Receipt

This is not a Permit

Clatsop County Community Development
800 Exchange St Ste 100
Astoria, OR 97103

Ph. (503) 325 - 8611 Fax (503) 338 - 3606

For Department Use Only

Permit #: 20170531
Permit Type: Type II
Entry Date: 10/16/2017
Entered By: Bart Catching
Assigned To:
Permit Status: Entered

Permit Timeline

User	Status	Date
Bart Catching	Entered	10/16/2017

Proposed Use

Proposed Use: **Geologic Hazard Report**

Zone: **CR**
Overlay District: **GHO**

Description: GHO for Accessory Structure (Pump House and Suana)

Owner/Project Location

Owner:
Name: **Haladay Jay S & Haladay Jay Revocable Trust** Ph. #: (503) 970-3447
Address: 18420 Old River Landing Cell: ( ) -
City, State, Zip: Lake Oswego, OR 97034 Fax: ( ) -

Situs Address: 80608 Hwy 101
City: Cannon Beach State: OREGON

T	R	S	Q S	Qq S	Taxlot
4	10	07	C	C	01000

Applicant/Agent

Applicant:
Name: Rich Elstrom Construction Ph. #: (503) 738-0274
Address: PO Box 2795 Cell: ( ) -
City, State, Zip: Gearhart, OR 97138 Fax: ( ) -

Ph. #: ( ) -
Cell: ( ) -
Fax: ( ) -

Fees

Fee Type:	***Permit Fee Total:***
Planning/Development	$441.00
Total:	**$441.00**

Receipt

Payor Name:	***Pymnt Type***	***Check #***	***Pymnt Date***	***Pymnt Amount:***
Rich Elstrom Construction	Check	24456	10/16/2017	$441.00

Balance Due: $0.00

Signatures

1. For Commercial and industrial uses, include parking and loading plan, sign plan and erosion control plan.
2. For residential and other uses, include an erosion control plan.
3. Review attached applicant's statement and sign below.

I have read and understand the attached APPLICANT'S STATEMENT and agree to abide by the terms thereof.

Applicant Signature: _____ ***Date:*** _____
Owner Signature: _____ ***Date:*** _____
Agent Signature: _____ ***Date:*** _____

Clatsop County
Community Development
800 Exchange Street, Suite 100
Astoria, Oregon 97103
Phone 503 325-8611 Fax 503 338-3606
comdev@co.clatsop.or.us www.co.clatsop.or.us

Geologic Hazard Permit

Fee: $441 (Required with application)

Proposed Use: ACCESSORY BUILDING - PUMP HOUSE AND SAUNA

Legal Description of Property:

T 4N R 10W S 7 Lot 1000 Acres 1.77 Zone ~~RT~~ CR

Adjacent Property Owned by Applicant:

T 4N R 10W S 7 Lot 900 Acres 1.59 Zone ~~RT~~ CR

T____ R____ S____ Lot____ Acres____ Zone____

Applicant:

Name: Rich Elstrom Const Inc. Email: Rlec@opusnet.com

Mail Address: P.O. Box 2795 City/State/Zip Gearhart OR 97138

Phone: 503-738-0274 Phone: 503-738-0274

Signature: Rich Elstrom Pres of GC Date: 10-11-17

Property Owner (mandatory if different than applicant):

Name: Jay & Renee Halladay Email: Jayhaladay@gmail.com.

Mail Address: 18420 Old River Landing City/State/Zip Lake Oswego OR 97034

Phone: 503-970-3447 Phone:____

Signature: X Jay Halladay Date: 10-11-17

Property Owner -2 /Geologist/ Attorney

Name:____ Email:____

Mail Address:____ City/State/Zip____

Phone:____ Phone:____

Signature: X Renee Halladay Date: 10-11-17
Renee Halladay

Please attach a Geologic Hazard Report that meets the requirements in LWDUO Section 4.040 and is prepared in conformance with the attached Standards for the Preparation of Geotechnical Reports.

NOTE: Either A or B below must be met in order to approve the Geologic Hazard Permit. Please verify by checking the appropriate box and attaching the conclusions and required actions, if applicable.

