

# MEMORANDUM

---

TO: Will Dong, Tudor Project Ltd

FROM: Triton Environmental Consultants Ltd.

DATE: 14 June 2022

FILE #/NAME: 11145

RE: Follow-up Site Visit, Truman Road Feasibility Study –  
Ecological Community Assessment

---

## **Background**

Tudor Project Ltd. (Tudor) is considering the purchase of a partially developed 7.0-hectare property for the purposes of developing a subdivision near Halfmoon Bay on the Sunshine Coast of south coastal British Columbia

An initial site assessment and feasibility survey was completed in October 2021 by Triton Environmental Consultants (Triton Environmental Consultants 2021). Additional concerns were raised by community stakeholders about the impacts of this project on a Red-listed<sup>1</sup> community Douglas-fir/dull Oregon-grape (*Pseudotsuga menziesii* / *Mahonia nervosa*) that is mapped to occur at the site. In response to these community concerns, and the potential impacts of the presence of this plant community on development plans, a follow-up site assessment by a vegetation ecologist was recommended to determine if this rare plant community was in fact present at this site.

The site is a second growth forested area within the Coastal Douglas-fir (CDFmm) biogeoclimatic subzone zone in which some portions have been logged multiple times over the years (Golder Associates 1982). A geotechnical assessment conducted in 1981 described the site as exposed bedrock consisting of granite and a series of rock terraces formed by erosion during the last glacial period. There is little accumulation of granular soils anywhere on the property and the vegetation is typically shallow-rooting pines, firs, and underbrush (Golder Associates 1982). A search of the provincial database program (iMap BC) indicates that the Douglas-fir/dull Oregon-grape (*Pseudotsuga menziesii* / *Mahonia nervosa*) community is present in two small polygons along the northern fringe of the property boundary (Triton 2021), see also Figure 1.

## **Methodology**

In addition to the original desktop assessment of the project area completed for the October assessment (Triton 2021), a comprehensive literature review was conducted prior to the recent follow-up visit focusing specifically on the Douglas-fir/dull Oregon-grape Ecological Community.

---

<sup>1</sup>Any native species or ecological communities that have, or are candidates for, Extirpated, Endangered, or Threatened status in BC (<https://a100.gov.bc.ca/pub/eswp/search.do>).

The site visit was conducted on May 17, 2022 by Triton Vegetation Ecologist Margarete Dettlaff, Ph.D., R.P.Bio., accompanied by Biodiversity West Environmental Consulting Senior Wildlife Biologist, Brent Matsuda, M.Sc., R.P.Bio., who initially assessed the site in October 2021.

The assessment of the ecological community followed the survey methods outlined in the BC Inventory and Methods for Rare Plants and Lichens (RISC 2018). Assessment effort was focused more intensely in habitats most likely to contain the rare community in question. Specifically, this assessment focused on areas indicated by provincial terrestrial ecological mapping (TEM) as having attributes associated with a Douglas-fir/dull Oregon-grape Ecological Community, although the entire site was assessed during the visit. All plant species observed and their relative abundance, forest structure and soil accumulation were all observed as part of this assessment of the plant community present on site. Any wildlife seen or heard (e.g., birds), or wildlife signs (e.g., scat) were also recorded. A general outline of the area walked on-site is shown in Figure 1.

The locations of any Douglas-fir trees observed with a Diameter-at-Breast-Height (DBH) greater than 50 cm were also recorded. They were not flagged or otherwise marked as experience has shown that doing so draws attention to their presence that is sometimes misinterpreted to mean that they are to be removed. While trees of this size are not necessarily considered to be “old growth” age, they do provide a relative measure of the number of mature age trees present on the site. There has been no standard age or size determined for what constitutes an “old growth” tree or forest as definitions vary depending on the reasons for the assessment (e.g., harvesting or preservation; Andy MacKinnon, BC Ministry of Forests (retired) Forest Ecologist, personal communication, April 13, 2022).

As a further check, the crew visited a reference site along Brooks Road where the Douglas-fir/dull Oregon-grape plant community was known to occur (Figure 1, 10U 432532 5485860) (BC Conservation Data Centre, 2010).

