



July 28, 2022

Planning Commission
City of Cannon Beach
163 East Gower Street
Cannon Beach, OR 97110

**Subject: Forest Lawn Partition (P 22-01/CU 22-02)
Application Revisions**

Dear Planning Commission:

This letter is provided on behalf of Patrick/Dave LLC (applicant) to summarize supplemental information that has been entered into the application record and offers additional compliance findings for identified code criteria governing the City's review of the partition request.

At the June 23rd hearing, the Planning Commission's comments were largely focused on tree removal and preservation, the project site's geologic conditions, and wetland preservation. Accordingly, the applicant has taken additional steps to address these concerns and has submitted supplemental evidence that includes:

- Tentative Partition Plan (*update to original Exhibit B*)
- Simplified Tentative Partition Plan
- Arborist Report (*update to original Exhibit I*)
- Supplemental Earth Engineers Letter

Tree Removal and Preservation

Cannon Beach Municipal Code (CBMC) Chapter 17.70.030(D) states the following:

The retention of trees shall be considered in the design of partitions, subdivisions or planned developments; placement of roads and utilities shall preserve trees wherever possible. The need to remove trees shall be considered in the review process for partitions, subdivisions or planned developments. (emphasis added)

At the June 23rd hearing, Planning Commissioners, as well as the City's consulting arborist, raised possible concerns with the tentative partition plan's compliance with the above standard. In response to these concerns, the applicant team worked extensively with a consulting arborist, Todd Prager, on modifications to the tentative partition plan that will allow future residential construction to preserve additional trees within the project site. These changes are described in detail within the attached Arborist Report, and are also shown on the attached Tentative Partition Plan and the attached Simplified Tentative Partition Plan. In total, the number of trees proposed for removal has been reduced from 11 to seven (7). A summary of the updated arborist findings is as follows:

- A site visit was conducted on Sunday, July 17th, in order to reevaluate and confirm the health status of each of the project site's trees. Previously, three (3) trees within the project site's delineated wetland were identified for removal due to health hazards (trees #12, #20, and #37b). Following their reevaluation, Todd determined the identified health concerns, including observed

leaning, weren't great enough to warrant removal. Consequently, these trees are no longer proposed for removal.

- The alignment of the shared access easement to Lots 1 and 3 from Hemlock Road has been revised specifically to preserve tree #18, a 29-inch Sitka spruce. This tree is no longer proposed for removal.
- Building site envelopes on proposed Lots 1 and 3 have shifted to the east to accommodate larger root protection zones of adjacent trees, including trees #16, #18, #24, and #25, as shown on the attached Tree Protection Plan.
- The vehicle turnaround area within Lot 1 has shifted to the east, and Lot 1's building site envelope reduced in size, to accommodate a larger root protection zone around trees #16 and #18, as shown on the attached Tree Protection Plan.
- The shared access, all driveways, and vehicle turnaround areas are proposed to be constructed of gravel/fine crushed rock placed over geotextile fabric. Constructing these surfaces with gravel will vastly limit the grading required versus what would be required for pavement, and geotextile fabric will allow for air and water to filter through to root systems.
- As shown on the attached Tree Protection Plan, tree protection fencing is shown that will be placed on-site prior to any ground disturbing activity. This protection fencing will limit encroachments into the root zones of preserved trees during on-site construction activity.
- Specific tree protection methods are identified on pages 4, 5, 10, and 11 of the attached Arborist Report that will need to be followed during on-site construction activities. Jamie Lerma, who will serve as the project's future general contractor, is familiar with these construction techniques and their successful implementation on projects throughout the Oregon coast.

In total, the project site has 40 surveyed trees, only seven of which are proposed for removal. Due to the extensive tree preservation on the site, over 80 percent of the project site's trees will be preserved. This will continue to provide a dense canopy cover within the project site and continuous wooded buffer along Hemlock Street.

The modifications to the applicant's proposed tentative partition plan described above further demonstrate that the applicant has extensively considered the preservation of trees on the site and overwhelmingly meets the standard of CBMC 17.70.030(D).

Project Site Geologic Conditions

At the June 23rd hearing, Planning Commissioners raised concerns with the project site's geologic hazards—specifically landslides and soil liquefaction—based on their review of the geotechnical investigation and geologic hazard report prepared by Earth Engineers, Inc. (EEI). To further clarify and address project compliance with the City's geologic hazard provisions of CBMC 17.50 an updated letter dated July 27, 2022 from Earth Engineers, Inc. is provided and supplemental compliance findings are also provided below.

Per CBMC 17.50.010 the purpose of the CBMC Chapter 17.50 is to ensure that city decisions are based on accurate geologic and soils information prepared by a registered geologist and to require "...the application of engineering principles in any construction that occurs where such studies indicate potential hazards." Accordingly, Troy Hull, a registered professional geotechnical engineer with EEI has provided an assessment of site conditions, dated June 10, 2022, and a subsequent July 27, 2022 summary letter, attached to this letter.

Specifically, under CBMC 17.50.040, the critical standard for City review of geologic hazards is noted below:

3. *The burden of proof shall be upon the applicant to show construction feasibility. A proposed use will be permitted only where:*
 - a. *The geologic site investigation report indicates that there is not a hazard to the use proposed on the site or to properties in the vicinity; or*
 - b. *The geologic site investigation report and engineering report specifies engineering and construction methods which will eliminate the hazard, or will minimize the hazard to an acceptable level.*

As noted in the evidence provided by EEI, the site has been mapped by the City as having a “moderate” landslide potential and “low” liquefaction potential. As noted in EEI’s July 27, 2022 letter, these mapping indicators are not unique to the project site and are pervasive throughout Cannon Beach. For example, nearly the entire City is mapped as having a moderate or high potential for liquefaction and significant areas throughout the City have either a “moderate”, “high” or “very high” landslide potential designation.

For that reason, these mapping indicators are not intended to inherently prohibit development. Rather, they are intended to ensure that—consistent with CBMC 17.50.040(A)(3)(b)—engineering and construction methods are applied to mitigate the concern. Consistent with that intent, EEI has prescribed design measures that, based on their professional recommendation, will protect the life-safety of future structures on the sites and not worsen the potential for liquefaction or landslide hazards on the adjacent properties, thereby minimizing the hazard to an acceptable level.

Specific mitigation measures prescribed include:

- Well graded, crushed rock structural fill as necessary; and
- Pin pile or helical pier foundation systems for the future residential dwellings.

Wetland Preservation

As described within the application package and during the June 23rd hearing, the applicant is not proposing any impacts within regulated wetland or wetland buffer areas. The applicant’s revised tentative partition plan continues to preserve the wetland and wetland buffer areas in their entirety. No future development, including building sites or driveways, are proposed to occur within the wetland or wetland buffer areas. In an effort to better illustrate this, the applicant has prepared a simplified and colorized version of the tentative partition plan (attached), which clearly shows the boundaries of the wetland and wetland buffer areas and adjacent building sites, driveways, vehicle turnaround areas, and the shared access from Hemlock Street. As shown, none of these development elements are proposed to impact the wetland or wetland buffer areas.

Completely avoiding wetland and wetland buffer area impacts is considered the highest priority alternative per CBMC 17.43.050(A)(1)(a). While the applicant previously considered development plans that contemplated wetland and wetland buffer area impacts, the proposal that was submitted, and is currently under review, proposes no impacts to wetland and wetland buffer areas and all future development will be constructed within upland areas only; therefore, the applicant’s proposal is compliant with CBMC 17.43.050(A).

As described at the June 23rd hearing, the applicant will also be recording a conservation covenant/easement over the project site’s wetland and wetland buffer areas, which will ensure the

wetland's preservation in perpetuity. The applicant is committed to preserving this wetland and is accepting of this being a condition of the project's approval.