CRITERIA		FINDINGS AND CONCLUSIONS
(A) Do the conclusions of the geohazard report* support a finding that there are no adverse effects of the site's geologic characteristics on the proposed development and the proposed site modifications will not adversely affect geologic conditions and processes in the immediate area? ***Section 4.045(1)(A)***	☐ Yes ☒ No	***If yes, ATTACH THE CONCLUSIONS;*** *If no, Criterion B must be met.*
(B) Do the conclusions of the geohazard report* support a finding that if specified actions are taken to address an identified potential hazard then the effects of the site's geologic characteristics on the proposed development will be at an acceptable level and the effects of the proposed site modifications on the geologic conditions and processes in the immediate area are at an acceptable level? ***Section 4.045(1)(B)***	☑ Yes ☐ No	***If yes, ATTACH THE CONCLUSIONS AND REQUIRED ACTIONS;*** *If no, Criterion A must be met.*

**NOTE: For areas subject to mass wasting or wave attack, the geohazard report shall be prepared by a certified engineering geologist or a registered professional geologist (in consultation with an engineering geologist, structural engineer, or civil engineer if structural recommendations are incorporated into the report).*

For areas with compressible soils only, the geohazard report shall be prepared by a certified engineering geologist, soil engineer, or civil engineer.

Geotech Solutions Inc.

September 7, 2017 *haladay-14-1-consult2*

Jay Haladay
jay@viewpoint.com

cc: Rich Elstrom Construction; rec@opusnet.com

GEOTECHNICAL HAZARD RECONNAISSANCE
Arcadia Sands Tax Lot 1000 – Sauna/Pumphouse and Cabin Pad Relocation to East

As requested, we appreciate the opportunity to present this updated geotechnical hazard reconnaissance regarding oceanfront tax lot 1000 in Arcadia Sands north of Arch Cape, Oregon. Changes to our December 17, 2014 report include reconnaissance and report updating to include the sauna and pump house and cabin relocation site east of the driveway, both of which we observed staked while on site. The purpose of our work was to evaluate present site surface conditions at the preceding locations and complete a geotechnical hazard report that applies there, together with recommendations of shallow foundation support. The scope of our work included the following:

- Complete a site reconnaissance to observe surface conditions, slopes, and soil exposures.
- Review vicinity geotechnical reports and geological maps available in our files.
- Provide a stamped geotechnical engineering letter with our opinion on the qualitative stability and suitability for foundation support for the structure.

Site Geological Context
An estimated 50 year oceanfront slope regression setback of 50 feet has been recommended in the south adjacent parcel in a site geological hazard study by Horning Geosciences. This setback was in the context of existing aseismic activity (ie lack of activity) along the Cascadia Subduction Zone, and is consistent with DOGAMI O-09-06 mapping. An excerpt from this report is attached that shows the oceanfront slope slumping in a narrow band along the exposed toe in terrace deposits, with alluvial fan deposits at higher elevations at the proposed building locations. Experience on the parcel to the south indicates that part of the building ridge is intruded by a basalt dike that likely underlies a portion of the main elevated cabin, and may also be present at depth under the terrace deposits at the sauna and east cabin location.

Coastal subsidence from a CSZ interface is stated as a risk to buildings at and beyond the 50 year setback from accelerated erosion / regression rates. Dynamic stability is also an issue for this type of event, similar to the risk of adjacent lots, but decreasing with these larger oceanfront setbacks. Tsunami inundation shown on DOGAMI's TIM-Clat-10 is below the building areas.

SITE OBSERVATIONS AND CONDITIONS
Surface Conditions
The site is located immediately north of the Picture Windows Lane development as shown on the attached ***Site Plan***. In a 1962 aerial photo the area was logged, with no house present. Trees have since grown back. A few show possible signs of near surface creep nearer the drainage, but no features

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of large scale instability were observed. The ground surface in the building areas is gently sloping, generally to the north and west toward the small incised drainage. The house to the south lies in a retained cut which we previously observed (photo attached) to have suitable stability with exposed basalt present at depth. Vegetation is present on the oceanfront slope in the form of salal, brush, and low conifers, with a few scattered trees. Localized soil slumping and partially exposed buried logs integral with the marine terrace deposit were observed in the slope in the vicinity. A cobble berm abuts the toe of the slope, and slopes gradually to a sand beach which is exposed at low to moderately high tides. Higher tides and storm surges impact the cobble berm and slope above it. Oceanfront slopes on this and neighboring properties exhibit erosion induced slumping, which is likely episodic related to storm surges and El Nino Southern Oscillation sea level influences which can remove the cobble berm.