## **Results**

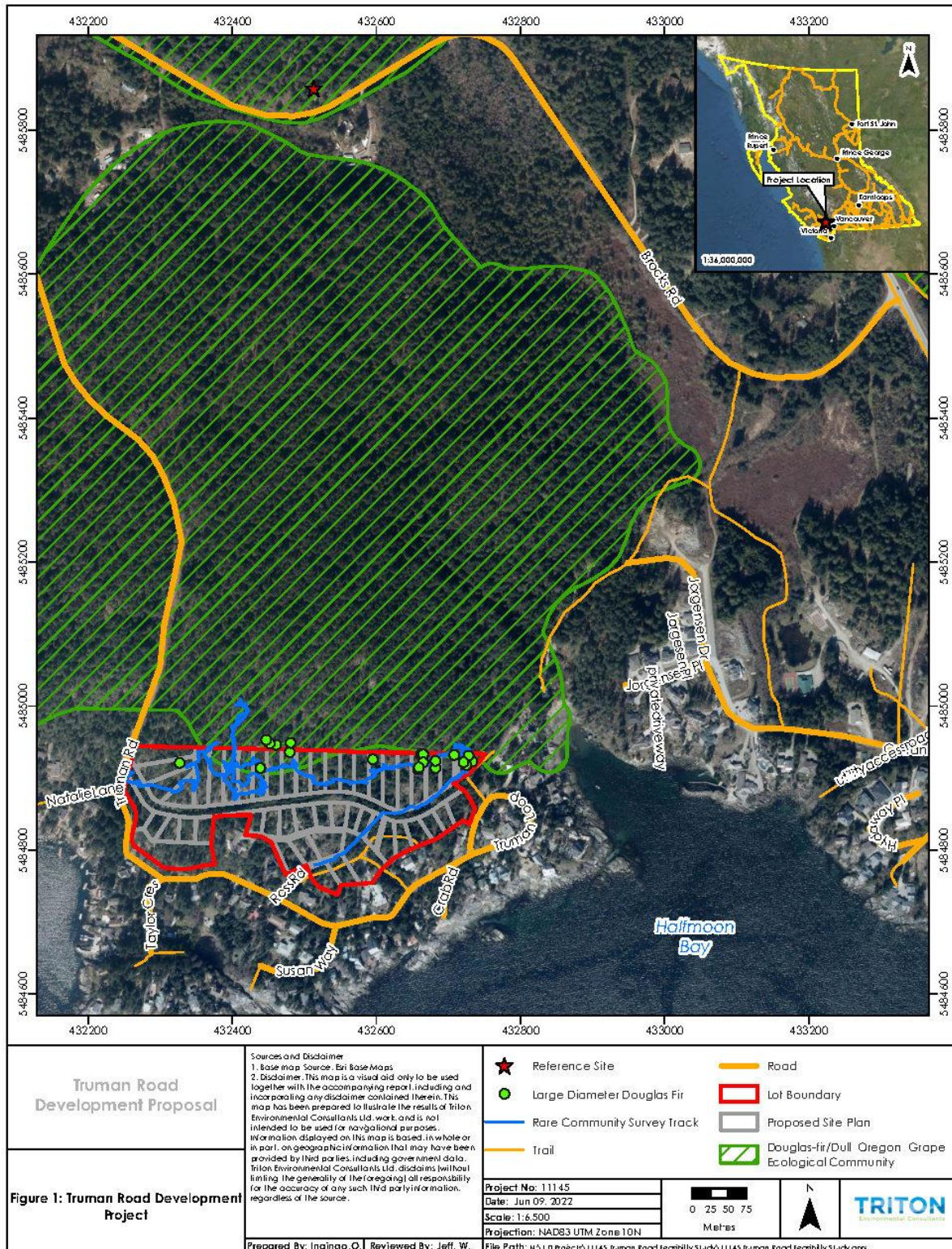
### **Literature Review**

A literature review of the Douglas-fir/dull Oregon-grape Ecological Community indicated that it is a moderately open- to closed-canopy late successional (structural stage 5 and above<sup>2</sup>) forest ecosystem that was historically widespread over much of the southern coast of BC. The tree layer is characterized by Douglas-fir with some grand fir (*Abies grandis*) or western redcedar (*Thuja plicata*) on slightly moister sites, and arbutus (*Arbutus menziesii*) on drier sites. Dominant shrubs are dull Oregon-grape (*Berberis nervosa*, formerly *Mahonia nervosa*) and salal (*Gaultheria shallon*) with occasional occurrences of oceanspray (*Holodiscus discolor*) and trailing blackberry (*Rubus ursinus*).

---

<sup>2</sup> More structurally complex stands, usually >80 years since last major disturbance event. From Pojar et al, 2004.

Figure 1: Map of survey area.