If you have any questions regarding any of the details included within or attached to this letter, please do not hesitate to contact me at 971-229-8318 or mrobinson@dowl.com. The applicant team, including the applicant's consulting geotechnical engineer, arborist, and wetland biologist will all be in attendance at the next hearing on July 28th in order to answer any questions Commissioners or members of the public may have.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Robinson', with a long horizontal line extending to the right.

Matthew Robinson
Associate Planner

Attachment(s):

1. Tentative Partition Plan (*update to original Exhibit B*)
2. Simplified Tentative Partition Plan
3. Tree Protection Plan (*Attachment 1 from Arborist Report*)
4. Arborist Report (*update to original Exhibit I*)
5. Supplemental Earth Engineers Letter

Tentative Partition Plan

LINE TABLE		
LINE #	BEARING	DISTANCE
L2	N38°30'47"E	14.40'
L3	N88°12'47"E	28.17'
L1	N7°14'53"E	4.98'

Wetland and Wetland Buffer Areas to be subject to Conservation Covenant that will be recorded with the Final Plat. No development, human-activity, or other encroachments will be allowed with Wetland and Wetland Buffer Areas.

HORIZONTAL DATUM:

BASIS OF BEARING OREGON STATE PLANE COORDINATE SYSTEM, NAD83, NORTH ZONE

PRELIMINARY FOREST LAWN
PARTITION PLAT

LOCATED IN THE SE 1/4 OF SECTION 30,
TOWNSHIP 5 NORTH, RANGE 10 WEST W.M.
CITY OF CANNON BEACH, CLATSOP COUNTY,
OREGON

JULY 26, 2022

CURVE TABLE					
CURVE #	DELTA	RADIUS	LENGTH	CHORD	CHORD LEN
C1	26°03'04"	80.00'	36.37'	S20°16'25"W	36.06'
C2	5°13'04"	80.00'	7.29'	S35°54'29"W	7.28'
C3	49°42'02"	80.00'	69.40'	S63°21'52"W	67.24'
C4	12°06'36"	120.00'	25.36'	N82°09'41"E	25.32'
C5	13°03'30"	120.00'	27.35'	N69°34'38"E	27.29'
C6	6°21'59"	1402.02'	155.79'	N11°07'10"E	155.71'
C7	1°32'16"	1402.02'	37.63'	N15°04'17"E	37.63'
C8	2°43'30"	1402.02'	66.68'	N17°12'10"E	66.67'
C9	3°14'25"	1402.02'	79.29'	N20°11'08"E	79.28'
C10	22°49'52"	25.00'	9.96'	N76°26'11"W	9.90'
C11	35°13'20"	25.00'	15.37'	N47°24'35"W	15.13'
C12	9°42'31"	45.00'	7.63'	N21°25'36"W	7.62'

LEGEND:

	PROPOSED ACCESS AND UTILITY EASEMENT		BUILDING SETBACK LINE
	AREA OF WETLAND		WETLAND DELINEATION LINE
	AREA OF PROPOSED DRIVEWAY		OVERHEAD POWER
	TREE - DECIDUOUS		TELEPHONE
	TREE - CONIFER		COMMUNICATION POWER POLE
			TELEPHONE RISER
			FIRE HYDRANT
			WATER METER
			WATER VALVE

ACCESS EASEMENT DATA TABLE:

LOT	EASEMENT AREA (S.F.) IN LOT
1	799
3	703

LOT DATA TABLE:

LOT	TOTAL AREA (S.F.)	BLDG AREA (S.F.)	WETLAND AREA (S.F.)	UPLAND AREA (S.F.)	AREA OF WETLAND BUFFER (S.F.)
1	5,140	1,290	143	4,765	232
2	20,500	1,076	12,710	5,844	1,945
3	22,400	1,130	16,703	4,440	1,257

BASIS OF ELEVATIONS:

BASIS OF ELEVATIONS IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) BASED GPS OBSERVATIONS.

S&F Land Services

PORTLAND, VANCOUVER, BEND, SEASIDE

1725 N ROOSEVELT DR,
STE B, SEASIDE, OR 97138
(503) 738-3425

WWW.SFLANDS.COM

EMAIL: INFO@SFLANDS.COM

DATE	JOB NO.	FIELD	DRAWN	CHECKED
JULY 26, 2022	21G30502	SP/JPW	RER	JLW

SURVEY FOR:

FOREST LAWN
PRELIMINARY PLAT

TAX LOT 51030DA04100
PARCEL 3, PP 2000-037

SW 1/4 SECTION 30, T5N, R10W, W.M.
CITY OF CANNON BEACH, CLATSOP COUNTY, OREGON

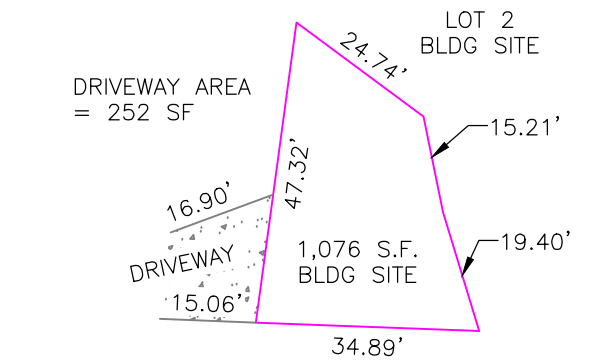
REGISTERED
PROFESSIONAL
LAND SURVEYOR

PRELIMINARY

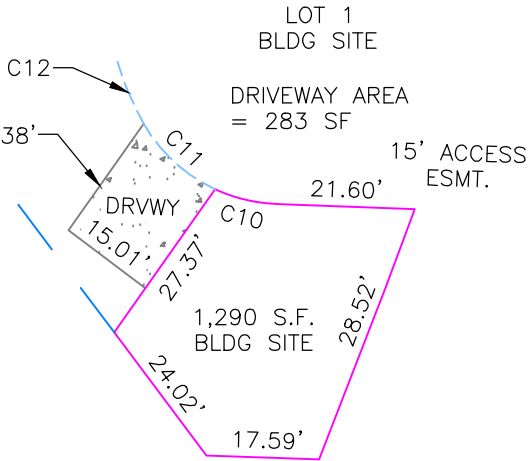
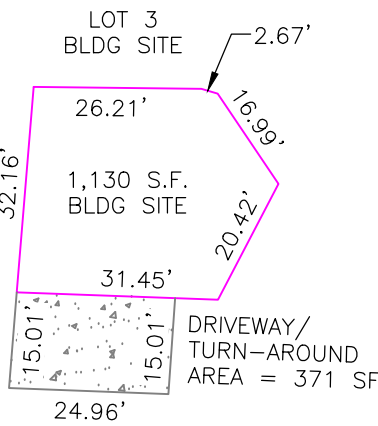
OREGON
SEPTEMBER 10, 2019
JACK L. WHITE II
91987PLS

RENEWES 6/30/24

30' 0 15' 30' 60'
SCALE: 1" = 30'



BUILDING (BLDG) SITE DETAILS:
SCALE 1"=30'



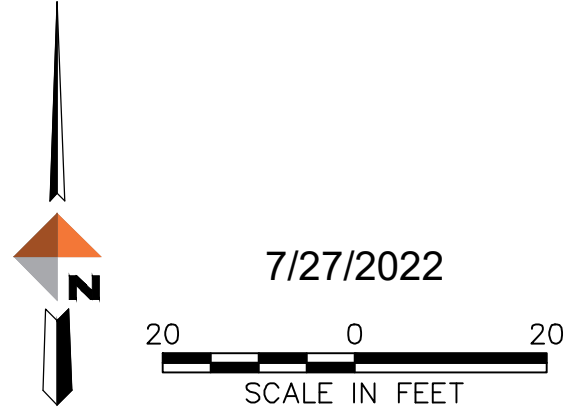
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Simplified Tentative Partition Plan



Forest Lawn Partition
Simplified Partition Plan

Wetland and Wetland Buffer Areas to be subject to Conservation Covenant that will be recorded with the Final Plat. No development, human-activity, or other encroachments will be allowed with Wetland and Wetland Buffer Areas.



