# Curry County Community Development Department
## PLANNING COMMISSION STAFF REPORT

**Application AD-1911 is a request for conditional use approval for a proposed vintage Recreation Vehicle (RV) Park called Silver Cypress. Silver Cypress is proposed to have eleven (11) upgraded Vintage Silver Stream Units catering to couples, yoga retreats and artists within a tranquil landscaped natural environment. The project includes two parcels with a total of 3.01 acres in the Rural Commercial (RC) zoning district.**

## 1. Background Information

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| **Owners:** | Garth Evey<br>Jeven Showers<br>PO Box 1093<br>Talent, Oregon 97540 |
| **Applicants:** | Garth Evey<br>Jeven Showers<br>PO Box 1093<br>Talent, Oregon 97540 |
| **Agent:** | Pacific Geographic Consultants, LLC<br>140 Brierwood Dr.<br>Talent, OR 97540 |
| **Land Use Review:** | Administrative Conditional Use Review Referred to the Planning Commission by Planning Director. |
| **Property Description:** | Assessor's Map 35-14-31B, Tax Lots 1400 and 1500; |
| **Location:** | Property is located at 32990 and 32982 Nesika Road. The two parcels are adjacent to each other on the west side of Nesika Road, about 0.3 miles north of the Nesika Market. |
| **Surrounding Land Uses:** | North – Residential<br>South – Vacation rental<br>East – Nesika Road, existing residential development w/lots for sale<br>West – Pacific Ocean |

**Existing Site Conditions**

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| **Existing Development:** | Tax Lot 1400 is developed with a 988 sq. ft. residence and Tax Lot 1500 is developed with a 945 sq. ft. commercial building (former restaurant). |
| **Proposed Development:** | Vintage AirStream RV Park with 11 upgraded AirStream trailers. Existing dwelling converted to Manager's Quarters and conversion of the former restaurant into a small community gathering hall for park guests. |
| **Zone:** | Rural Commercial (RC) Zoning District |

**Background:**

AD-1911 is a proposal for 11 vintage Airstream trailers to be placed on two adjacent ocean view parcels within the Nesika Beach community. The proposal is based on a unique and successful RV camping concept established in a few other areas of the country. It is a blend of high-end vintage modified Airstream trailers within an environment of tranquility next to the ocean. Silver Cypress is planned for an adult vacation camping experience. The proposed vegetative walking paths will be illuminated with low voltage, low profile lighting. Each vintage trailer will have its own BBQ, Jacuzzi on a private deck and vegetative separation from other campers for a private intimate setting.


**Example Silver Cypress Trailer**

Application AD-1911 is similar in concept to an application proposed in 2018. Application AD-1812 for an RV park was approved by the Planning Director in October, 2018 and then was appealed to the Planning Commission. The Planning Commission scheduled a public hearing on AD-1812 for December 20, 2018 but was not able to hold the public hearing because they did not have a quorum. The applicant then decided to withdraw the application on January 22, 2019 in order to complete additional work on the RV proposal and to develop additional technical information to guide the proposed development.

## II. Applicable Review Criteria

To approve this application, the Planning Commission must determine that it is in conformance with the following sections of the Curry County Comprehensive Plan and the Curry County Zoning Ordinance (CCZO):

**Curry County Comprehensive Plan (CCCP)**

**Goal 17 – Coastal Shorelands Section 15.10, Policy 6**

**Curry County Zoning Ordinance (CCZO)**

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| **Section 2.070** | **Noticing Requirements, Evidentiary Hearing 3.** |
| **Section 2.090** | **Procedure for Conditional and Permitted Use Permits** |
| **Section 3.130** | **Rural Commercial Zone (RC) and Use Table 3.130** |
| **Section 3.251** | **Floodplain** |
| **Section 3.252** | **Development in Areas of Geologic Hazards** |
| **Section 3.320** | **Erosion Prevention and Sediment Control Plan** |
| **Section 3.400-3.450** | **Storm and Surface Water Management Standards** |
| **Section 4.020-4.022** | **Off-Street Parking and Loading** |
| **Section 4.050** | **Access Management** |
| **Section 7.010** | **Authorization to Grant or Deny Conditional Uses** |
| **Section 7.040(1)** | **Conditional Uses Generally** |
| **Section 7.040(6)** | **Mobile/Manufactured Home Parks, or Recreational Vehicle Park, or Campground** |
| **Section 7.045** | **Conditional and Permitted Uses – Director Periodic Review** |
| **Section 7.050** | **Time Limit on a Permit for Conditional Uses** |

## III. Findings of Conformance with the CCCP and CCZO

**Goal 17 – Coastal Shorelands CCCP Section 15.10, Policy 6 –** *Curry County Recognizes that seacliffs and coastal headlands in the county are eroding as part of the natural coastal erosion process and present a hazard to development. In such instances Curry County will require a site specific geologic hazard analysis by a competent geologist or engineering geologist licensed in the State of Oregon to verify the safety of any development in these areas under the Natural Hazard Overlay requirements of its zoning ordinance.*

**Facts:** The CCCP states that the coastal shoreland boundary for the project site follows the top of the cliff (pg. 318). The site is located on a coastal bluff bordered to the west by an actively eroding sea cliff which is undergoing coastal erosion. The County has required that the applicant prepare a Geotechnical Site Assessment to address the safety of the proposed development and potential site development issues associated with coastal erosion. A Geotechnical Site Assessment was completed by Eric Oberbeck of Cascadia Geoservices, Inc., an Oregon Certified Engineering Geologist.

**Finding:** The proposed project is within an area identified by the CCCP as being potentially subject to natural coastal erosion. The sea bluff on the site currently exhibits active coastal erosion. A Geotechnical Site Assessment was completed by a Certified Oregon Geologist which contains recommendations and mitigation for development on the site which, when implemented, are intended to verify the safety of the proposed development. This finding is met.

**Section 2.070 – Noticing Requirements, Evidentiary Hearing 3. –** *Written notice shall be provided to the Oregon Division of State Lands of applications which involve lands that are wholly or partially within areas that are identified as wetlands on the State-wide Wetlands Inventory.*

**Facts:** The National Wetland Inventory (NWI) identifies the area along the western edge of the site as a potential wetland. The NWI Classification System includes a notation that the wetland areas identified are M2USP which is Marine, Intertidal Unconsolidated Shore, regularly flooded back beach along the shore. Curry County has not adopted a site specific wetland inventory based on field verification of wetlands. However, the CCZO requires notification of projects where a wetland has been identified to the Oregon Division of State Lands (DSL). The DSL utilizes the NWI data in areas of the state where more detailed wetland data has not been completed and may notify the applicant that further investigation related to wetlands may be required for the project.

**Finding:** The NWI identifies a wetland along the western edge of the proposed project site. The County does not have an adopted program for management of wetlands. The County has notified DSL as required by Section 2.070 of the CCZO. This finding is met.

**Section 2.090 – Procedure for Conditional and Permitted Use Permits –** *After accepting a completed application for Administrative Action pursuant to Section 2.060, the Director shall act on or cause a hearing to be held on the application pursuant to Section 2.062.*

**Facts:** The applicant submitted an application for an Administrative Conditional Use permit for a vintage RV park on June 22, 2019. The applicant was notified on July 15,

2019 that the application was determined to be incomplete. On July 22, 2019 additional information was submitted by the applicant. The Planning Director determined the application to be complete on July 24, 2019. At that time, the Planning Director also determined that it was probable that there would be interest in the project by surrounding property owners and the community of Nesika Beach, and that interested parties would desire to have a public hearing.

**Finding:** The Planning Director found the application complete on July 24, 2019 at which time it was determined that there would be an interest by surrounding property owners, the community of Nesika Beach and interested persons. Therefore, the Planning Director referred the proposed project to the Planning Commission for a public hearing and subsequent consideration of a decision. This finding is met.

**Section 3.130 – Rural Commercial (RC) Zone and Use Table 3.130 –** *The RC zoning classification is applied to all rural lands with existing commercial uses in built and committed exception areas to the Statewide Planning Goals as of the date of adoption of this ordinance. Table 3.130 lists Recreational Vehicle Park (rural or urban) or campground as allowed subject to a Conditional Use Permit as specified in Section 7.040(6).*

**Facts:** The proposed project is within the Nesika Beach rural community which is a Land Conservation Development Commission (LCDC) adopted exception area to the Statewide Planning Goals. Both parcels had prior existing development on them including a dwelling and a commercial restaurant. The proposed vintage RV park is identified as a type of use that is allowed in the RC zoning district through a conditional use permit process.

**Finding:** The applicant has submitted a complete application for a conditional use permit for a vintage RV park within the RC zoning district. The application contains the appropriate land use findings and supplemental requirements pursuant to the CCZO. This finding is met.