A drainage is present in the central portion of the site generally running east-southeast to west-northwest, with what appears to be a small plunge pool west of the roadway crossing. No large scale instability was noted associated with this drainage that would impact the building sites.

CONCLUSIONS AND RECOMMENDATIONS

General

Based on our review of geologic information, subsurface explorations, and site observations, the site can be developed as proposed subject to the acceptance of the discussed risks and application of the recommendations provided herein.

The owner must understand that the site is located in shore regression terrain and that no precautions can completely eliminate risks of future ground movements, slope regression, seismic induced slope instability, or other events potentially damaging to structures. There is a risk of tsunami damage at this oceanfront property below the house that cannot be mitigated, and an evacuation plan must be followed whenever ground shaking from an earthquake or tsunami alerts are present as actual wave impacts are variable. Stability consequences of tsunami impacts and subsidence from a Cascadia Subduction Zone interface earthquake cannot be completely feasibly mitigated at this and surrounding oceanfront sites. The purpose of this report was to identify risk associated with developing the site and provide recommendations to reduce impacts of that risk for life safety design. Our conclusions and recommendations are detailed in the following sections.

Slope Regression and Oceanfront Setback

Adjacent geological reports by Horning GeoSciences indicate a 50-foot setback from the crest allows for a minimum of 50 years of slope regression. This is based on average regression rates and the current context of ocean erosion, including aseismic conditions (no CSZ interface earthquake - and no corresponding coastal subsidence). Actual regression is episodic and may include more than 10 feet at a time over one storm surge or rainfall event. This report and DOGAMI O-09-06 discuss the risks associated with such slopes, noting the unpredictability of increases to sea levels, extreme erosional events, and coastal subsidence, among others. Any new construction on this site carries risk of slope regression and seismic impacts to the structure similar to that on nearby recently developed sites.

Risk associated with slope regression reduces with distance from the bluff crest and is low but not zero at the building locations, and is generally less than neighboring existing houses.

Erosion Protection

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Erosion protection of the oceanfront slope is vital to moderating slope regression. Maintaining and enhancing the vegetative cover over this slope will provide some erosional protection. Root intensive plantings such as willows are particularly beneficial. The small inferred plunge pool in the creek below the driveway could enlarge during extreme runoff, and if it does should be rip-rapped to arrest progression and reduce risk to nearby building pads.

Cut and Fill Limitations for Stability

In order to maintain the present static stability conditions, cuts and fills should be no greater than 5 feet above existing grades east of the 50 foot setback line, and 2 feet or less west of the setback line. North-south trending trench cuts that remain open more than two days must not exceed 8 feet deep within 80 feet of the oceanfront slope crest, and 4 feet deep within 30 feet. Mass grading, including north-south trending trenches, must be completed during the dry season that typically runs from late June to late September. Failure to conform to these limits may reduce stability conditions and result in reduced stability during construction and related damage to this and adjacent properties.

Earthwork

Building Pad Preparation **-** Site preparation for earthwork will require removal of forest duff, topsoil, and any unsuitable fill over the building footprints. Forest duff and topsoil may extend several feet and requires removal. Excavated soils should be removed from the site or spread in landscape areas, conforming to the fill limitations herein. The ground surface around the building excavations must be sloped to drain away from the excavation. Temporary dewatering may be required to remove seepage, and could likely be accommodated with portable sump pumps. Water must not be discharged directly on the oceanfront slope.

Grading **-** New cuts and fills should be limited to 5 feet in height/thickness to lessen stability impacts. Local ordinances and codes must be consulted for regulations relative to grading.

Stabilization and Soft Areas **-** After stripping we should be contacted to evaluate the exposed subgrade for soft or loose areas, or otherwise unsuitable materials. This evaluation can be done by probing.

Fill **-** The on-site soils cannot be used for structural fill. Imported fill should consist of crushed rock with less than 6 percent fines. This material should be compacted to 95 percent relative to ASTM D 1557.

Permanent Slopes

Permanent exposed cut slopes can be no higher than 10 feet, and should be inclined no steeper than 2H:1V for cuts in medium stiff or better silt or siltstone or weathered basalt. All slopes must be protected from erosion prior to the onset of the wet season. This erosion protection should include reinforced erosion control matting (such as a north American Green SC-150 or equivalent) planted with root intensive ground cover.