DOWL
WWW.DOWL.COM
720 SW Washington Street, #750
Portland, Oregon 97205
971-280-8641
Project No. 2332.14830.01
Contact: Read Stapleton, AICP

Tree Protection Plan

Attachment 1



Arborist Report



Todd Prager & Associates_{LLC}

MEMORANDUM

DATE: July 21, 2022
TO: Patrick/Dave, LLC
FROM: Todd Prager, RCA #597, ISA Board Certified Master Arborist
RE: Tree Plan for the Forest Lawn Partition

Summary

After adjustments to the proposed site design and infrastructure improvements, 34 trees are proposed to be retained and 7 trees are proposed to be removed at the Forest Lawn Partition in Cannon Beach. The current proposed tree removal has been reduced from 11 trees to 7 trees since the May 26, 2022 partition application submittal. The 34 trees to be retained with site design and infrastructure improvements will be protected according to the recommendations in this report.

Background

Patrick/Dave, LLC is proposing a three-lot partition and construction of infrastructure improvements at the vacant property located south of the intersection of Forest Lawn Road and South Hemlock Street in Cannon Beach, Oregon. Wetlands occupy much of the northern portion of the site with the buildable areas clustered towards the southern end. Access to lots 1 and 3 is proposed from South Hemlock Street and access to lot 2 is proposed from Forest Lawn Road. The proposed partition plan is provided in Attachment 1.

Sitka spruce (*Picea sitchensis*) is the dominant tree species at the site with scattered red alder (*Alnus rubra*) along with a western hemlock (*Tsuga heterophylla*) and crabapple (*Malus sp.*). Small diameter Hooker's willow (*Salix hookeriana*) occupy much of the wetland, but their diameter's were smaller than required to be individually inventoried.

The partition application dated May 26, 2022 anticipated the removal of 11 trees with future development of the site and lots.

The assignment requested of my firm for this project was to:

- Visit the property to review the site and trees;
- Coordinate with the project design team to identify opportunities for additional tree preservation;
- Provide my recommendations for tree preservation and removal based on the site constraints; and
- Provide tree protection recommendations for the construction of site and infrastructure improvements.

Tree and Site Assessment

On July 17, 2022, I visited the site and reviewed the trees. The purpose of my site visit was to verify the tree assessment dated December 28, 2021 by Arbor Care Tree Specialists, Inc. in Attachment 2. During my visit I also reviewed the site to determine if there were opportunities for additional tree preservation. My scope of work did not include a re-inventory of the trees at the site since that work was already completed by another arborist.

The tree assessment data in Attachment 1 was generally accurate and relevant for this stage of the project. The following changes and additions to the inventory based on my site visit are summarized as follows:

- **Tree 12**, a decayed red alder growing over a culvert, was removed by the City of Cannon Beach based on background I received.
- **Tree 15**, a 60-inch diameter (DBH) Sitka spruce, had a thinning crown compared with other trees at the site.
- **Tree 16**, a 50-inch Sitka spruce on a neighboring property, had a thinning crown compared with other trees at the site and a sweep in its lower trunk towards the northeast.
- **Tree 20**, a 30-inch DBH western hemlock, leaned away from the site and was separated from South Hemlock Street by larger Sitka Spruce that were adjacent to it.
- **Tree 21.1** was added to the site plan in its approximate location by my firm. It was a 36-inch DBH Sitka spruce in good health condition and fair structural condition with codominant stems at approximately 50 feet above ground. Its crown was moderately one sided due to competition with adjacent trees.
- **Tree 34** was a 35-inch DBH Sitka spruce with an approximately 15 percent live crown ratio. Live crown ratio is the ratio of the height of the tree's live foliage to the total height of the tree.
- **Tree 36** was a 36-inch DBH Sitka spruce with a sweep at its lower trunk towards South Hemlock Street.
- **Tree 37b** presently had a relatively low density of *Porodaedalea pini* conks.

With the removal of tree 12 from the inventory and addition of tree 21.1, the total inventoried tree count at the site remains at 41 trees.

Tree Preservation and Removal

Following my site visit, I coordinated with the project team to review and adjust the proposed plans with the goal of preserving additional trees. The following plan adjustments were made in coordination with the project team:

- **Utilities and Access:** The proposed utility and access easement alignment was adjusted to reduce disturbance to the root zones of trees 18 and 20;
- **Lot 1:** The lot 1 building site and vehicle turnaround was adjusted to reduce disturbance to the root zones of trees 16 and 18;
- **Lot 3:** The lot 3 building site was adjusted to reduce disturbance to the root zone of tree 25; and

- **Wetland Trees:** Trees 20 and 37b will be retained and monitored by the owners so that no tree removal will occur within the wetland.

The May 26, 2022 partition application proposed the removal of 11 trees. Based on proposed site plan changes, the current proposal is to remove 7 trees. Table 1 below is a summary of the current status of the 11 trees previously proposed for removal. Trees with changes in status are bolded in Table 1.

Table 1: Current Status of 11 Trees Previously Proposed for Removal

Tree #	Type	DBH	Area	5/22/2022 Proposal	Current Proposal	Comments
12	red alder	11	wetland	remove	n/a	Removed by city
15	Sitka spruce	60	upland	remove	remove	This tree had a thinning crown and will be impacted by construction of the access drive and utilities from South Hemlock
17	Sitka spruce	50	upland	remove	remove	This tree had a poor live crown ratio, lean, heaving root plate, and will be impacted by construction of the access drive and utilities from South Hemlock
18	Sitka spruce	29	upland	remove	retain	This tree can be retained by repositioning of the access drive and utilities from South Hemlock and relocating the lot 1 vehicle turnaround
19	Sitka spruce	36	upland	remove	remove	This tree conflicts with construction of the access drive and utilities from South Hemlock
20	western hemlock	30	wetland	remove	retain	This tree leaned away from the building site and was separated from South Hemlock Street by larger Sitka Spruce that were adjacent to it. The adjacent trees offered protection to the roadway. It may be retained and monitored at this time.
23	Sitka spruce	32	upland	remove	remove	This tree conflicts with the access drive, utilities, and building site for lot 3.
34	Sitka spruce	35	upland	remove	remove	This tree conflicts with the building site for lot 3.
35	Sitka spruce	35	upland	remove	remove	This tree conflicts with the building site for lot 3 and is infected with <i>Fomitopsis pinicola</i> .
36	Sitka spruce	36	upland	remove	remove	This tree conflicts with the building site for lot 3.
37b	Sitka spruce	32	wetland	remove	retain	This tree was in the wetland and had a relatively low density of <i>Porodaedalea pini</i> conks. It may be retained and monitored at this time.

Tree Protection Recommendations

The trees to be retained will require protection during construction. This section of the report includes my preliminary tree protection recommendations for the construction of site and infrastructure improvements.