**Section 3.251 – Floodplain –** *Portions of zones may be subject to flooding. Restrictions, conditions and regulations for the construction of buildings and uses of land lying in the flood plain zones are subject to the Flood Damage Prevention Ordinance of Curry County. The flood plain zones, as indicated on Flood Plain Maps, are an official part of the County Zoning Maps. Flood Hazard Development Permits under the Flood Damage Prevention Ordinance are subject to administrative approval by the Director.*

**Facts:** Curry County adopted a new Flood Damage Prevention Ordinance in 2018 which included updated flood hazard maps (FEMA Flood Plain Maps). These updated FEMA

Flood Plain maps identify ocean flooding along the western edge of the proposed project site. No structures are proposed within the area designated as being within the Flood Plain. The uses proposed within the flood hazard area associated with the vintage RV park are passive recreation including viewing the scenic ocean, bird watching, enjoying the native vegetation and general relaxation.

**Finding:** The proposed vintage RV park site includes a flood hazard designation along its western edge. No structures are proposed within this area and no uses that will be subject to flooding will occur on site, therefore the provisions of the Curry County Flood Damage Prevention Ordinance are not applicable. This finding is met.

**Section 3.252 – Development in Areas of Geologic Hazards** – *Those areas identified as geologic hazard areas shall be subject to the following requirements at such time as a development activity application is submitted to the Director.*

1. *The applicant shall present a geologic hazard assessment prepared by a geologist at the applicant's expense that identifies site specific geologic hazards, associated levels of risk and the suitability of the site for the development activity in view of such hazards. The geologic hazard assessment shall include an analysis of the risk of geologic hazards on the subject property, on a contiguous and adjacent property and on upslope and downslope properties that may be at risk from, or pose a risk to, the development activity. The geologic hazard assessment shall also assess erosion and any increase in storm water runoff and any diversion or alteration of natural storm water runoff patterns resulting from the development activity. The geologic hazard assessment shall include one of the following:*
   a) *A certification that the development activity can be accomplished without measures to mitigate or control the risk of geologic hazard to the subject property or to adjacent properties resulting from the proposed development activity.*
   b) *A statement that there is an elevated risk posed to the subject property or to adjacent properties by geologic hazards that requires mitigation measures in order for the development activity to be undertaken safely and within the purposes of Section 3.250.*
2. *If the assessment provides a certification pursuant to Section 3.252(1) (a,), the development activity may proceed without further requirements of this Section.*
3. *If the assessment provides a statement pursuant to Section 3.252(1) (b), the applicant must apply for and receive an Administrative Decision prior to any disturbance of the soils or construction.*

**Facts:** The western portion of the two parcels proposed for the vintage RV park are located within an area identified by the Department of Geology and Mineral Industries

(DOGAMI) as being subject to coastal erosion. The potential coastal erosion hazard areas identified by DOGAMI for this site have not been adopted by Curry County and therefore are not included as a County Geologic Hazard subject to Section 3.252 of the CCZO. However, Section 7.010 *Authorization to Grant or Deny Conditional Uses* states "*In permitting a conditional or permitted use the County may impose conditions in addition to the provisions set forth for uses within each zone in order to protect the best interests of the surrounding property, the neighborhood, or the County as a whole.* During discussion and review of the prior application for a proposed vintage RV park on this site (AD 1812 which was withdrawn by the applicant), the Planning Director recognized the critical importance of the coastal erosion issues surrounding multiple Nesika Beach properties. Further, the issue of coastal erosion needs to be taken into consideration for this site in order to adequately address the requirements for an Erosion and Sediment Control Plan and a Storm Water Management Plan. Based on these considerations, the Planning Director required the applicant to prepare a Geologic Hazards Assessment in accordance with Section 3.252 of the CCZO.

A Geotechnical Site Assessment (attached) was prepared by Eric Oberbeck of Cascadia Geoservices, Inc., (Oregon Certified Engineering Geologist). The Geotechnical Assessment includes a detailed evaluation of the site conditions, including the actively eroding sea cliff along the western boundary and subsurface explorations. The Assessment also includes mitigation recommendations for development of the vintage RV park. The Assessment concludes with the following statement:

> **"Based on our surface and subsurface investigation and our knowledge of the area, it is our opinion that the subject property is suitable for the proposed development provided development is done in accordance with our recommendations"**

A critical recommendation of the Assessment is that:

> "**no permanent surface or subsurface structures be built closer than 125 feet from the break in slope of the sea cliff".**

**Finding:** A geologic hazard has been identified on the site for the proposed vintage RV park. The applicant has submitted a geologic hazard assessment that evaluates the risk to the proposed development in accordance with Section 3.252 of the CCZO. This finding is met provided the applicant carries out the recommended mitigation strategies set forth in the Assessment. The recommendations will be included as conditions to this conditional use permit if approved by the Planning Commission.

**Section 3.320 – Erosion Prevention and Sediment Control Plan –** *All development activity shall comply with the requirements for erosion prevention and sediment control. The intent of these provisions is to minimize the amount of sediment and pollutants that exit the site of development activity and, thereby, minimize the amount of such material that reaches waterways, wetlands, public improvements and the property of others. These provisions are intended to require that temporary and permanent measures be taken for all development activity that require or result in the disturbance of the surface of soil and/or vegetation. And* **Section 3.321 – Development Affected** *– The requirements of this section must be met by all development activities that: b) will result in the construction of either 2,000 square feet of impervious surface on a site or will result in the coverage of 25% or more of the area of a site in impervious surfaces, whichever is less.*

**Facts:** The development as proposed will result in less than 2,000 square feet of impervious surface in accordance with the site plan. The applicant has stated:

> "that the development plan minimizes the removal of vegetation including that no trees are planned to be removed and native vegetation, including ferns, escallonia and other ornamental grasses will be added to the site to provide additional buffers between RV spaces and to minimize erosion on the property".

However, the Geologic Hazard Assessment includes recommendations that are intended to minimize erosion on site. These provisions are included as conditions to this conditional use permit if approved by the Planning Commission. A detailed erosion and sediment control plan (ESCP) has not been included with this application and typically would not be requested until immediately prior to on-site construction activities commencing.

**Finding:** The applicant has submitted some elements of erosion and sediment control as included within the recommendations of the Geologic Hazards Assessment. A detailed ESCP will be required to be submitted for Planning Director review and approval prior to on-site construction. This is included as a condition to this conditional use permit if approved by the Planning Commission. This finding is met.

**Section 3.400 – 3.450 – Storm and Surface Water Management Standards –** *No permit for construction of new development or tenant improvements that results in impervious cover greater than 500 square feet for development activity on any land within Curry County that is not within the limits of an incorporated city, or under federal ownership, at the date of an application shall be issued until effects on stormwater management are evaluated. The level of review varies according to the affected area: 1). 500-1,999 square feet – No storm water management measures beyond mitigation measures for pollution reduction or flow are required;*

*2.) 2,000-4,999 square feet – Conceptual plans shall be submitted for approval; 3.) 5,000+ square feet – A comprehensive storm water management plan shall be submitted for approval.*

**Facts:** The applicant has indicated that the proposal will result in the construction of at least 2,000 square feet of impervious surfaces. However, this amount of impervious surface includes a determination that the RV pads, walking paths and parking areas are constructed with hard (impervious) surfaces. The proposal indicates that these surfaces will actually be constructed from washed, crushed decomposed granite which are considered semi-impervious surfaces. Based on this information, the Planning Director has determined that the amount of impervious surfaces associated with this development is less than 2,000 square feet therefore Section 3.401(1) is the applicable criteria for this application. No storm water management measures beyond mitigation measures for pollution reduction or flow are required.

The mitigation measures for storm water are identified in the Geologic Hazards Assessment based on the recommendation stated therein:

**"We further believe that near-surface groundwater, which is recharging seeps on the sea cliff slope, is causing undercutting and mass wasting of the slope and is a significant cause of bluff retreat on this site. We note that, based on our borings, that groundwater occurs between 5 to 7 feet below ground surface (bgs). Because of this, it is our opinion that wasting of the sea cliff slope can be slowed by installing a perimeter interceptor drain east of the sea cliff. The drain should be discharged away from the western sea cliff slope and should be sited in a low area based on a grading plan for the site. The purpose of the interceptor drain would be to intercept shallow groundwater and to divert it from the sea cliff, thus partially dewatering the upper part of the slope. We recommend that the drain be installed to a depth of at least 5 feet bgs, be sized in accordance with the drainage area which it will serve and be located based on the grading plan for the site. Finally, we recommend that the site be graded such that all surface drainage is directed into the perimeter drain and that outfalls from all surface and near-surface drains, including rain gutter (where applicable) be discharged away from the western boundary of the property."**

The proposed site plan shows three (3) infiltration ditches to be constructed. However, it does not indicate where the interceptor drain is to be constructed. It is recommended that the applicant work closely with the Geotechnical Engineer to identify the location of the interceptor drain and to also indicate if there will be a discharge of storm water from the interceptor drain and if so, where that discharge will occur.

