March 13, 2024
*Update April 17, 2024*

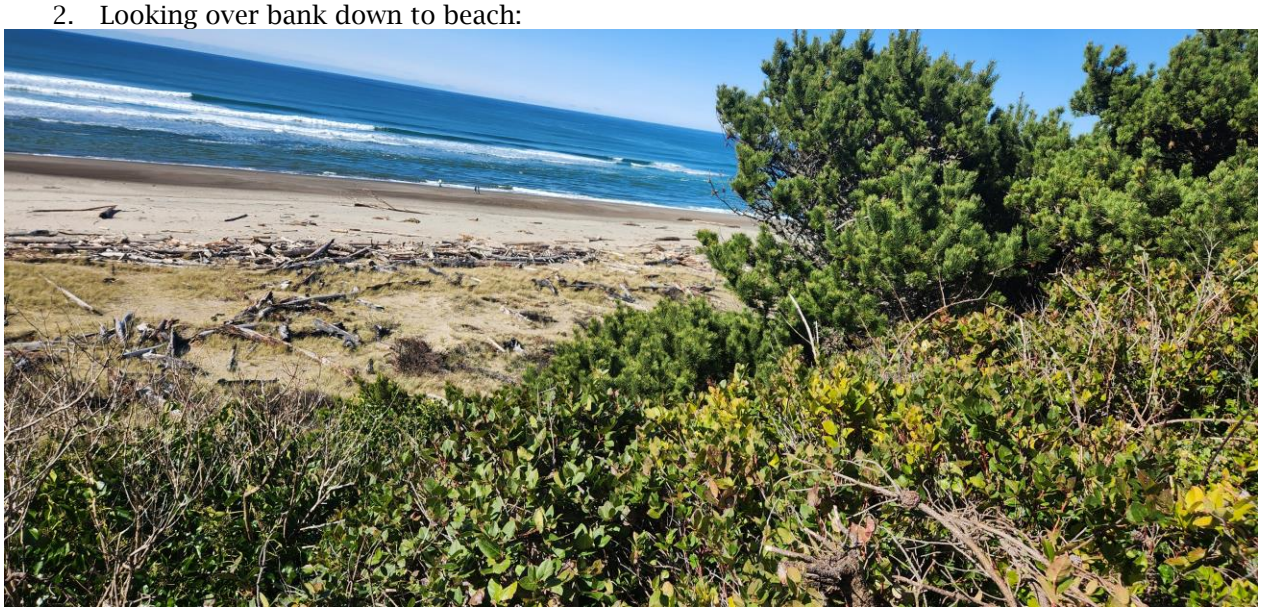
Virginia Lauth
[redacted]

**RE:** **REVISION TO LETTER OF UPDATE TO: GEOLOGIC HAZARD ASSESSMENT AND GEOTECHNICAL EVALUATION**
**4600 SOUTHWEST BEACH AVENUE**
**TAX LOT 7-11-27-CD 3600, ACCOUNT R420048**
**LINCOLN CITY, OREGON 97367**
**Branch Engineering Inc Project No. 19-225**

Pursuant to your request, Branch Engineering Inc. (BEI) staff revisited the subject site on March 7, 2024 to assess the current conditions as they may relate to our previously prepared Geologic Hazard Assessment and Geotechnical Evaluation for the subject site dated July 19, 2019. Site conditions on march 7, 2024 are depicted by the photographs below and show no discernible changes from the conditions we observed in 2019 except for some additional vegetation growth on the property.

1. Looking West across site:

2. Looking over bank down to beach:



We had previously concluded that there is no apparent increase of bank erosion or instability since our 2019 study. Updated hazard mapping by the Oregon Department of Geology and Mineral Industries now shows the entire site is within the area or predicted "severe" shaking during a subduction zone seismic event with 20-30% damage probability. Other hazard mapping remains consistent with our 2019 study.

