the more resistant gray sandy silt and rapidly eroded the underlying weakly cemented sand. Photograph taken August 17, 2021.



Photo 4 – Easterly view of Tax Lot 15000. The recent severe erosion undermined the house foundation, and new pile supporting the foundation were installed to prevent damage or collapse of the house. Photograph taken August 17, 2021.

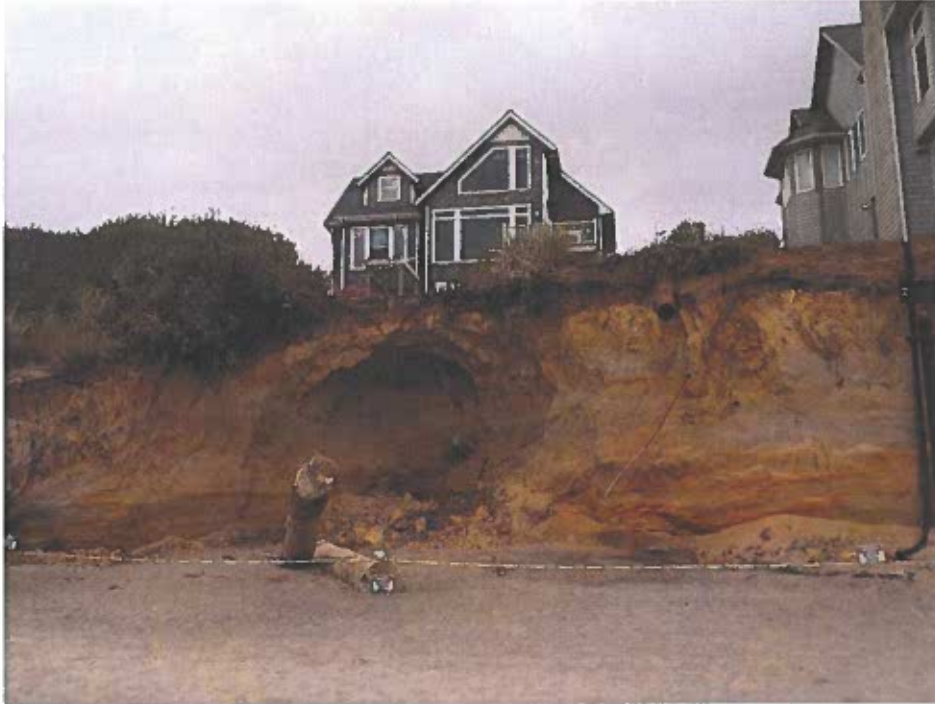


Photo 5 – Easterly view of the bluff slope fronting Tax Lot 15100. Note the embayment and overhang in the bluff fronting the site. Photograph taken August 17, 2021.



Photo 6 – Northeasterly view of the bluff and existing rip rap immediately north of the site. Photograph taken August 17, 2021.



Photo 7 – Easterly view of Tax Lots 15000, 15100 and the public walkway/utility easement during placement of quarry-run rock to provide emergency protection. Photograph taken August 17, 2021.



Photo 8 – Northeasterly view of Tax Lots 15000, 15100 and the public walkway/utility easement during placement of quarry-run rock to provide emergency protection. Photograph taken August 17, 2021.

Project #Y214560

Appendix B
- Oregon Parks and Recreation Department -
Ocean Shore Permit Application Forms

Oregon Parks & Recreation Department
Ocean Shore Permit Application

Construction Work Plan
Kaufmann Construction

DES4LVIA - 4755 LINCOLN AVE.

-----Original Message-----

From: office@dankauffmanexcavating.com

To: 'Adam Large' <hgsa@teleport.com>; rgrant7245@aol.com

Sent: Mon, Jun 6, 2022 12:15 pm

Subject: construction details

Here are the construction details for the permit application

Thank you.

Corinna Sawyer

Dan Kauffman Excavating

D.K. Quarries

Central Coast Ready Mix

541-994-8584

office@dankauffmanexcavating.com

Addendum: Construction and staging site details

Construction impacts for riprap projects completed by Dan Kauffman Excavating, Inc.

Dan Kauffman Excavating Inc. will be using the Willow Street Beach access to complete the riprap project for Mr. Grant and his neighbors.