**Finding:** The proposed project will result in less than 2,000 square feet of impervious surfaces therefore the CCZO Section 3.401 (1) is the applicable criteria for storm water management. The applicant has commissioned a Geotechnical Hazards Assessment which includes mitigation measures consistent with CCZO Section 3.401 (1). This finding is met with the condition that the applicant identify the interceptor drain location on the site plan and implement the mitigation measures for storm water set forth in the Geotechnical Hazards Assessment.

**Section 4.020-4.022 – Off-Street Parking and Loading** – *Off-street parking and loading requirements for types of building and uses not specifically listed herein shall be determined by the Commission, based upon the requirements of comparable uses listed; and in the event several uses occupy a single structure or parcel of land, the total requirements for off-street parking shall be the sum of the requirements of the several uses computed separately.*

**Facts:** The off-street parking and loading requirements in the CCZO do not specifically list recreational vehicle parks. The closest use to this use is a motel which requires one space per guest room or suite, plus one additional space for the owner or manager. In the case of the proposed development, an RV park provides "guest rooms" or "suites" in the form of recreational vehicles. Considering the proposed use includes eleven (11) RV spaces and a dwelling for an onsite manager, the total number of spaces required would be twelve (12), plus one (1) van-accessible handicapped parking space. The proposed plan includes the construction of eighteen (18) spaces.

**Finding:** The proposed 11 space vintage RV park is required to have 12 parking spaces plus one van-accessible handicapped space. There are 18 parking spaces proposed for the development which exceeds the Off-street Parking and Loading requirements. This finding is met.

**Section 4.050 – Access Management –** *All lots in the RC zone shall abut a county, public or private road as defined by the Curry County Code Article 3 – Roads for a distance of at least twenty-five (25) feet to provide adequate access for a private driveway, except flag lots which shall have a 20 foot minimum access.*

**Facts:** The proposed vintage RV park abuts Nesika Road which is a county road. There are two existing access points for the project that were established prior to the CCZO that are each twenty (20) feet. These existing driveways have been used for both a commercial restaurant and a residence. These pre-established access drive-ways meet the definition of a non-conforming use and therefore can be used at the discretion of the decision making body even though they do not meet the current standard of twenty-five

(25) feet. The application states that each driveway has been designed for two-way access and has a width of 20-feet that is at a 90 degree angle to Nesika Road.

**Finding:** The proposed development includes two (2), twenty-foot (20) access driveways that are pre-existing non-conforming access driveways. The access driveways will allow for two-way access into and out of the RV park. This finding is met.

**Section 7.040 Standards Governing Conditional Uses –** *In addition to the standards of the zone in which the conditional use is located and the other standards in this ordinance, conditional uses must meet the following standards:.*

*Conditional Uses Generally*

a. *The County may require property line set-backs or building height restrictions other than those specified in Article IV in order to render the proposed conditional use compatible with surrounding land use.*

**Facts:** The setback requirements for the Rural Commercial (RC) zoning district include: ten (10) feet from lot lies bordering existing roads and at least a thirty-five (35) foot setback from the center of existing road right-of-ways. The required setbacks are five (5) feet from all other lot lines for a structure not to exceed 15 feet in height. The proposed structures for the vintage RV park are all significantly less than 15 feet in height and according to the site plan, are set back more than five (5) feet from the lot lines. According to the site plan the three (3) proposed RV spots located along the southern lot line do not appear to have existing or proposed vegetation screening from the adjacent vacation rental. The Planning Commission may consider requiring that a vegetative buffer be established along this southern lot line to further screen the vintage RV trailers.

There is an existing structure that is located near Nesika Road that is planned to be renovated and used as an accessory building. This structure was built prior to the Curry County Zoning Ordinance and is therefore a non-conforming use and appears to closely meet the setback requirement of thirty-five (35) feet from the center of Nesika Road. Staff was unsure based on the submitted site plan.

**Finding**: The proposed site plan indicates that the RV locations are setback consistent with the requirements set forth in the CCZO for the RC zoning district. All of the sites are planned to be surrounded with native vegetation and therefore screened from adjacent land uses except the three located along the southern lot line. The Planning Commission may desire to add a condition to this conditional use permit, if approved, that a vegetative buffer be established at this location. This finding has been met.

*b. The County may require access to the property, off-street parking, additional lot area, or buffering requirements other than those specified in Article IV in order to render the proposed conditional use compatible with surrounding land uses.*

**Facts:** The applicant has stated that the proposed parking areas will be will be surfaced with washed/compacted decomposed granite to provide an all-weather, durable and dust free surface. The parking area will also include lighting in the parking area, drive aisles and pedestrian paths. The lighting will be 4-inch high, low voltage lighting that will be downward facing and directed away from neighbors.

**Finding**: The additional requirements that the Planning Commission may include as conditions to this application, if approved, are: the applicant proposed all-weather surface for parking areas and low impact lighting for the parking area, drive aisles and walking paths. It is also recommended that the access entrance to the vintage RV park include the all-weather surface consistent with the parking area. This finding is met with these provisions as conditions to this application.

*c. The County may require that the development be constructed to standards more restrictive than the Uniform Building Code or the general codes in order to comply with the specific standards established and conditions imposed in granting the conditional use permit for the proposed use.*

**Finding:** No additional UBC or CCZO standards are recommended. Therefore, this standard does not apply.

*d. If the proposed conditional use involves development that will use utility services; the applicant shall provide statements from the affected utilities that they have reviewed the applicant's proposed plans. These statements shall explicitly set forth the utilities' requirements, terms and conditions providing or expanding service to the proposed development and shall be adopted by the Commission or Director as part of the conditional use permit.*

**Facts**: The proposed project will utilize utility services from the Ophir Fire District, the Nesika Beach/Ophir Water District and Coos Curry Electric Cooperative. Statements and signatures have been provided from these service districts indicating that these utility services can be available and provided to the subject property for the vintage RV park. There is currently water and electrical services to the property.

On site sewerage disposal is proposed for wastewater. The applicant has indicated that there are two existing septic drain fields on the property. However, the suitability of these

drain fields to service the proposed RV park has not been indicated. Therefore, it is recommended that the applicant provide confirmation from the Department of Environmental Quality that the existing on-site septic systems are appropriate for the proposed use.

**Finding**: The applicant has provided statements from the affected utility services that they can provide services for the proposed vintage RV park. This finding is met.

*e. If the proposed conditional use involves the development or expansion of a community or non-community public water system, the applicant shall submit a water right permit(s) or documentation that a permit is not required from the Oregon Water Resources Department which indicates that the applicant has the right to divert a sufficient quantity of water from the proposed source to meet the projected need for the proposed use for the next twenty year planning period.*

**Finding**: The proposed development of the subject property for a vintage RV park does not involve the development or expansion of a community or non-community public water system. Therefore, this standard is not applicable.

*f. If the proposed conditional use involves the development or expansion of a community or non-community public water system, the applicant shall install a raw water supply flow monitoring device (flow meter) on the water system and shall record the quantity of water used in the system on a monthly basis. The monthly record of water usage shall be reported to the Curry County Department of Public Services-Planning Division and Health Department Sanitarian on an annual basis.*

**Finding**: The proposed development of the subject property for a vintage RV park does not involve the development or expansion of a community or non-community public water system. Therefore, this standard is not applicable.

*g. If the proposed conditional use included the development or expansion of a community or non-community public water system and the use is located within the service area of a city or special district water system the applicant shall utilize the city or special district water system rather than developing an independent public water system. An independent community or non-community public water system can be developed for the use if the applicant can prove that it would be physically or economically not feasible to connect to the city or special district water system. The city or special district must concur in the conclusion that connection of the proposed use is not feasible.*

**Finding**: The proposed development of the subject property for a vintage RV park does not involve the development or expansion of a community or non-community public water system. Therefore, this standard is not applicable.

**Section 7.040(6) Mobile/Manufactured Home Parks, or Recreational Vehicle Park, or Campground b)** – *Recreational vehicle park (rural or urban) and related parking facilities. (1) Campgrounds and recreational vehicle parks generally. The size and design of the park or campground at a minimum shall conform to any limitations established by law on the proposed public road access or driveway used for access to the park or campground.*

**Finding:** There are no CCZO limitations pertaining to public road access or driveways other than those noted above for access management. This finding is met.

**Section 7.040 (6) b) (3) Recreational vehicle park/rural** – *i. Utilities shall be limited to a size and scale appropriate for rural uses. Drinking water facilities and sewage disposal facilities shall be limited to those located wholly within the property in which the park is located. Water, electric, telephone, and other utilities may only be developed at a park by extending existing distribution lines located along roads or utility easements contiguous to the park.*

**Finding:** The utility services to support the park development are limited to a size and scale for rural use and the applicable service districts have confirmed that they can provide the services requested to support the 11 space RV park. This finding is met.