- *Tree Protection Fencing:* Tree protection fencing shall be installed in the locations shown in Attachment 1 prior to construction of site and infrastructure improvements. If work is required in the tree protection zones, the project arborist shall be consulted to oversee the work.
- *Directional Felling:* Fell the trees to be removed away from the trees to be retained so they do not contact or otherwise damage the trunks or branches of the trees to be retained. No vehicles or heavy equipment shall be permitted within the tree protection zones during tree removal operations.
- *Stump Removal:* The stump of trees 17, 19, 23, 34, 35, and 36 to be removed shall have their structural roots cut prior to removal to protect the root systems of the adjacent trees to be retained.
- *Underground utilities:* Excavation for underground utilities shall be centered within the access/utility easement to gain maximum distance from both trees 18 and 20. If roots over 2-inches in diameter are encountered during excavation, work should be paused and excavation overseen by the project arborist so that roots may be retained and tunneled under where possible.
- *Access, driveways, and turnaround construction:* The access, driveway, and turnarounds adjacent to trees 16, 18, 20, 24, and 25 shall be constructed of clean crushed rock (with no fines) over geotextile fabric that is permeable to air and water. The surface litter layer shall be carefully removed under arborist supervision prior to fabric and rock placement to minimize damage and disturbance to any surface roots of trees to be retained. No excavation beyond the native soil surface is permitted. At least four inches of crushed rock over geotextile fabric shall be placed over exposed surface roots to protect them from damage.
- *Building Foundations within Tree Protection Zones:* If any building foundations are to be constructed within the tree protection zones shown in Attachment 1, they will need to be designed to protect structural roots that may be located within their footprints. This may involve pneumatic excavation to locate structural roots greater than 2-inches in diameter and bridging the foundations over the roots. A pier foundation is the least intrusive foundation type (Figure 1) and may be required to minimize root impacts. Any pneumatic excavation or foundation construction within the tree protection zones will need to occur under the onsite supervision of the project arborist.

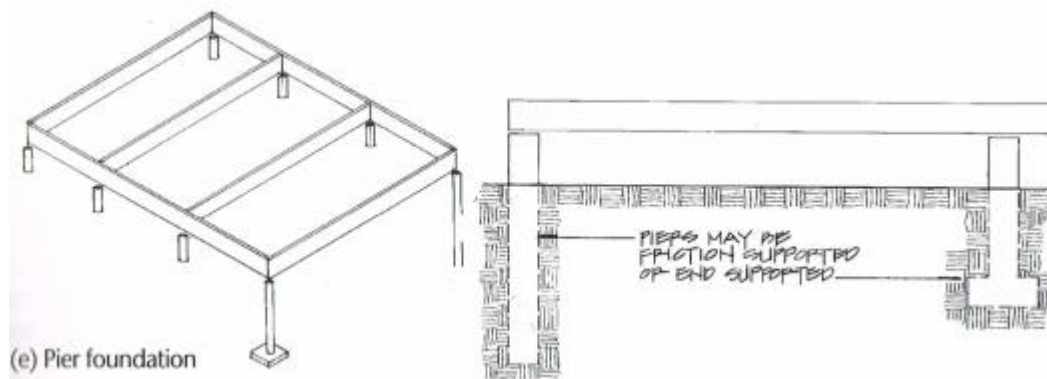


Figure 1: Pier Foundation Example¹

- **Compaction Management:** If needed for construction access, a 12-inch layer of wood chips over geotextile fabric shall be placed in the tree protection zones to prevent excessive soil compaction from construction traffic. The project arborist will need to review and approve shifting of the fence locations and final placement of wood chips if required. The fabric and wood chips should be removed after construction is complete.
- **Crown Pruning Trees:** If the crowns of any trees need to be raised and/or reduced, it shall occur prior to construction. The pruning shall be conducted by an ISA certified arborist in accordance with ANSI A300 pruning standards in coordination with the project arborist. The pruning shall be the minimum necessary to achieve the required clearance for construction.
- **Erosion Control:** If erosion control is required within or directly adjacent to the tree protection fencing, straw wattles shall be used to avoid excavation.

Additional tree protection recommendations are included in Attachment 3.

¹ Figure 1 from:

Matheny, N. P., & Clark, J. R. (1998). *Trees and development: A technical guide to preservation of trees during land development*. Champaign, IL: International Society of Arboriculture.

Conclusion

After adjustments to the proposed site design and infrastructure improvements, 34 trees are proposed to be retained and 7 trees are proposed to be removed. The previous proposal included the removal of 11 trees.

The trees to be retained as part of the site design and infrastructure improvements will be protected according to the recommendations in this report.

Please contact me if you have questions, concerns, or need any additional information.

Sincerely,



Todd Prager

*ASCA Registered Consulting Arborist #597
ISA Board Certified Master Arborist, WE-6723B
ISA Qualified Tree Risk Assessor
AICP, American Planning Association*

- Attachment 1: Site Plan with Trees and Tree Protection
- Attachment 2: Tree Inventory
- Attachment 3: Tree Protection Recommendations
- Attachment 4: Assumptions and Limiting Conditions





Todd Prager & Associates
LLC

Attachment 2

Tree Number	Common Name	Scientific Name	Comments from Arbor Care Tree Specialists	DBH
1	Sitka spruce	<i>Picea sitchensis</i>	Ok	22
2	Sitka spruce	<i>Picea sitchensis</i>	Ok	22
3	Sitka spruce	<i>Picea sitchensis</i>	Ok	12
4	Red alder	<i>Alnus rubra</i>	Ok, tipped tree with horizontal trunk. Stable	12
5	Red alder	<i>Alnus rubra</i>	Large decay pocket. No target. No action required	9
6	Sitka spruce	<i>Picea sitchensis</i>	Ok	9
7	Sitka spruce	<i>Picea sitchensis</i>	Ok	12
8	Sitka spruce	<i>Picea sitchensis</i>	Ok	35
9	Sitka spruce	<i>Picea sitchensis</i>	Phaeolus schweinitzii at base. Leans into wetland.	50
10	Sitka spruce	<i>Picea sitchensis</i>	Ok	12
11	Sitka spruce	<i>Picea sitchensis</i>	Ok	27
12	Red alder	<i>Alnus rubra</i>	Remove. Growing over culvert and decay in plane of lean toward road.	11
13	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
14	Crab apple	<i>Malus sp.</i>	Ok. Cluster of 5 trunks	6-8
15	Sitka spruce	<i>Picea sitchensis</i>	Ok	60
16	Sitka spruce	<i>Picea sitchensis</i>	Ok	50
17	Sitka spruce	<i>Picea sitchensis</i>	Remove. Poor live crown ratio and heavy lean with a heaving root plate	50
18	Sitka spruce	<i>Picea sitchensis</i>	Ok	29
19	Sitka spruce	<i>Picea sitchensis</i>	Ok	36
20	Western hemlock	<i>Tsuga heterophylla</i>	Remove. Heavy lean with a heaving root plate	30
21	Sitka spruce	<i>Picea sitchensis</i>	Ok	36
21.1	Sitka spruce	<i>Picea sitchensis</i>	Added by Todd Prager based on July 21, 2022 site visit. Good health condition and fair structural condition with codominant stems at approximately 50 feet above ground. Crown was moderately one sided due to competition with adjacent trees	36
22	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
23	Sitka spruce	<i>Picea sitchensis</i>	Ok	32
24	Sitka spruce	<i>Picea sitchensis</i>	Ok	40
25	Sitka spruce	<i>Picea sitchensis</i>	Ok	35
26	Sitka spruce	<i>Picea sitchensis</i>	Ok	33



Todd Prager & Associates
LLC

Attachment 2

Tree Number	Common Name	Scientific Name	Comments from Arbor Care Tree Specialists	DBH
27	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
28	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
29	Sitka spruce	<i>Picea sitchensis</i>	Ok	21
30	Sitka spruce	<i>Picea sitchensis</i>	Ok	19
31	Sitka spruce	<i>Picea sitchensis</i>	Ok	
32	Sitka spruce	<i>Picea sitchensis</i>	Ok	40
33	Sitka spruce	<i>Picea sitchensis</i>	Ok	20
34	Sitka spruce	<i>Picea sitchensis</i>	Ok	35
35	Sitka spruce	<i>Picea sitchensis</i>	Remove. Fomitopsis pinicola seen at 18ft.	35
36	Sitka spruce	<i>Picea sitchensis</i>	Ok	36
37	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
37b	Sitka spruce	<i>Picea sitchensis</i>	Remove. Porodaedalea pini: multiple fruiting bodies extending up trunk	32
38	Sitka spruce	<i>Picea sitchensis</i>	Ok	42
39	Sitka spruce	<i>Picea sitchensis</i>	Ok	24
40	Red alder	<i>Alnus rubra</i>	Ok	22

*This tree inventory is adapted from information collected by Arbor Care Tree Specialists and compiled in their report dated 12-28-2021.