Drainage

General **-** Slope stability can be reduced by surface infiltration and erosion. Therefore, we recommend that all surface runoff from hard surfaces, including downspouts, be collected and routed by tight line to suitable discharge at an erosion protected outlet near the drainage base at least 80 feet from the

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building. Actual storm water drainage design should be completed by a civil engineer with such expertise.

Gutters must be maintained as free flowing and ground surface slopes must be inclined away from the structure and be graded to prevent ponding. All crawl spaces must be adequately ventilated and sloped to drain to a suitable exterior discharge.

A perimeter foundation drain at the base of all exterior footings, grade beams, and embedded walls is required. The drain should consist of a two-foot wide zone of drain rock encompassing a 4-inch diameter rigid perforated pipe, all enclosed with a nonwoven filter fabric. The drain rock should have no more than 2 percent passing a #200 sieve and should extend to within one foot of the ground surface. As an alternative, a composite drain board can be used above the perimeter drain, such as a Miradrain G100N or an approved equivalent. The geosynthetic should be a Propex Geotex 601 or equivalent. One foot of low permeability soil (such as the on-site silt) should be placed over the fabric at the top of the drain to isolate the drain from surface runoff.

Vapor Flow Retardant - A continuous, impervious barrier must be installed over the ground surface in the crawl spaces and under all interior slabs. Barriers must be installed per the manufacturer's recommendations.

Foundations

General

In our opinion, risks of damage due to ground movements associated with slope regression and earthquakes can be reduced by supporting structures on continuous shallow foundations with grade beams connecting any interior footings. Based on the results of our stability and risk analyses as well as qualitative judgment from investigating actual landslides, grade beams and continuous footings should be designed to free-span a minimum distance of 4 feet.

Continuous Foundations with Grade Beams – Conventional perimeter continuous foundations with interior continuous footings or grade beams oriented primarily in the east-west direction (perpendicular to the beach and ocean) will provide a stiffer foundation system more resistant to differential settlements and small ground deformation in the direction of anticipated movements than spread foundations. Aternatively, piers or embedded footings that are laterally braced with the structure are suitable.

Footings or piers bearing in native medium stiff (or stiffer) silt can be designed for an allowable bearing pressure of 2,500 psf with the edge of footings set back at least 5 feet from the face of erosion protected slopes. The preceding bearing pressure can be increased to 5,000 psf for temporary wind and seismic loads. Footings should be embedded at least 24 inches below the lowest adjacent, exterior grade and should be no less than 18 inches wide. Resistance to lateral loads can be obtained by a passive equivalent fluid pressure of 300 pcf against suitable footings and piers, ignoring the top 12 inches of embedment, and by a base friction coefficient of 0.35. Friction at the base of any grade beams should be ignored. Properly founded footings and piers are expected to settle less than a total of 1-inch, with less than ½ inch differentially under static structural loads.

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If footing construction is to occur in wet conditions, a few inches of crushed rock should be placed at the base of footings to reduce subgrade disturbance and softening during construction.

Seismic Design

General - In accordance with the International Building Code (IBC) as adapted by SOSSC and based on our explorations and experience in the site vicinity, the subject project should be evaluated using the parameters associated with Site Class D. However, because of the several minutes of expected strong ground motions the owner may want the structural engineer to consider designing to a higher performance level to reduce building damage during such an event.

LIMITATIONS AND OBSERVATION DURING CONSTRUCTION

We have prepared this report for use by Jay Haladay and members of the design and construction team for this project only. The information herein could be used for bidding or estimating purposes but should not be construed as a warranty of subsurface conditions. We have made observations only at the aforementioned locations and only at the stated depths. These observations do not reflect soil types, strata thicknesses, water levels or seepage that may exist between observations. We should be consulted to observe all foundation bearing surfaces, proof rolling of slab and pavement subgrades, installation of structural fill, and any cut slopes. We should be consulted to review final design and specifications in order to see that our recommendations are suitably followed. If any changes are made to the anticipated locations, loads, configurations, or construction timing, our recommendations may not be applicable, and we should be consulted. The preceding recommendations should be considered preliminary, as actual soil conditions may vary. In order for our recommendations to be final, we must be retained to observe actual subsurface conditions encountered. Our observations will allow us to interpret actual conditions and adapt our recommendations if needed. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty, expressed or implied, is given.