*ii. Accessory uses within the park shall be limited to a level appropriate for rural uses and shall be limited to a store, laundry facilities, outdoor recreation play area which are of a size and design to serve the patrons of the park.*

**Finding:** The proposed vintage RV park development plan includes the conversion of two existing buildings to accessory uses including a manager's residence and a small community hall for patron gatherings. No outdoor play areas are included. This finding is met.

*iii. One dwelling for a manager shall be allowed on the park site.*

**Finding:** One of the existing buildings on site will be converted to a manager's dwelling. This finding is met.

**Section 7.045 – Conditional and Permitted Uses – Director Periodic Review** – *The Director may issue Conditional or Permitted Use Permits that must be periodically reviewed to ascertain that the conditions of the permit are being complied with on a continuing basis.*

> **Finding:** The Director is proposing a condition for this proposed use, if approved, to review the conditions with the owner at least every three (3) years to ascertain that the conditions of the permit are being complied with. This finding is met with this condition.

**Section 7.050 (1) Time Limit on a Permit for Conditional Uses -** authorization *of a conditional use, in general, shall become null and void after one year unless substantial construction on the single family dwelling has taken place or an extension has been granted.*

> **Finding:** To comply with CCZO Section 7.050 (1), the approval of the conditional use permit shall be valid for a period of one (1) year unless an extension of the conditional use has been granted under the provisions of CCZO Section 7.050 (4).

## IV. Staff Recommendation

Application AD-1911 a request for conditional use approval for a vintage Recreational Vehicle (RV) Park called Silver Cypress is recommended for approval with the following conditions:

1. The applicant is permitted to establish an 11 unit recreational vehicle park on the subject property consisting of two tax lots. Establishment of the RV park shall be done in two phases with Phase 1 on Tax Lot 1400 and Phase 2 on Tax Lot 1500, as shown on the approved plot plan.

2. At the completion of Phase two (2) of the RV park, the applicants shall apply for and receive a lot line vacation, thus creating one tax lot.

3. The Applicant/Property Owner shall comply with all on-site sewage disposal requirements of the Oregon Department of Environmental Quality (ODEQ) for recreational vehicle parks.

4. The applicant shall coordinate with ODEQ to complete an evaluation of the existing septic system and its feasibility to accommodate the expected service demands from the RV Park. This information shall be provided to the Planning Director for review.

5. The Applicant/Property Owner shall contact CCEC if there are any changes to the existing electric service system.

6. All construction shall comply with the State of Oregon Building Codes as they apply to recreational vehicle parks.

7. All buildings and RV pads shall meet all side and front yard set backs.

8. The development shall have the applicant proposed all-weather surface for the on-site access and parking areas.

9. The development shall have the applicant proposed low impact lighting for the parking area, drive aisles and pedestrian paths.

10. This permit is valid for a period of one year from the date of approval unless substantial construction has begun. The applicant may apply for an extension of this one year approval upon filing a request under CCZO Section 7.050 (5).

11. The applicant shall follow and comply with the recommendations set forth in the Geotechnical Site Assessment completed by Cascadia Geoservices Inc.

12. No permanent surface or subsurface structures shall be built closer than 125 feet from the break in slope of the sea cliff.

13. Prior to issuance of a building permit, the applicant shall submit a revised site plan indicating the location of the stormwater interceptor drain including the location and management for the discharge, if any.

14. A vegetative buffer shall be included along the south property line to buffer the three proposed RV spaces form the adjacent land use.

15. The applicant shall coordinate with the Oregon Division of State Lands in regards to the identified wetland on site to insure its protection.

16. Prior to the issuance of a building permit, the applicant shall submit an engineered drainage and erosion control plan.

17. The proposed vintage RV Park shall be developed consistent with the site plan proposed by the applicant. Any alterations to the site layout shall be reviewed and approved by the Planning Director provided they are consistent with the standards set forth in the CCZO as applied to this application.

# Proposed Site Plan

35-14W-31 TL 1400/1500


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**Legend**

- Subject Property
- Existing Drainfield
- Existing Septic
- Infiltration Ditch
- Proposed RV Pad
- Shoreline Boundary
- Guest Parking
- Employee Parking
- Existing Structures
- Native Grass
- Native Vegetation
- Proposed Granite Path
- Proposed New Vegetation
- Proposed Native Grasses

0 50 100

Feet

1 inch = 100 feet

This map is based on a digital database compiled by Curry County GIS from a variety of sources, and may include field data collected using GPS. We cannot accept responsibility for errors, omissions, or positional accuracy. There are no warranties, expressed or implied.

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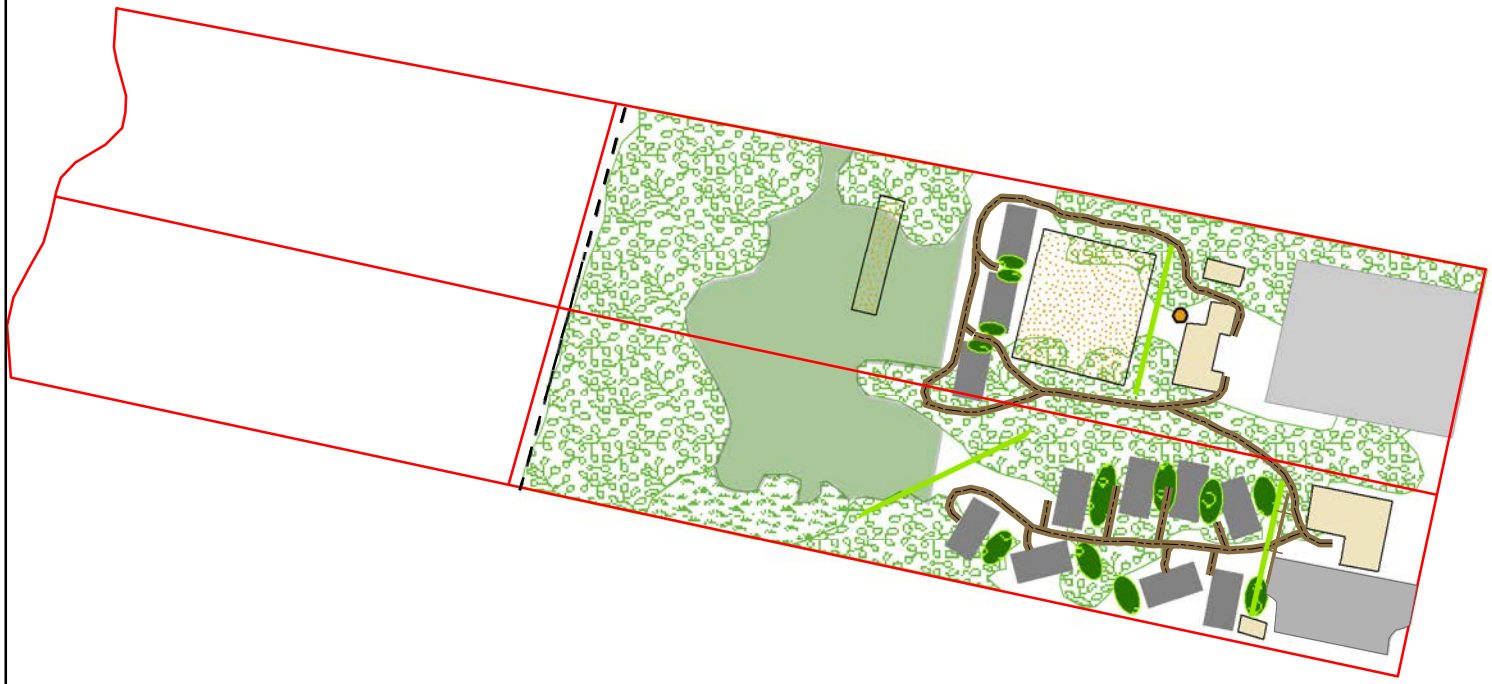
7/16/2019

# Proposed Site Plan

35-14W-31 TL 1400/1500



N

**Legend**

- Subject Property
- Existing Drainfield
- Existing Septic
- Infiltration Ditch
- Proposed RV Pad
- Shoreline Boundary
- Guest Parking
- Employee Parking
- Existing Structures
- Native Grass
- Native Vegetation
- Proposed Granite Path
- Proposed New Vegetation
- Proposed Native Grasses