Attachment 3 Tree Protection Recommendations

Before Construction Begins

1. Notify all contractors of tree protection procedures. For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection.
 - a. Hold a tree protection meeting with all contractors to explain the goals of tree protection.
 - b. Have all contractors sign memoranda of understanding regarding the goals of tree protection. The memoranda should include a penalty for violating the tree protection plan. The penalty should equal the resulting fines issued by the local jurisdiction plus the appraised value of the tree(s) within the violated tree protection zone per the current Trunk Formula Method as outlined in the current edition of the ***Guide for Plant Appraisal*** by the Council of Tree & Landscape Appraisers. The penalty should be paid to the owner of the property.
2. Fencing
 - a. Trees to remain on site will be protected by installation of tree protection fencing as shown in Attachment 1.
 - b. Unless otherwise noted, the fencing should be put in place before the ground is cleared to protect the trees and the soil around the trees from disturbances.
 - c. Fencing should be established by the project arborist based on the needs of the trees to be protected and to facilitate construction.
 - d. Fencing should consist of 6-foot-high steel fencing on concrete blocks or 6-foot metal fencing secured to the ground with 8-foot metal posts to prevent it from being moved by contractors, sagging, or falling down.
 - e. Fencing should remain in the position that is established by the project arborist and not be moved without approval from the project arborist.
3. Signage
 - a. All tree protection fencing should have signage as follows so that all contractors understand the purpose of the fencing:

TREE PROTECTION ZONE

DO NOT REMOVE OR ADJUST THE LOCATION OF THIS
TREE PROTECTION FENCING
UNAUTHORIZED ENCROACHMENT MAY RESULT IN FINES

Please contact the project arborist if alterations to the location of the tree protection fencing are necessary.

Todd Prager, Project Arborist, Todd Prager & Associates, 971-295-4835

- b. Signage should be placed every 75-feet or less.

During Construction

1. Protection Guidelines Within the Tree Protection Zones:
 - a. No new buildings; grade change or cut and fill, during or after construction; new impervious surfaces; or utility or drainage field placement should be allowed within the tree protection zones.
 - b. No traffic should be allowed within the tree protection zones. This includes but is not limited to vehicle, heavy equipment, or even repeated foot traffic.
 - c. No storage of materials including but not limiting to soil, construction material, or waste from the site should be permitted within the tree protection zones. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
 - d. Construction trailers should not to be parked/placed within the tree protection zones.
 - e. No vehicles should be allowed to park within the tree protection zones.
 - f. No other activities should be allowed that will cause soil compaction within the tree protection zones.
2. The trees should be protected from any cutting, skinning or breaking of branches, trunks or woody roots.
3. The project arborist should be notified prior to the cutting of woody roots from trees that are to be retained to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots should be immediately covered with soil or mulch to prevent them from drying out.
4. Trees that have woody roots cut should be provided supplemental water during the summer months.
5. Any necessary passage of utilities through the tree protection zones should be by means of tunneling under woody roots by hand digging or boring with oversight by the project arborist.
6. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

After Construction

1. Carefully landscape the areas within the tree protection zones. Do not allow trenching for irrigation or other utilities within the tree protection zones.
2. Carefully plant new plants within the tree protection zones. Avoid cutting the woody roots of trees that are retained.
3. Do not install permanent irrigation within the tree protection zones unless it is drip irrigation to support a specific planting or the irrigation is approved by the project arborist.
4. Provide adequate drainage within the tree protection zones and do not alter soil hydrology significantly from existing conditions for the trees to be retained.
5. Provide for the ongoing inspection and treatment of insect and disease populations that can damage the retained trees and plants.
6. The retained trees may need to be fertilized if recommended by the project arborist.
7. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

Attachment 4

Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. The information provided by Patrick/Dave, LLC and their consultants was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. This report is a summary of my assignment which was to:
 - Visit the property to review the site and trees;
 - Coordinate with the project design team to identify opportunities for additional tree preservation;
 - Provide my recommendations for tree preservation and removal based on the site constraints; and
 - Provide tree protection recommendations for the construction of site and infrastructure improvements.

Supplemental Earth Engineers Letter





Earth
Engineers,
Inc.

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Phone: 360-567-1806

www.earth-engineers.com

July 27, 2022

Patrick/Dave LLC
3514 Northeast U.S. Grant Place
Portland, Oregon 97212
Attention: David Pietka, Owner

Phone: (503) 206-1071
E-mail: dpietka@msn.com

**Subject: Supplemental Commentary on Landslide and Liquefaction Hazards
Proposed Forest Lawn 3-Lot Partition
Clatsop County Tax Lot No. 51030DA04100
Intersection of Forest Lawn Road and Hemlock Street
Cannon Beach, Clatsop County, Oregon
EEI Report No. 22-103-2**

Dear Mr. Pietka,

As requested by Jamie Lerma with Red Crow, LLC, Earth Engineers, Inc. (EEI) is pleased to provide additional commentary on the landslide and liquefaction hazards identified in our Geotechnical Investigation Report (reference EEI Report No. 22-103-1-R1 dated June 10, 2022). We understand that at the last Planning Commission meeting to discuss the proposed 3-lot partition, there was some concern expressed about landslide and liquefaction hazards.

Our scope of services for the above referenced project was to perform a geotechnical investigation and evaluate geologic hazards in accordance with the Cannon Beach Municipal Code (CBMC) 17.050. **To be clear, Section 17.50.010 of the code essentially states that the purpose of evaluating geologic hazards is so that the project can be engineered to properly address the potential hazards—the purpose is not to determine if the project should be constructed or not.**

Two of the hazards identified in our June 10, 2022 report were landsliding and soil liquefaction during an earthquake. We should note that just because geologic hazards are identified for a property, does not mean that the property is not developable from a geotechnical standpoint. The key is to identify potential hazards and provide recommendations on how to properly mitigate those hazards so that the hazard is not made worse on adjacent properties, and that the subject property can be constructed without risk to life-safety.

Section 17.50.040(3) of the CBMC provides the critical standard for the City's review of geologic hazards, and is noted below:

3. The burden of proof shall be upon the applicant to show construction feasibility. A proposed use will be permitted only where:

- a. The geologic site investigation report indicates that there is not a hazard to the use proposed on the site or to properties in the vicinity; or
- b. The geologic site investigation report and engineering report specifies engineering and construction methods which will eliminate the hazard, or will minimize the hazard to an acceptable level.

As identified through our original report and investigation, and described in greater detail within this letter, the project site has been mapped by the City as having a “moderate” landslide potential and “low” liquefaction potential. These mapping indicators are not unique to the site and are pervasive throughout Cannon Beach. For example, nearly the entire City is mapped as having a moderate or high potential for liquefaction and significant areas through the City have either a “moderate,” “high,” or “very high” landslide potential designation.