This location will also be the construction staging area for the duration of this project.

Materials for this project will be coming from the Weyerhaeuser 200 pit site which is located approximately 40 miles away. Therefore, in order to maintain a consistent quantity of material it must be stockpiled nearby.

Danger signs will be placed around the stockpiled materials. This site is also a beach access for the public and must remain open for their safe travel to and from the beach. Stockpiles will be maintained to keep the area free of obstructions and equipment will be stored in a safe manner and out of the walking areas.

The stockpile of riprap at the staging area is westward of the statutory vegetation line.

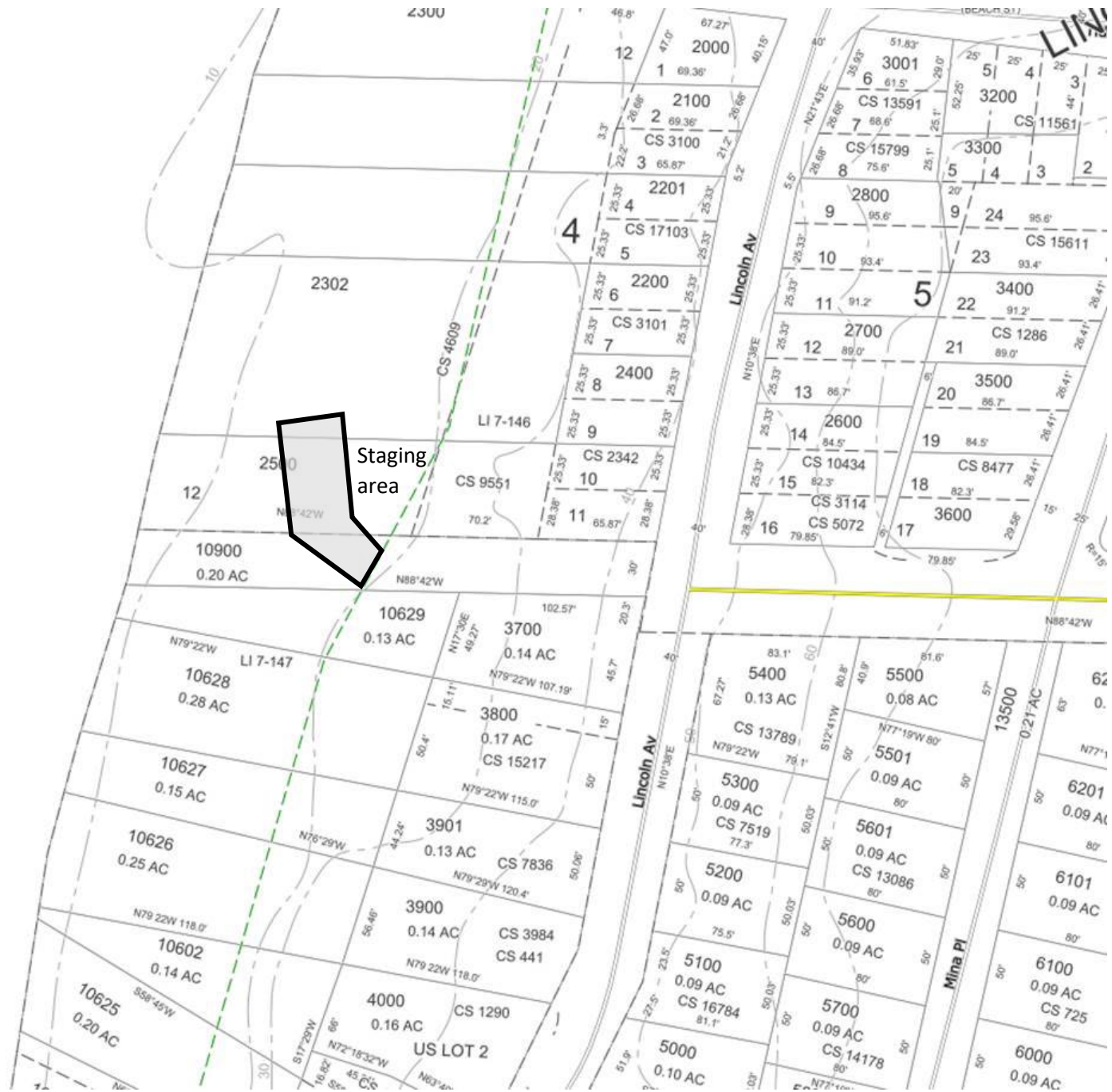
All construction equipment will also be parked at the staging area. The equipment will enter the beach at the staging area and proceed directly to the project site.