0 50 100

Feet

1 inch = 100 feet



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7/16/2019

# Proposed Site Plan

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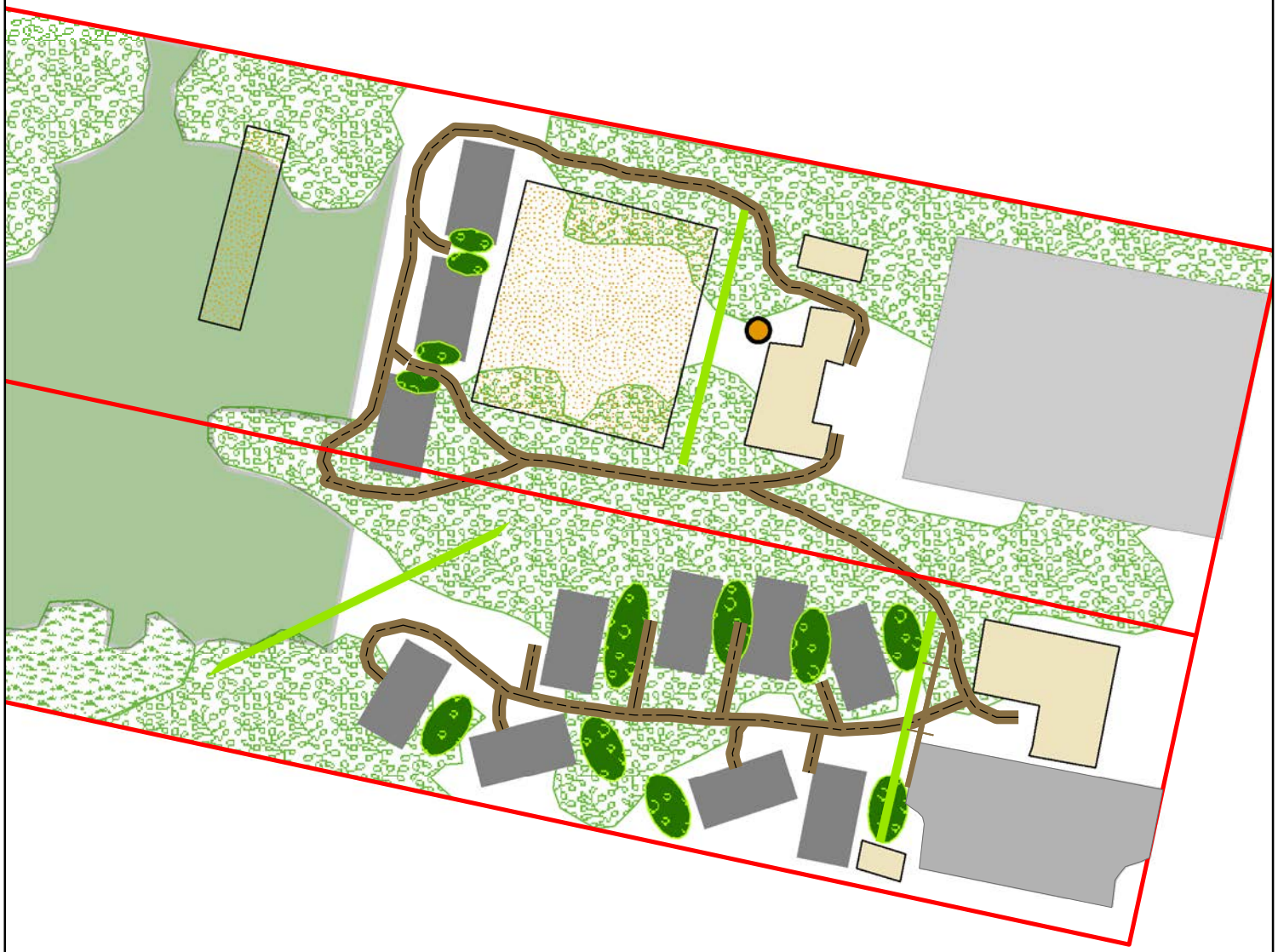

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0 50 100

Feet

1 inch = 50 feet

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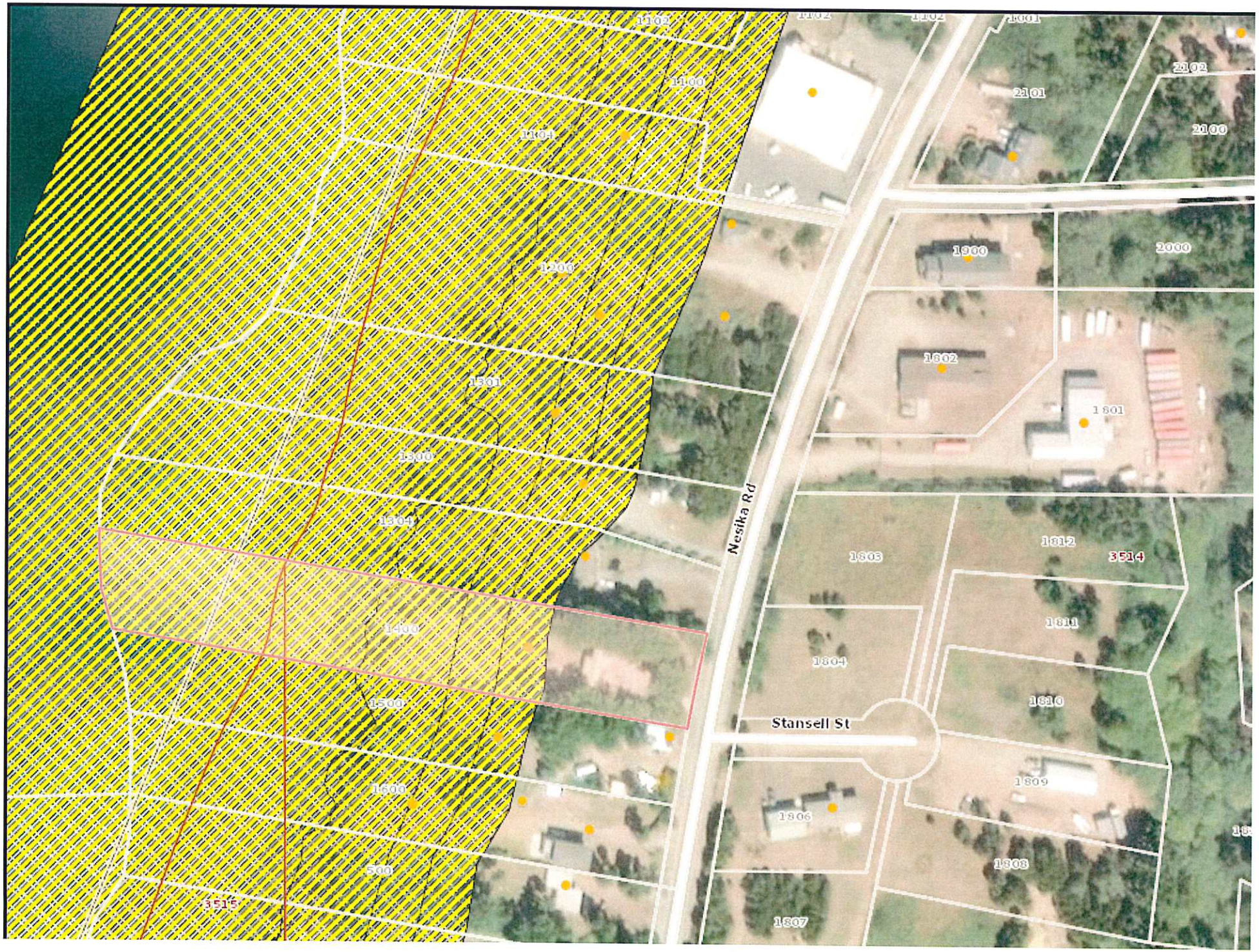
7/16/2019

Coastal Hazards/Erosion



Goal 18 Shoreline Protection

Wetlands


M2U SN
M2U SP
Nesika Rd
Stansell St
1102
1100
1104
1200
1501
1300
1504
1400
1500
1600
500
3515
2101
2102
2100
1900
2000
1802
1301
1803
1812
3514
1811
1804
1810
1809
1806
1808
1807

EXHIBIT "K"

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# Geotechnical Site Assessment—Commercial Development

Silver Cypress RV Resort
32982 & 32990 Nesika Road
Nesika Beach, Oregon 97444

**Prepared for:**
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Sent via e-mail: garthspeaks@yahoo.com

April 10, 2019
CGS Project No. 19010

## TABLE OF CONTENTS

## INTRODUCTION

Cascadia Geoservices, Inc. (CGS) is pleased to submit the results of our geotechnical site evaluation for a portion of your property (described here as site or subject property) located on Nesika Road in Nesika Beach, Oregon (Figure 1, Location Map). The purpose of this site evaluation was to evaluate the site, including the actively eroding sea cliff along the western boundary of the site, and to make recommendations regarding possible mitigation scenarios. This Geotechnical Site Evaluation Report summarizes our project understanding, site investigation, and subsurface explorations, and provides our conclusions and recommendations.

## PROJECT UNDERSTANDING

Our understanding is based on e-mail and telephone correspondence with you beginning on January 18, 2019. Our understanding is further based on a conceptual site plan provided to us by you in an e-mail dated February 4, 2019. And, our understanding is based on two site visits: the first on February 7, 2019 and the second on March 2, 2019, at which time a geological reconnaissance of the site was conducted and two geotechnical borings were drilled.