For that reason, these mapping indicators are not intended to inherently prohibit development. Rather, they are intended to ensure that—consistent with CBMC 17.50.040.3(b)—engineering and construction methods are applied to mitigate the concern. Consistent with that intent, EEl has prescribed design measures that, based on our professional recommendation, will protect the life-safety of future structures on the subject property and not worsen the potential for liquefaction or landslide hazards on the adjacent properties, thereby minimizing the hazard to an acceptable level. Specific mitigation measures prescribed include:

- Granulated, well graded, crushed rock as structural fill, as necessary; and
- Pin pile or helical pier foundation systems for the future residential dwellings

LANDSLIDING HAZARD

Landsliding was identified because the property is mapped near a very large landslide. There are two applicable landslide maps that were included in our June 10, 2022 report (see Figures 1 through 4 below). Figure 1 shows that the subject property is mapped in a “moderate” hazard area. Figure 2 is the same map, but zoomed out to show that the majority of Cannon Beach is mapped in a landslide hazard area.

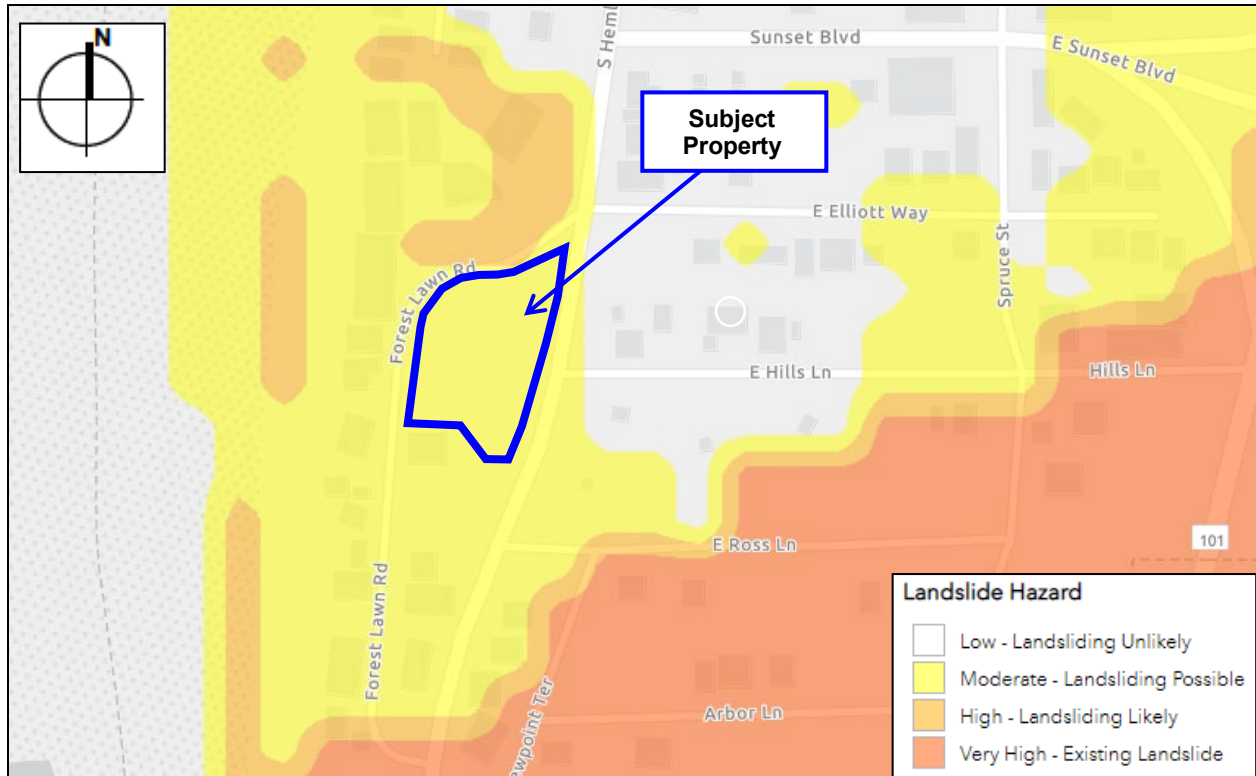


Figure 1: HazVu map showing the landslide hazard zones deposits in the immediate vicinity of Forest Lawn Road.

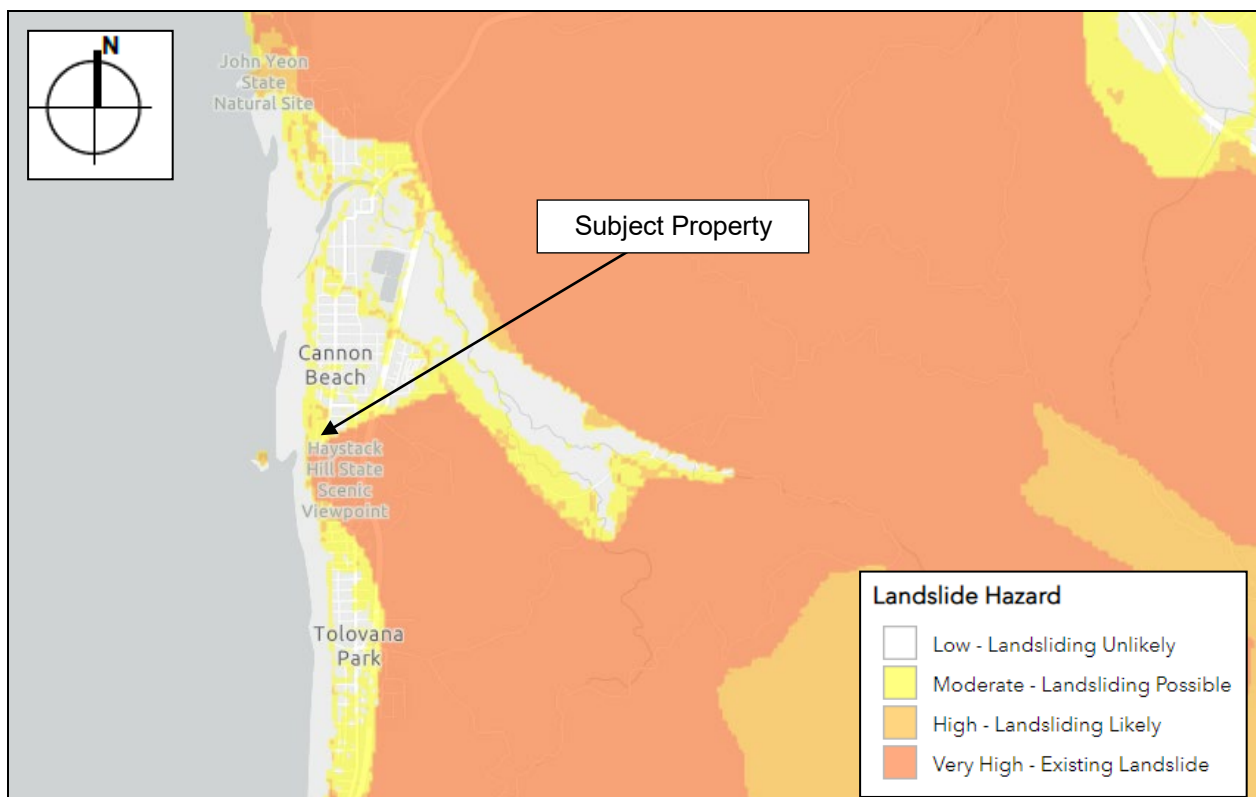


Figure 2: The same HazVu map as Figure 1 above, but showing the landslide hazard of the greater Cannon Beach area.

Figure 3 shows that the subject property is mapped adjacent to, but not within, a very large landslide mass. Figure 4 is the same map, but zoomed out to show that the majority of Cannon Beach is mapped in a very large ancient landslide area.