We appreciate the opportunity to work with you on this project and look forward to our continued involvement. If you have any questions, please do not hesitate to call.

Sincerely,

Don Rondema, MS, PE, GE
Principal

Attachments – Site Plan, 1962 aerial photo, DOGAMI O-09-06 excerpt

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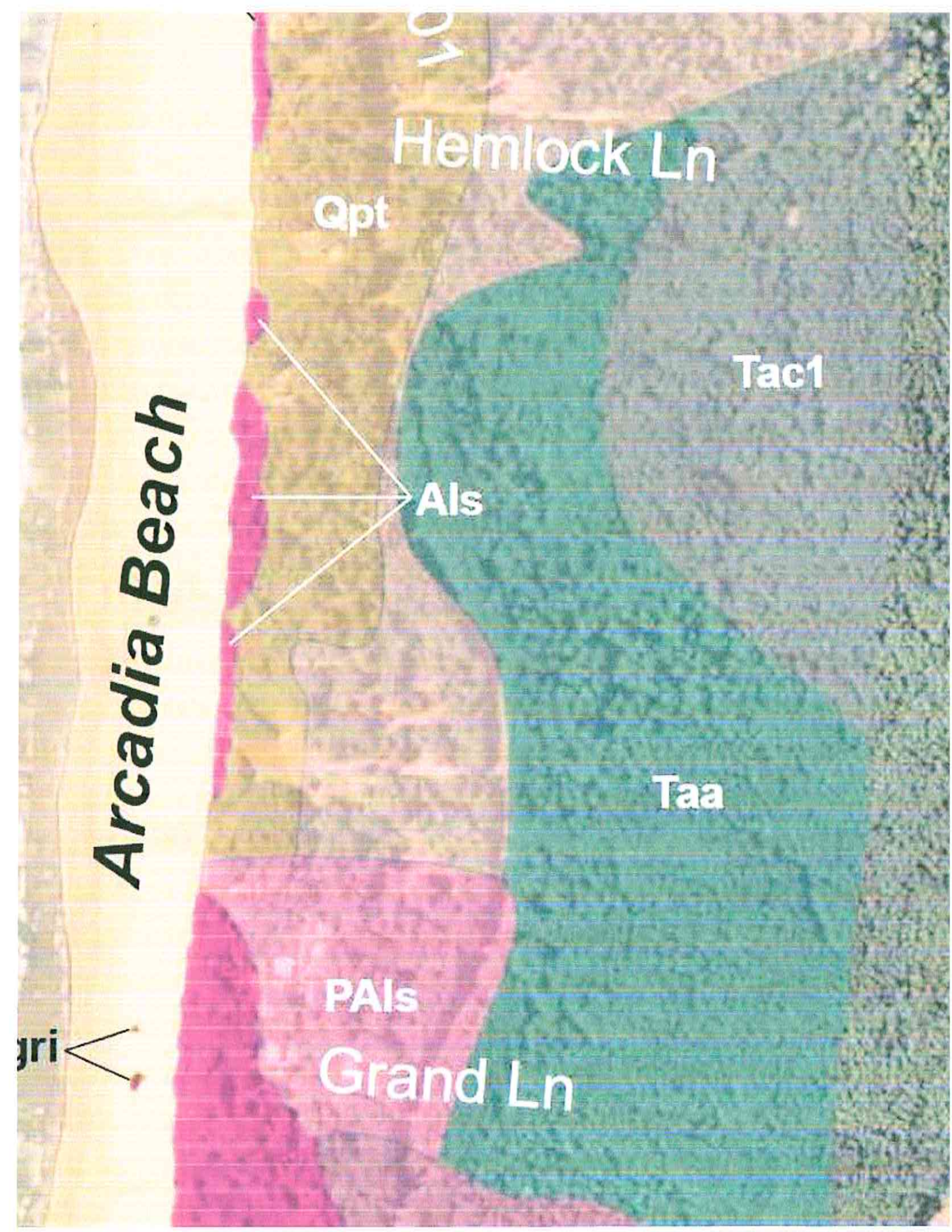
NOT TO SCALE

BASE PHOTO FROM GOOGLE EARTH 2017 AERIAL

Geotech Solutions Inc.

SITE PLAN

haladay-14-1-consult2


Hemlock Ln
Qpt
Tac1
Als
Arcadia Beach
Taa
PAls
Grand Ln