We understand that you are proposing to build an RV park on the site (Figure 2, Site Map). We further understand that the park will provide existing RVs located on gravel pads which people will rent. The RVs will be connected to an on-site septic system which will be connected to the City of Nesika Beach's water supply. We further understand that you have no plans to construct a residence on the site or other large structures but do plan to build a 20-foot by 10-foot shower/laundry structure. We understand that this structure will be supported on a concrete slab foundation.

The site is located on a coastal bluff bordered to the west by an actively eroding sea cliff which is undergoing severe coastal erosion. This is causing landward propagation of the sea cliff resulting in bluff retreat and loss of property. As such, Curry County is requesting that, prior to development, you obtain a geologic site review per their Zoning Ordinance Section 3.252: Development in Areas of Geologic Hazards.

## SURFACE DESCRIPTION

The site is located in the Klamath Mountain Physiographic Region of southwestern Oregon in the community of Nesika Beach, Oregon. The site is part of Tax Lots 1400 and 1500, T 35S, R14W, Section 31 and is generally level to gently sloping to the west at an elevation of from 74 to 85 feet above mean sea level (AMSL). Tax Lots 1400 and 1500 are rectangular lots which are approximately 100 feet wide (measured north to south) and from 360 to 370 feet long measured east to west. The lots are in a developed area with both residential and commercial use and are bordered on the east by Nesika Road and on the west by a sea cliff. There is an existing residential structure on Tax Lot 1400 and on-site septic systems on both tax lots.

Based on mapping done by others,[1,2] soils at the site consist of fine sandy loam (116D—Ferrelo-Gearhart complex, 0 to 15 percent slopes). This soil, which commonly mantles marine terrace sediments, is described as a fine sandy loam consisting of an upper organic layer which grades down to fine sand. The soils are excessively drained and are derived from eolian (wind-deposited) sands. Underlying these are surficial deposits of Quaternary Marine Terrace deposits (QMTD) which consist of sands, silts, clays, and gravels. These sands are exposed in the upper part of the sea cliff and are graded normally with coarser material at the bottom of the section. Underlying these marine sediments are severely deformed and sheared marine sedimentary and volcanic rocks of the Jurassic Otter Point Formation. This assemblage of rocks is described as a mélange, and on the site consists primarily of hard conglomerate and softer siltstone which has decomposed to clay near the contact with the overlying QMTD.

→The sea cliff west of the site is approximately 80 feet high. The top of the sea cliff is near vertical and consists of moderately cemented fine-grained sand (Photo 1). Based on mapping done by others, these sands are part of the Quaternary Marine Terrace deposits (QMTD). These are mantled by 3 feet of organic sandy loam soils. The top of the sea cliff is truncated by a fresh, earthen scarp and is severely

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[1] United States Department of Agriculture (USDA). Natural Resource Conservation Service Web Soil Survey retrieved from http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

[2] McClaughry, J. D., et al. 2013. Geologic map of the southwestern Oregon Coast between Crook Point and Port Orford, Curry County, Oregon. Oregon Department of Geology and Mineral Industries (DOGAMI) Open-File Report O-13-21.

undercut in places. Mid-slope, a bench has formed which consists of landslide material. Construction material and vegetation from the top of the bluff are visible, as are drainage pipes within the landslide debris (Photo 2).

Underlying the sands is a gray layer of clay which is variable in thickness. The clay is wet and appears to be medium plasticity. The clay represents an abrasion surface formed as the ocean retreated. The clay overlies hard conglomerate and sandstone with softer, interbedded siltstone which is intensely fractured (Photo 3). We infer, based on mapping by others,[2] that this is moderately to intensely weathered Otter Point Formation bedrock.

Severe undercutting due to slope seepage within the upper part of the slope is evident (Photo 4) and is exacerbating and accelerating slope wasting. Seepage occurs throughout the fine sands near the top of the sea cliff and predominately within the coarser sands at the base of the QMTD (Photo 5). Slope runoff due to mid-slope seepage has caused deeply incised drainage swales within the slope (Photo 6). Storm debris and a truncated slope at the base of the sea cliff are evidence of storm wave erosion.

## SUBSURFACE EXPLORATION

CGS observed the completion of two borings (B-1 and B-2) during our March 2, 2019 site visit. The borings were drilled by Dan Fischer Excavation of Forest Grove, Oregon. The borings were drilled to identify and observe native soil and bedrock. The borings were both drilled to a depth of 29 feet below ground surface (bgs), at which point they were abandoned due to running, caving sand. The borings were drilled using a trailer-mounted drill rig and advanced using conventional auger drilling techniques. Standard penetration tests (SPTs) were completed at 5-foot intervals. The borings were logged by an Oregon certified engineering geologist from our Port Orford, Oregon office. Summary logs are included here as Attachment 1. The locations of the borings are shown on Figure 2, Site Map.

### Subsurface Conditions Encountered

Soils encountered in our two borings were similar and are summarized as follows:

**Native Soils:** From the surface down to three feet below ground surface (bgs), we encountered loose, organic, silty fine sands. We interpreted these to be Ferrelo-Gearhart complex as mapped.

**Quaternary Marine Terrace Deposits (QMTD):** Below the soils beginning at 3.0 feet bgs to 29.9 feet bgs, we encountered medium-dense to dense brown fine-grained sand that was wet and poorly graded. At 29 feet bgs, both borings caved due to wet, flowing sand and were abandoned. In B-2 we encountered a layer of wet, stiff, gray, clayey fine sand at 26.5 feet bgs.

**Otter Point Formation:** Observed at the base of the sea cliff but not in the borings. Consists of hard gray conglomerate and softer siltstone which has decomposed to clay near the contact with the overlying QMTD.

## LABORATORY ANALYSIS

Select samples were packed in moisture-tight bags and shipped to our laboratory in Woodland, Washington where they were classified in general accordance with the Unified Soil Classification System, Visual-Manual Procedure. In addition, Water Content (ASTM 2216) and Percent Fines (ASTM D114) were determined for selected samples. The results are summarized below in Table 1. The Lab Analysis Reports for the samples are provided as Attachment 2.

**Table 1: Laboratory Analysis**

| Sample Number | Boring | Depth Feet (bgs) | Soil Description | Moisture Content (%) | Percent Fines (-#200) | USCS[3] |
|---|---|---|---|---|---|---|
| SS-2 | B-1 | 10 | Fine Sand | 21.0 | | SP |
| SS-5 | B-1 | 25 | Fine Sand | 22.9 | 6.8 | SP |
| SS-7 | B-2 | 10 | Clayey Fine Sand | 28.9 | | SC |
| SS-10 | B-2 | 25 | Fine Sand | 22.7 | | SP |

Our lab analysis indicates that the sands are saturated and contain less than 10 percent fines. The clayey fine sand also has a high-water content which we attribute to the physical characteristics of the clay.

[3] Unified Soil Classification System

## GROUNDWATER

Groundwater was encountered in both borings beginning at a depth of 5 feet bgs on the north side and 7 feet bgs on the south. Groundwater was also identified by the presence of wet samples within the medium-dense to dense brown fine-grained sand identified as QMTD.

Based on our site observations, near-surface groundwater is abundant within the sea cliff slope and forms multiple seeps. Based on our conversation with you, we understand that you have observed seeps which were "gushing" from the slope. As discussed, the heavy flow of groundwater from the sea cliff is eroding the slope and causing undercutting. This is exacerbating coastal erosion by saturating the softer bedrock materials at the toe of the slope.

The shallow nature of the groundwater encountered in our borings indicates a near-surface source. We infer that groundwater on the site will rise during periods of sustained rainfall. We note that the clay layers within the sand deposits act as confining layers allowing perched groundwater levels to form. We further note that the primary groundwater level is with the coarse sands at the base of the QMTD, and that the primary hydraulic gradient is towards the west.

## GEOLOGIC HAZARDS

### Coastal Erosion

Based on a review of Oregon HazVu: Statewide Geohazards Viewer,[4] the sea cliff west of the site has been identified by the State as undergoing "Very High (Active) Coastal Erosion." In addition, the top of the bluff adjacent to the sea cliff has also been identified as being susceptible to high and moderate coastal erosion. Coastal erosion on the site is a significant geologic hazard because it causes localized landslides along the edge of the sea cliff.