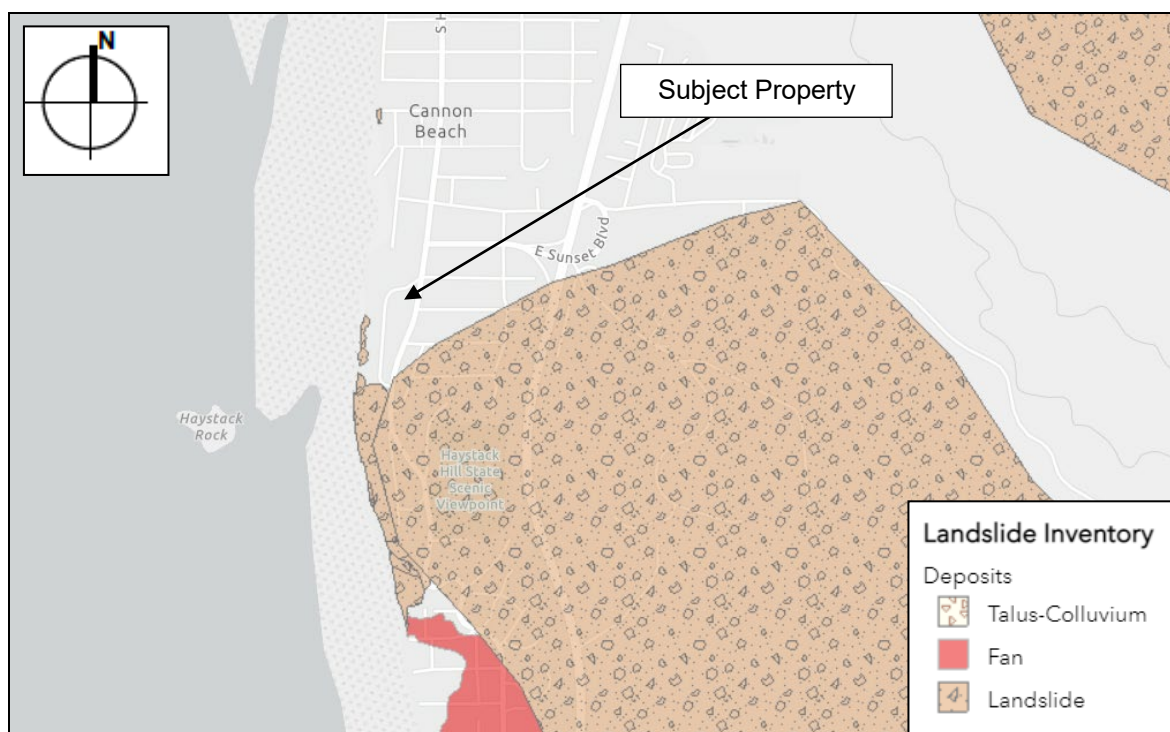


Figure 3: HazVu map showing the mapped landslide deposits in the immediate vicinity of Forest Lawn Road.

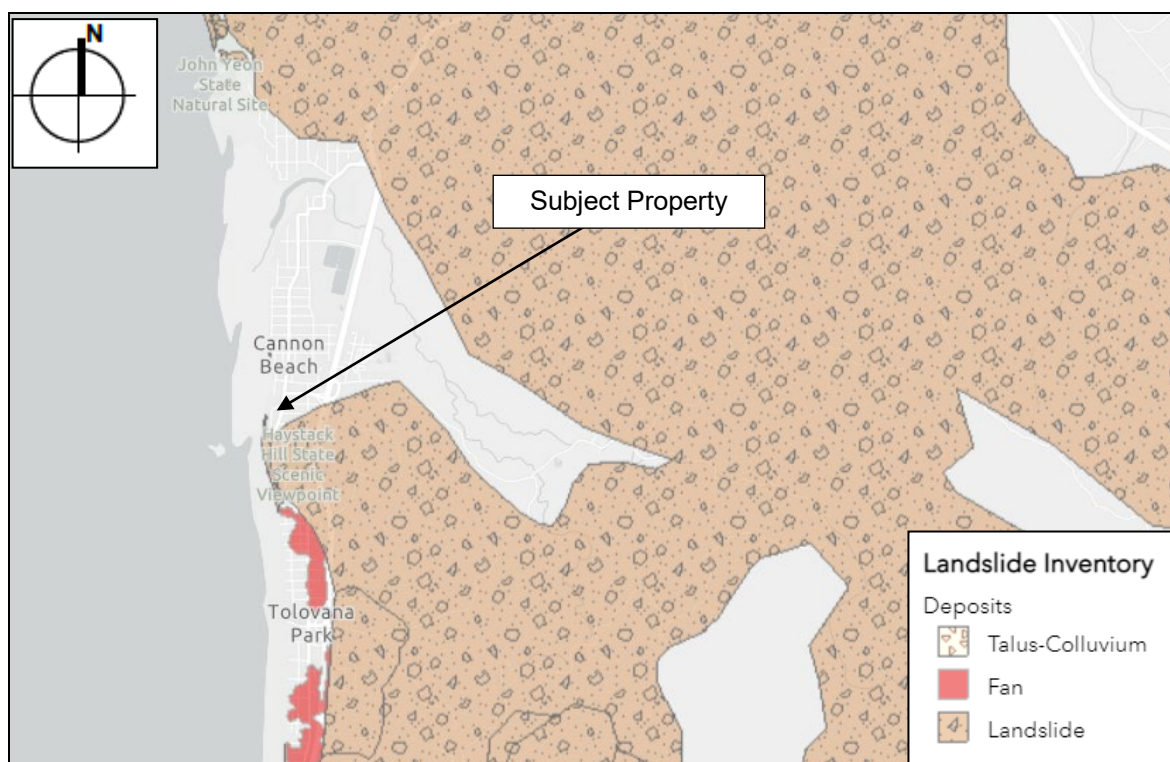


Figure 4: The same HazVu map as Figure 3, showing the mapped historic landslide deposits in the greater Cannon Beach area.

Ultimately, we identified that the property is mapped in a landslide hazard area, as shown in the mapping above, we investigated the subsurface soil conditions with borings and lab testing as required, and we determined that the hazard mitigation should include a more robust foundation system to support the future homes (i.e. a pile foundation system that are estimated to be 30 to 50 feet deep, depending upon the type of deep foundation system selected). A deep foundation system will take the building loads down to the stable sandstone stratum. No other mitigation recommendations are necessary to protect life-safety for the subject 3-lot development or ensure that the landslide risk is not made worse on adjacent lots as a result of this proposed development.

LIQUEFACTION HAZARD

There is one applicable liquefaction hazard map that was included in our June 10, 2022 report (see Figures 5 and 6 below). Figure 5 shows that the subject property is generally mapped in a “low” hazard area. Figure 6 is the same map, but zoomed out to show that the majority of Cannon Beach is mapped in a liquefaction hazard area. Based on our drilled borings, we would concur with the mapping that soil liquefaction is a potential hazard at the property.

Similarly to the landslide hazard, we identified that the property is mapped in a liquefaction hazard area, we investigated the subsurface soil conditions with borings and lab testing as required, and we determined that the hazard mitigation should include a more robust foundation system to support the future homes (i.e. a pile foundation system that are estimated to be 30 to 50 feet deep, depending upon the type of deep foundation system selected). A deep foundation system will take the building loads down through the potentially liquefiable soils to the stable sandstone stratum. No other mitigation recommendations are necessary to protect life-safety for the subject 3-lot development or ensure that the liquefaction risk is not made worse on adjacent lots as a result of this proposed development.