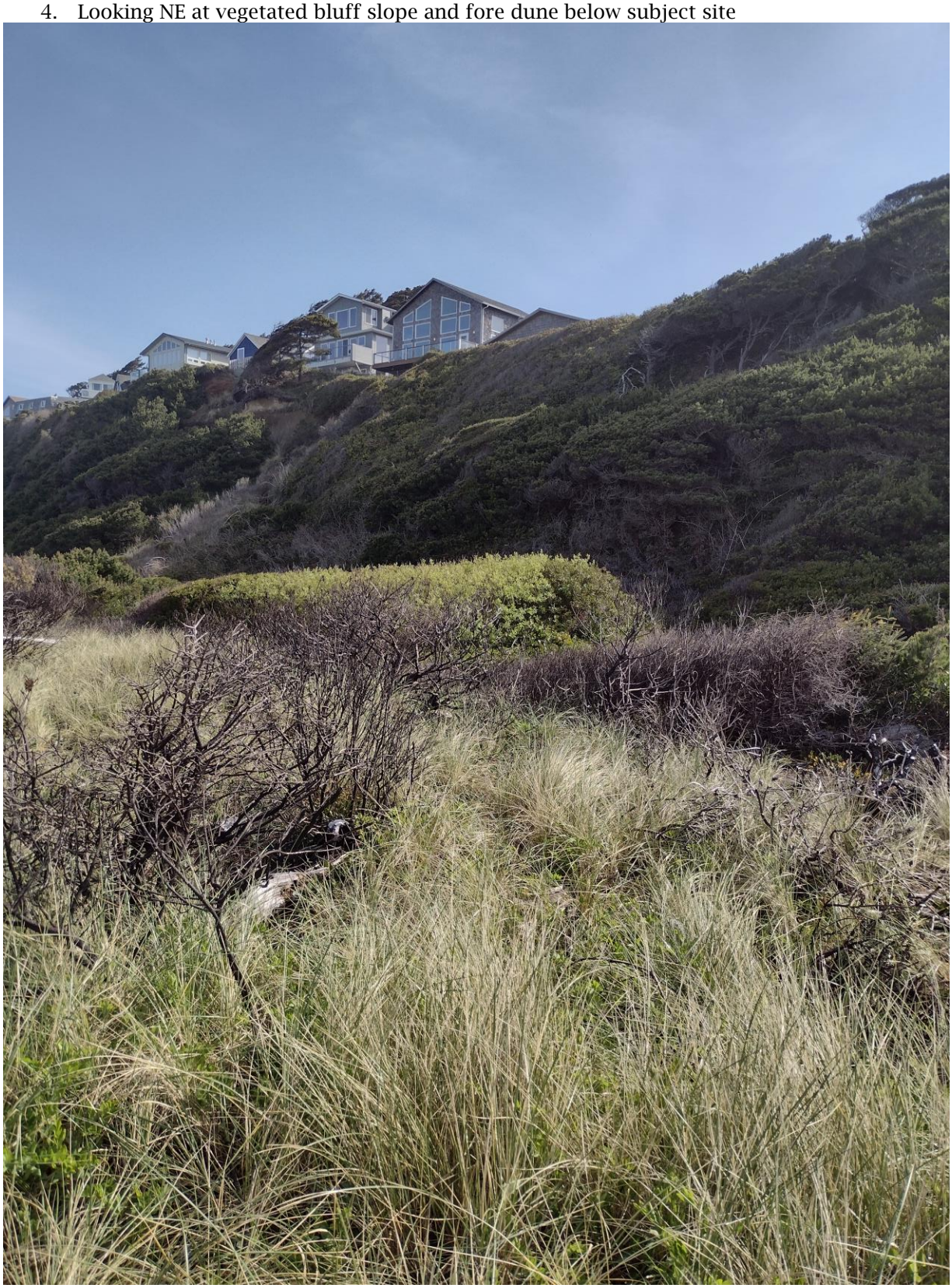
Additional site information has been requested by Lincoln City to comply with the following items of Municipal Code 17.47:

Proximity of nearby headlands – The nearest headlands to the subject site are Roads End Point approximately 6.6 miles north and Fishing Rock approximately 7.2 miles south. Both of these are relatively small headland features with the most prominent headland being Cascade Head about 8 miles north of the site. The inlet to Siletz Bay is about ¼-mile south of the site.

Description of the fronting beach – The approximately 60-foot high 1H:1V, bluff on the west side of the subject site is heavily vegetated as seen in the photographs below with a pathway at the toe of the slope and a vegetated fore dune prior to encountering about a 100-foot, wide area of dune grass and flotsam. The photographs were taken on April 10, 2024. Based on aerial imagery from Goggle Earth®, the normal high and low tide levels are over 200- and 500-feet from the toe of the bluff slope, respectively.

3. Looking north at pathway at toe of bluff

4. Looking NE at vegetated bluff slope and fore dune below subject site



5. Looking SW across dune grass and flotsam between fore dune and ocean

Calculation of wave runup – The actual calculations of wave runup found in the 2006 Coastal Engineering v. 53, no 7 reference is beyond the scope of geotechnical engineering practice; however, based on Google Earth® imagery the pathway seen in Photograph 3 appears to have remained intact since 1994 and the fore dune and vegetation has become more pronounced. The amount of flotsam on the beach varies throughout the last 20 years but appears to have been relatively consistent since 2016, with similar quantities as seen in the April 10, 2024 photograph below.

6. Looking east across beach at subject site

Although the general erosion rate along this area of the Oregon Coast has been estimated to be up to 1-foot per year, as previously stated in our July 19, 2019 report a rate of 0 to 0.3-inch per year was estimated for this specific area, and the site does not appear to have been impacted by erosion or bluff caving for the last 30 years. There is indication of human impacts or concentrated drainage on the bluff slope or beach area that would reduce the resistance to erosion. The beach is a comprised of poorly grade, fine sand with a shallow slope to the ocean shore and no apparent rock outcrops or sea stack on or off shore.

Determination of legal restriction of shoreline protective structures – Legal determinations is not within a geotechnical scope of work; however, from a geotechnical perspective the proposed residential development of the subject site does not pose any adverse impacts to the rate of bluff erosion that currently exists. Provided that drainage from impervious surface areas or landscaping is not redirected, concentrated, or disposed onto the top or face of the bluff slope.

Bluff setback – The minimum recommended setback from the top of bluff is 50-feet for a 50-year design life, where the top of bluff is considered to be the marked "Top of Slope" between elevations 67 and 72 as seen on the attached topographic survey of the site. This recommended setback location appears to be consistent with our 2019 recommendation of 120-foot from the east property line.

BEI concludes that the conclusions and recommendations report in our 2019 study remain applicable to the site.

Sincerely,
*Branch Engineering Inc,*

REGISTERED PROFESSIONAL ENGINEER
#16,170
Ronald J. Derrick
OREGON
SEPT 15, 1992
RONALD J. DERRICK

Digitally signed by Ronald J. Derrick
Date: 2024.04.17 15:50:29 -07'00'

EXPIRES: 12/31/25
Ronald J. Derrick, P.E., G.E.
Principal Geotechnical Engineer