Oregon's Department of Geology and Mineral Industries (DOGAMI), in concert with others,[4] has begun monitoring rates of erosion along parts of the Oregon

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[4] Oregon Department of Geology and Mineral Industries (DOGAMI) Oregon HazVu: Statewide Geohazards Viewer viewed at https://gis.dogami.oregon.gov/maps/hazvu

coastline. They have identified chronic coastal hazards such as mass wasting of sea cliffs and recession of coastal bluffs caused by wave attack and geologic instability. This process is known as bluff retreat and is occurring along the sea cliff on the western edge of your property. Erosion of Oregon's coastal bluffs is expected to intensify in the future along many beaches due to diminishing beach sediments which provide buffering during winter storms. Future wave attack will be more destructive due, in part, to long-term rises in mean sea level and warmer oceans which will cause more intense storms associated with climate cycles such as El Niño.

As indicated by the presence of storm debris, wave-sea-cliff interaction is occurring along the base of the sea cliff below and west of your site. Beach profiles surveyed by DOGAMI[5] using GPS[6] provide a measure of offshore wave energy, which is reflected in accretion of sediments on the beach during the summer and erosion of sediments in winter. These data allow profiling of the beach and a determination as to bluff erosion and retreat rates.

A beach profile taken 60 feet north of Tax Lot 1400 (which was surveyed during various times in the summer and winter beginning in September of 2002 and most recently in May 2017) indicates that 13 feet of the base of the sea cliff has eroded in the last 15 years resulting in 3 feet of bluff retreat at the top, or 0.2 feet per year. The profile, included here as Figure 3, indicates that the rate of erosion at the base of the sea cliff was the most severe during the period from April 2016 through May 2017 indicating an acceleration in slope erosion. Similarly, a second profile, conducted 860 feet south of the site, indicates that 6 feet of retreat at the top of the bluff has occurred from April 2016 to May 2017. Erosion for the period from September 2002 until April 2016 was negligible. The cliff-backed beach at both locations is similar in elevation and geologic composition as that of the sea cliff west of your site.

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[5] Washington Department of Ecology (WA beaches), Oregon Department of Geology and Mineral Industries (OR beaches), and at Oregon State University (OR/WA near-shore bathymetry) accessed at The Northwest Association of Networked Ocean Observing Systems (NANOOS) website at http://www.nanoos.org/

[6] Measurements of the beach were taken using Real Time Kinematic Differential Global Positioning Systems (RTK-DGPS).

We believe that this rate of erosion and bluff retreat is representative of what we are seeing along the sea cliff west of Nesika Beach which includes your site. We further note that future erosion and retreat will be episodic and will be tied to large winter storms.

### Seismic Design Criteria

The subject property is located in an area that is highly influenced by regional seismicity due to the proximity to the Cascadia Subduction Zone (CSZ). Recent studies[7] indicate that the southern CSZ has generated maximum credible earthquakes with a moment magnitude (Mm) of 8.7 or greater every 200 to 300 years. Time-dependent probabilities currently range up to 18 percent in 50 years for a southern segment rupture.

The seismic design criteria for this project are based on the 2012/2015 International Building Code (IBC) (ASCE 7 Standard). The seismic design criteria, in accordance with the 2012/2015 IBC, are summarized in Table 2 below.

**Table 2: 2015 NEHRP Seismic Design Parameters**

| Seismic Design Parameters | Short Period | 1 Second |
|---|---|---|
| Maximum Credible Earthquake Spectral Acceleration | $S_s$ = 2.025 g | $S_1$ = .928 g |
| Site Class | D = Stiff Soil | |
| Site Coefficient | $F_a$ = 1.0 | $F_v$ = 1.5 |
| Adjusted Spectral Acceleration | $S_{MS}$ = 2.025 g | $S_{M1}$ = 1.393 g |
| Design Spectral Response Acceleration Parameters | $S_{DS}$ = 1.35 g | $S_{D1}$ = 0.928 g |
| Peak Ground Acceleration | PGA = .902 g | |

### Liquefaction

Liquefaction potential was assessed based on the information obtained from our borings and using the parameters suggested in the 2015 ODOT Geotechnical Design Manual. According to our seismic analysis, the site will

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[7] Goldfinger, C., et al. (2012). Turbidite Event History—Methods and Implications for Holocene Paleoseismicity of the Cascadia Subduction Zone. U.S. Geologic Survey (USGS), Professional Paper: 1661-F.

experience a peak ground acceleration (PGA) during a seismic event of .902 g. Based on the nature of the soils encountered in our borings and the indicated depth to groundwater, it is our opinion that the medium-dense fine sand encountered near the surface in borings B-1 and B-2 has a low to moderate liquefaction potential.

### Tsunamis

**Based on recent mapping and modeling done by the State of Oregon,[9] the site is within the Tsunami Inundation Zone and may be inundated during a tsunami generated by a near-source Cascadia Subduction Zone moment magnitude (Mm) earthquake of 9.0 or greater. Because of this, we strongly recommend that you check local resources and the State of Oregon's Department of Geology and Mineral Industries (DOGAMI) Tsunami Resource Center for current information regarding tsunami preparedness and emergency procedures.**

## DISCUSSION AND RECOMMENDATIONS

### Feasibility

→Based on our surface and subsurface investigation and our knowledge of the area, it is our opinion that the subject property is suitable for the proposed development provided development is done in accordance with our recommendations.

We observed that slope wasting of the sea cliff west of the site is actively occurring, and it is our opinion that future rates of erosion and bluff retreat will increase as sea levels rise and winter storms increase in intensity. It is further our opinion that bluff retreat is being exacerbated by shallow groundwater seeps which daylight on the sea cliff and which cause undercutting and slope wasting. We believe that for planning purposes, the anticipated future rate of bluff retreat will be similar in range to that of the two other Nesika Beach sites (between 0.2 and 6.0 feet per year) as determined by DOGAMI.[5] We believe that recent rates of erosion at the subject property have been on the order of several feet and that you should anticipate these higher rates of erosion in the future. Erosion and bluff retreat for the site will be episodic occurring during future winter storm events.

It is our opinion that wasting and undercutting of the sea cliff slope presents a severe hazard to people who venture too close to the edge. This is especially true of visitors who are not familiar with the Oregon coastline. Because of this, we recommend that you erect barriers and place signs prohibiting anyone from getting closer than 25 feet to the edge of a slope on the sea cliff.

In addition, we recommend that no **permanent** surface or subsurface structures be built closer than 125 feet from the break in slope of the sea cliff. This is a minimum setback. The existing leach field for the on-site septic system on Tax Lot 1400 should be located and monitored closely. Moving the system to the east would be preferable to avoid potential future environmental issues and to further help dewater the sea cliff slope.

We further believe that near-surface groundwater, which is recharging seeps on the sea cliff slope, is causing undercutting and mass wasting of the slope and is a significant cause of bluff retreat on this site. We note that, based on our borings, that groundwater occurs between 5 to 7 feet bgs. Because of this, it is our opinion that wasting of the sea cliff slope can be slowed by installing a perimeter interceptor drain east of the sea cliff. The drain should be discharged away from the western sea cliff slope and should be sited in a low area based on a grading plan for the site. We understand that a contour map of the site has already been completed. The purpose of the interceptor drain would be to intercept shallow groundwater and to divert it from the sea cliff, thus partially dewatering the upper part of the slope. We recommend that the drain be installed to a depth of at least 5 feet bgs, be sized in accordance with the drainage area which it will serve and be located based on the grading plan for the site. For further assistance designing the drain, please contact our office.

Finally, we recommend that the site be graded such that all surface drainage is directed into the perimeter drain and that outfalls from all surface and near-surface drains, including rain gutters (where applicable) be discharged away from the western boundary of the property.

## DESIGN

### Floor Slabs

Satisfactory subgrade support for reinforced building floor slabs such as proposed for the laundry/shower room can be obtained from the subgrade encountered. All loose fill and disturbed material should be removed to a depth of 1.0-foot bgs. A minimum of 12 inches of loose imported granular material should be placed and compacted over the prepared subgrade. Imported granular material should be crushed rock or crushed gravel that is fairly well graded between coarse and fine, contains no deleterious materials, has a maximum particle size of one (1) inch, and has less than 5 percent by weight passing the U.S. Standard No. 200 Sieve. Material recommendations are provided below.

### Drainage

The site should be graded to provide positive drainage away from the structure and away from the area west of the site road.

## CONSTRUCTION

### Site Preparation

In addition to deepening the floor slab subgrade, all existing near-surface root zones should be stripped and removed from the building site and for a 5-foot margin around the building area. The stripping depths will range from 1 to 2 feet bgs and will most likely vary based on the proximity to existing trees and shrubs on the site. The actual stripping depth should be based on field observations at the time of construction. Stripped material should be transported off-site for disposal or stockpiled for use in landscaped areas. Similarly, if uncovered, all buried pipes, drainage basins, and sumps within all proposed building areas and for a 5-foot margin around the building area should either be removed or grouted shut using low-strength concrete slurry. Deeper excavations and debris removal may be required at the discretion of the engineering geologist. The resulting subgrade should be compacted using a smooth-drum roller or plate compactor.