At the end of the day the excavators will return to the staging area.

Dump trucks hauling in material will access the staging area using Willow Street. Trucks will be arriving approximately every 2 hours. The dump trucks will enter the staging area, turn around and back into the stockpile area and dump the material near an excavator that will sort the material into the appropriate stockpile and the dump truck will leave the staging area using Willow Street.

Off road haul trucks will enter and exit the beach using the staging area. The haul trucks will be loaded with the sorted riprap materials and exit the staging area onto the beach and go directly to the current oceanfront project. The haul truck will return to the staging area approximately every 15 minutes. At the end of the day the haul trucks will return to the staging area.

Upon completion of the riprap by Dan Kauffman Excavating Inc. for Mr. Grant and neighbors, the staging area will be returned to the original conditions prior to use.





Oregon Parks & Recreation Department
Ocean Shore Permit Application

Construction Estimate

DESYLVIA - 4755 LINCOLN AVE

Agreement made as of February 16, 2022

Between the owner,

Terry & Janice DeSylvia

P O Box 806

Depoe Bay, Or. 97341

AND

Contractor,

Dan Kauffman Excavating, Inc. (DKE)

PO Box 79

Lincoln City OR 97367

541-994-8584, Phone

541-994-6466, Fax

office@dankauffmanexcavating.com

The project is located at: 4755 Lincoln Ave. Depoe Bay Or. 97341

Dan Kauffman Excavating, Inc. will construct a riprap structure at 4755 Lincoln Avenue, Depoe Bay, Oregon per the specifications of the Geo Report #Y21450 completed by H.G. Schlicker and Associates.

Riprap \$2,025.00 per lineal foot.

The owner agrees that, in the event damage occurs, DKE will not be responsible for any damage to the home, property, driveway, etc.

Contract sum:

The owner shall pay the contractor the contract sum in current funds for the contractor's performance of the contract. The contract sum shall be subject to additions and deductions as provided in the contract documents.

Any alteration or deviation from the plans and specifications, involving extra cost of time, material or labor will be executed only upon written change orders for same, and will become an extra charge over the sum mentioned in this contract.

All agreements must be made in writing.

Prices are good for 30 days.

Payments and progress payments

Oregon Parks & Recreation Department
Ocean Shore Permit Application

Permit Application Fee

DESYLVIA - 4755 LINCOLN AVE .

Oregon Shores Permit Application
Exhibit A: Application Fee Worksheet
Tax Map: 08s11w21cd

Owner Tax Lot Address	DeSylvia 14800 4855 Lincoln Av	Kain 14900 4805 Lincoln Av	Grant 15000 4815 Lincoln Av	Lincoln County NA Easement	Tanabe \$15,100.00 4815 Lincoln Av
Linear Frontage	65	66	66	5	55
S/Linear Ft (per Kaufmann Construction)	\$2,025	\$2,025	\$2,025	\$2,025	\$2,025
Construction Est	\$131,625	\$133,650	\$133,650	\$10,125	\$111,375
Allowance	-\$2,500	-\$2,500	-\$2,500	-\$2,500	-\$2,500
Net Construction Cost	\$129,125.00	\$131,150.00	\$131,150.00	\$7,625.00	\$108,875.00
Permit Fee %	3.0%	3.0%	3.0%	3.0%	3.0%
Permit Fee Construction	\$3,873.75	\$3,934.50	\$3,934.50	\$228.75	\$3,266.25
Permit Fee Base	\$400	\$400	\$400	\$400	\$400
Application Fee	\$4,273.75	\$4,334.50	\$4,334.50	\$628.75	\$3,666.25
Easement Fee Allocation	\$0.00	\$0.00	\$314.38	-\$628.75	\$314.38
Total Application Fee	\$4,273.75	\$4,334.50	\$4,648.88	\$0.00	\$3,980.63
Total Fee	\$17,237.75				