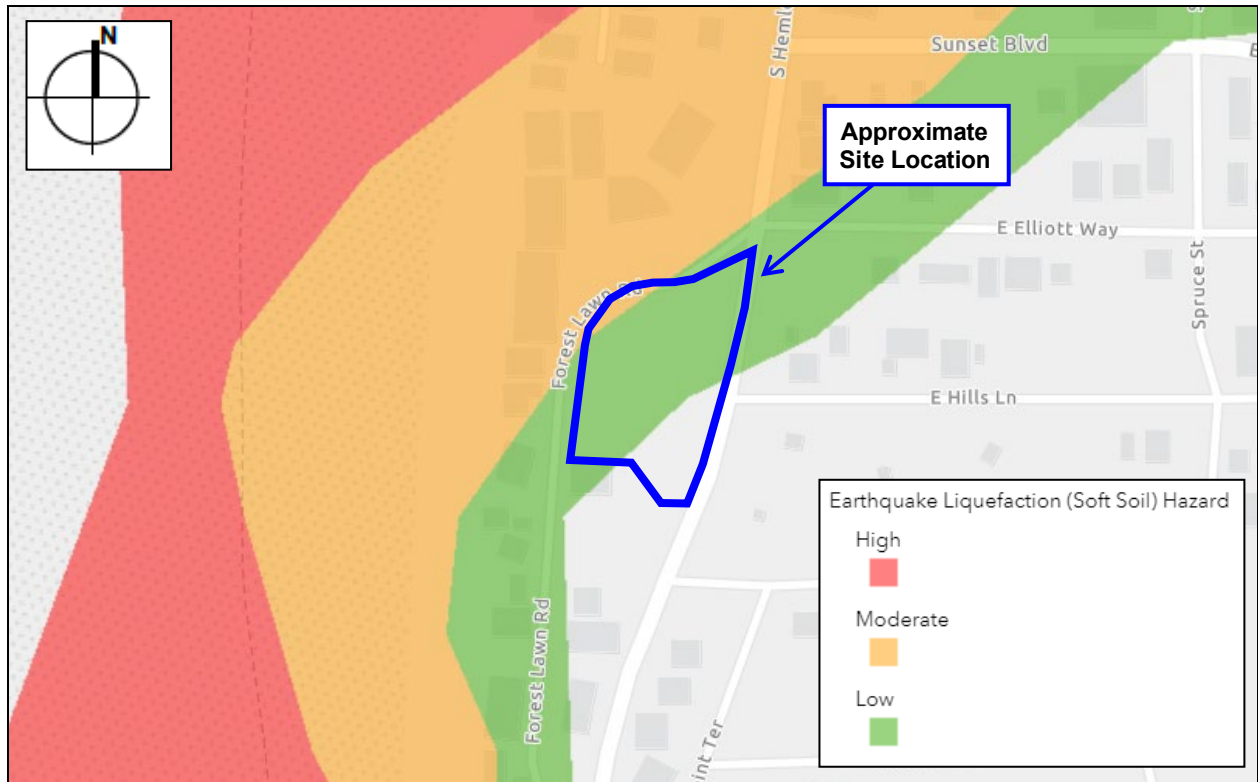


Figure 5: HazVu map showing the liquefaction (soft soil) hazard area in the immediate vicinity of Forest Lawn Road.

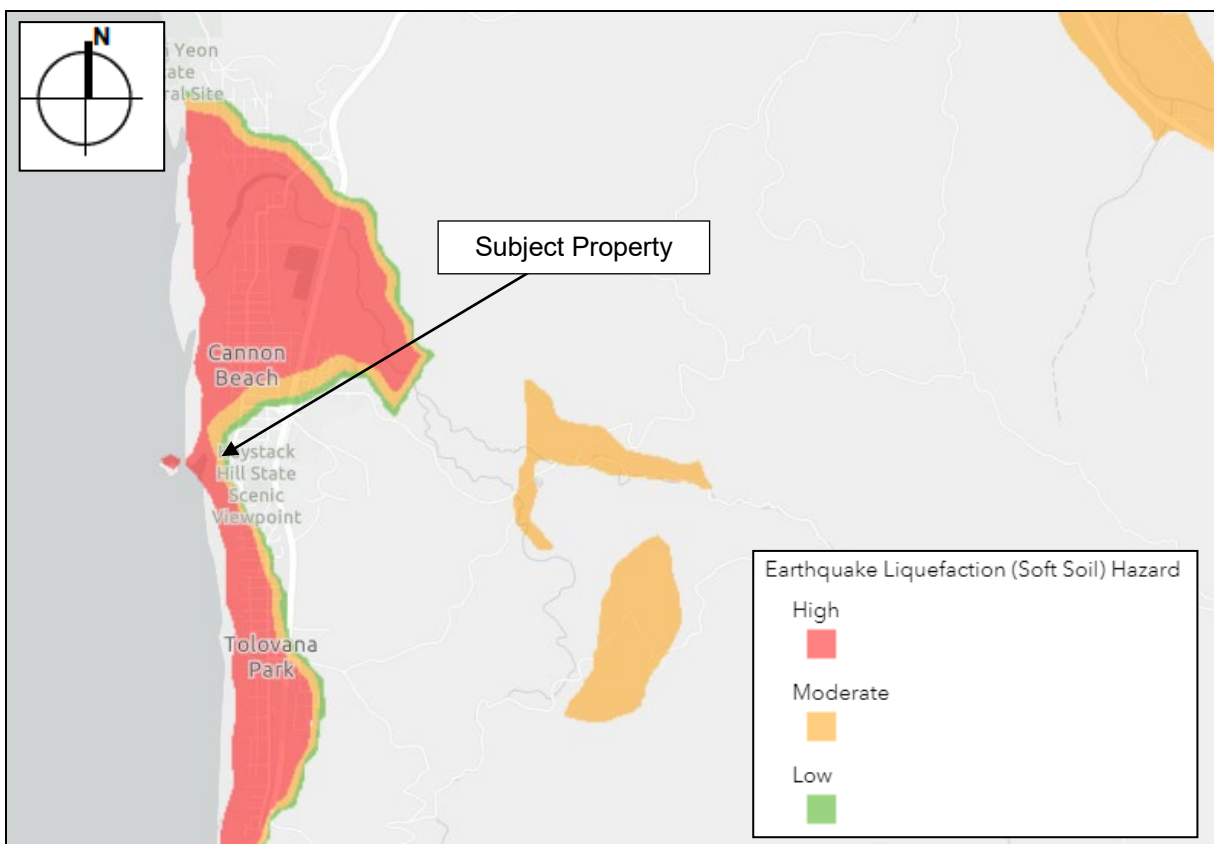


Figure 6: The same HazVu map as Figure 5, showing the liquefaction (soft soil) hazard in the greater Cannon Beach area

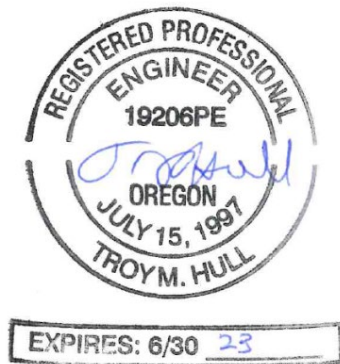
CONCLUSION

In conclusion, it is our professional opinion that we have met the City of Cannon Beach requirements for addressing geologic hazards. We identified the potential hazards that are present, we performed a thorough site investigation to evaluate those hazards, and we provided engineering recommendations to address the hazards. The recommendations we provided protect life-safety for the subject property and ensure that the hazard on adjacent properties is not made any worse as a result of the proposed development. Note that the City's July 21, 2022 Staff Report concurs with us that we have met the criteria for evaluating and addressing the geologic hazards and the City staff is recommending the conditional approval, without any conditions related to the geologic hazards (other than following the recommendations in our geotechnical report during construction).

Again, the intent of the City's code is not to identify geologic hazards so that construction can be prevented, but to identify the geologic hazards so that they can be properly addressed during construction.

If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Sincerely,
Earth Engineers, Inc.



Troy Hull, P.E., G.E.
Principal Geotechnical Engineer

A handwritten signature in black ink, appearing to read "Jacquie Boyer".

Jacqui Boyer
Geotechnical Engineering Associate