### Probing

Following stripping, excavation, and site preparation and prior to placing structural fill, the exposed excavated surface and the slab subgrade should be evaluated by

probing. A member of our geotechnical staff should carry out the probing. Soft or loose zones identified during the field evaluation should be compacted to an unyielding condition or be excavated and replaced with structural fill.

### Wet-Weather/Wet-Soil Conditions

As indicated, the site soils, when wet, may release excess water when disturbed. Trafficability on the exposed soils may be difficult during or after extended wet periods or when the moisture content of the surface soil is more than a few percentage points above optimum. Soils disturbed during site-preparation activities, or soft or loose zones identified during probing, should be removed and replaced with compacted structural fill.

### Excavation

Subsurface conditions at the project site show predominately medium-dense sand. Excavations in these soils may be readily accomplished with conventional earthwork equipment.

Trench cuts in native materials should stand vertical to a depth of approximately 4 feet, provided no groundwater seepage is present in the trench walls, with the understanding that some sloughing may occur. The trenches should be flattened to 1.5H:1V if excessive sloughing occurs or seepage is present.

Groundwater was encountered during our site exploration from 5.0 to 7.0 feet bgs. If shallow groundwater is observed during construction, use of a trench shield (or other approved temporary shoring) is recommended for cuts that extend below groundwater seepage or if vertical walls are desired for cuts deeper than 4 feet. If shoring or dewatering is used, CGS recommends that the type and design of the shoring and dewatering systems be the responsibility of the contractor, who is in the best position to choose systems that fit the overall plan of operation. These excavations should be made in accordance with applicable Occupational Safety and Health Administration and State regulations.

## MATERIALS

Fills should be placed over subgrade that has been prepared in conformance with the **Site Preparation** section of this report. A wide range of materials may be used as

structural fill; however, all materials used should be free of organic matter or other unsuitable materials and should meet the specifications provided in the 2015 Oregon Standard Specifications for Construction, Oregon Department of Transportation (ODOT, SS 2015),[8] depending on the application. A brief characterization of some of the acceptable materials and our recommendations for their use as structural fill are provided below.

**Native Soils**

The surficial soils generally appear to be not suitable for use as structural fill due to the presence of fill and of organic content. These soils should be stockpiled and either used for landscape areas or transported off the site.

**Imported Granular Material**

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

Imported granular material should be placed in lifts with a maximum uncompacted thickness of 8 to 12 inches, and be compacted to not less than 92 percent of the maximum dry density, as determined by ASTM D1557. During the wet season or when wet subgrade conditions exist, the initial lift should be approximately 18 inches in uncompacted thickness, and should be compacted by rolling with a smooth-drum roller without using vibratory action.

Where imported granular material is placed over soft-soil subgrades, we recommend a geotextile be placed as a barrier between the subgrade and imported granular material. Depending on site conditions, the geotextile should meet the specifications provided in ODOT SS 02320.10 – Geosynthetics, Acceptance, for Soil Separation or

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[8] http://www.oregon.gov/ODOT/Business/Documents/2015_STANDARD_SPECIFICATIONS.pdf

Stabilization. The geotextile should be installed in conformance with ODOT SS 00350.40 – Geosynthetic Construction, General Requirements.

### Floor Slab Base Aggregate

Base aggregate for floor slabs should be clean crushed rock or crushed gravel. The base aggregate should contain no deleterious materials, meet specifications provided in ODOT SS 00330.14 – Selected Granular Backfill, and have less than 5 percent by weight passing the U.S. Standard No. 200 Sieve. The imported granular material should be placed in one lift and compacted to at least 92 percent of the maximum dry density, as determined by ASTM D1557.

### Trench Backfill

Trench backfill placed beneath, adjacent to, and for at least 2 feet above utility lines (i.e., the pipe zone) should consist of well-graded granular material with a maximum particle size of 1.5 inches and less than 10 percent by weight passing the U.S. Standard No. 200 Sieve, and should meet the standards prescribed by ODOT SS 00405.12 – Pipe Zone Bedding. The pipe zone backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

Within roadway alignments or beneath building pads, the remainder of the trench backfill should consist of well-graded granular material with a maximum particle size of 2.5 inches and less than 10 percent by weight passing the U.S. Standard No. 200 Sieve, and should meet standards prescribed by ODOT SS 00405.14 – Trench Backfill, Class A or B. This material should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department. The upper 2 feet of the trench backfill should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D1557.

Outside of structural improvement areas (e.g., roadway alignments or building pads), trench backfill placed above the pipe zone may consist of general fill materials that are free of organics and of materials over 6 inches in diameter, and should meet the standards prescribed by ODOT SS 00330.12 – Borrow Material, and ODOT SS 00405.14 – Trench Backfill, Class C, D, or E. This general trench backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

## BUILDING CODES

There is now a consensus among earth scientists that much of the western US coastline, including the entire southern Oregon coast, is in an area which has been seismically active in the recent geologic past. Our understanding of these forces is evolving and has been heightened by witnessing geologically recent earthquakes and tsunamis in similar tectonic settings in northern Indonesia (2005) and in northern Japan (2011). In order to protect people living in seismically active areas within the state, the State has recently updated and released the 2017 Oregon Residential Specialty Code.[9] It is our opinion that new homes should adopt these updated standards.

## CONSTRUCTION OBSERVATIONS

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

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

## LIMITATIONS

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

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[9] Oregon Residential Specialty Code, 2017, State of Oregon, viewed at https://oregonhba.com/2017-oregon-residential-specialty-code-now-available/

1. CGS is not responsible for the conclusions, opinions, or recommendations made by others based upon our findings.
2. This report has been prepared for the exclusive use of the addressee, and their agents, and is intended for their use only. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without the expressed written consent of the Customer and Cascadia Geoservices, Inc.
3. The opinions, comments, and conclusions presented in this report are based upon information derived from our literature review, historical topographic map and aerial photograph review, and on our site observations. The scope of our services is intended to evaluate soil and groundwater (ground) conditions within the primary influence or influencing the proposed development area. Our services do not include an evaluation of potential ground conditions beyond the depth of our explorations or agreed-upon scope of our work. Conditions between or beyond our site observations may vary from those encountered.
4. Recommendations provided herein are based in part upon project information provided to CGS. If the project information is incorrect or if additional information becomes available, the correct or additional information should be immediately conveyed to CGS for review.
5. The scope of services for this subsurface exploration and report did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site.
6. If there is a substantial lapse of time between the submission of this report and the start of work at the site, if conditions have changed due to natural causes or construction operations at or adjacent to the site, or if the basic project scheme is significantly modified from that assumed, this report should be reviewed to determine the applicability of the conclusions and recommendations. Land use, site conditions (both on and off site), or other factors may change over time and could materially affect our findings. Therefore, this report should not be relied upon after two years from its issue, or in the event that the site conditions change.
7. The work performed by the Consultant is not warrantied or guaranteed.
8. There is an assumed risk when building on marginal ground, on sites subject to flooding, or adjacent to bluffs, sea cliffs, or on steep ground.

9. The Consultant's work will be performed to the standards of the engineering and geology professions and will be supervised by licensed professionals. Attempts at improving marginal ground, sites subject to flooding or adjacent to bluffs, sea cliffs, or on steep ground supporting the Customer's property may, through acts of God or otherwise, be temporary and that marginal ground, sites subject to flooding or adjacent to bluffs, sea cliffs, or on steep ground may continue to degrade over time. The Customer hereby waives any claim that they may have against CGS for any claim, whether based on personal injury, property damage, economic loss, or otherwise, for any work performed by CGS for the Customer relating to or arising out of attempts to stabilize the marginal ground, sites subject to flooding, or bluffs, sea cliffs, or steep ground located at the Customer's property identified hereunder. It is further understood and agreed that continual monitoring of the Customer's property may be required, and that such monitoring is done by sophisticated monitoring instruments used by CGS. It is further understood and agreed that repairs may require regular and periodic maintenance by the Customer.
10. The Customer shall indemnify, defend, at the Customer's sole expense, and hold harmless CGS, affiliated companies of CGS, its partners, joint ventures, representatives, members, designees, officers, directors, shareholders, employees, agents, successors, and assigns (Indemnified Parties) from and against any and all claims for bodily injury or death, damage to property, demands, damages, and expenses (including but not limited to investigative and repair costs, attorney's fees and costs, and consultant's fees and costs) (hereinafter "Claims") which arise or are in any way connected with the work performed, materials furnished, or services provided under this Agreement by CGS or its agents.

## PROFESSIONAL QUALIFICATIONS

Please see our website at www.CascadiaGeoservices.com to review our qualifications.

Sincerely,

Cascadia Geoservices, Inc.


Eric Oberbeck, RG, CEG
Expires May 31, 2019

**Photos**

**Figures**

Figure 1, Location Map
Figure 2, Site Map

**Attachments**

Attachment 1 – Summary Bore Logs
Attachment 2 – Laboratory Test Sheets