A sparse herb layer usually includes broad-leaved starflower (*Trientalis latifolia*), vanilla leaf (*Achlys triphylla*), bracken fern (*Pteridium aquilinum*) and sword fern (*Polystichum munitum*). The understory layer is instead dominated by Oregon beaked moss (*Kindbergia oregana*), with electrified cat's tail moss (*Thytidaedelphus triquetrus*) and step moss (*Hylocomium splendens*). Sites have sandy loam soils, and a moderately dry moisture regime with a very poor to medium nutrient regime (Romer, 1972; Green and Klinka, 1994; Pojar, Flynn and Cadrin, 2004; Warttig and Inselberg, 2010; de Groot and Cadrin, 2018; BC Conservation Data Centre, 2022)

## Field Visit

### Plant Community

A complete list of plants observed during both site visits is provided in Table 1. The forest along the upper north portion of the property primarily exhibited two community types: (1) a young, closed-canopy forest in the middle of the property, and (2) a more mature, very open forest along the rest of the northern perimeter that is characterized by widely spaced, large diameter Douglas-fir trees, and an open forest canopy with numerous gaps and sub-dominant arbutus and young regenerating western redcedar (Photos 1-4). The shrub layer was moderately well-developed, dominated by (in descending relative order of prevalence) oceanspray, western trumpet honeysuckle, trailing blackberry, and salal, with some scattered dull Oregon-grape. The soils were very thin to non-existent and there were numerous areas of exposed bedrock. The openness of the canopy and the thin soil supported a relatively diverse forb community, with substantial moss cover of Oregon beaked moss and step moss over exposed rock.

**Table 1. Plant, moss, and lichen species observed**

Species Type	Common Name	Scientific Name
Tree	Arbutus	<i>Arbutus menziesii</i>
Tree	Douglas-fir	<i>Pseudotsuga douglasii</i>
Tree	Lodgepole pine	<i>Pinus contorta</i>
Tree	Red alder	<i>Alnus rubra</i>
Tree	Western redcedar	<i>Thuja plicata</i>
Shrub	Baldhip rose	<i>Rosa gymnocarpa</i>
Shrub	Cotoneaster	<i>Cotoneaster sp.</i>
Shrub	dull Oregon-grape	<i>Berberis nervosa</i>
Shrub	Kinnickinick	<i>Arctostaphylos uva-ursi</i>
Shrub	Oceanspray	<i>Holodiscus discolor</i>
Shrub	Red huckleberry	<i>Vaccinium parvifolium</i>
Shrub	Salal	<i>Gaultheria shallon</i>
Shrub	Saskatoon berry	<i>Amelanchier alnifolia</i>
Shrub	Scotch broom	<i>Cytisus scoparius</i>
Shrub	Snowberry	<i>Symphoricarpous albus</i>
Shrub	Trailing blackberry	<i>Rubus ursinus</i>
Shrub	Twinflower	<i>Linnea borealis</i>
Shrub	Western trumpet honeysuckle	<i>Lonicera ciliosa</i>
Forb	Bigrooted geranium	<i>Geranium macrorrhizum</i>

<b>Species Type</b>	<b>Common Name</b>	<b>Scientific Name</b>
Forb	Black raspberry	<i>Rubus leucodermis</i>
Forb	Bracken fern	<i>Pteridium aquilinum</i>
Forb	Chickweed monkeyflower	<i>Mimulus alsinoides</i>
Forb	Cleavers	<i>Gallium aparine</i>
Forb	Common wood sorrel	<i>Oxalis acetosella</i>
Forb	Dandelion	<i>Taraxicum spp.</i>
Forb	Dovefoot geranium	<i>Geranium molle</i>
Forb	English ivy	<i>Hedera helix</i>
Forb	Green spleenwort	<i>Asplenium viride</i>
Forb	Hairy cat's ear	<i>Hypochaeris radicata</i>
Forb	Herb robert	<i>Geranium robertianum</i>
Forb	Himalayan blackberry	<i>Rubus armeniacus</i>
Forb	Liquorice fern	<i>Polypodium glycyrrhiza</i>
Forb	Meadow alumroot	<i>Heuchera chlorantha</i>
Forb	Meadow death-camas	<i>Zigadenus venenosus</i>
Forb	Northwestern twayblade	<i>Neottia banksiana</i>
Forb	Parsley fern	<i>Cryptogramma crispera</i>
Forb	Plantain	<i>Plantago sp.</i>
Forb	Purple peavine	<i>Lathyrus nevadensis</i>
Forb	Rattlesnake plantain	<i>Goodyera oblongata</i>
Forb	Sea Blush	<i>Plectritis congesta</i>
Forb	St John's wort	<i>Hypericum sp.</i>
Forb	Small flowered blue-eyed mary	<i>Collinsia parvifolium</i>
Forb	Small-flowered alumroot	<i>Heuchera micrantha</i>
Forb	Small-flowered nemophila	<i>Nemophila parviflora</i>
Forb	Spikemoss	<i>Selaginella sp.</i>
Forb	Sword fern	<i>Polystichum munitum</i>
Forb	Wild strawberry	<i>Fragaria virginiana</i>
Forb	Yarrow	<i>Achillea millefolium</i>
Forb	Yellow monkeyflower	<i>Mimulus guttatus</i>
Graminoid	Rush	<i>Juncus or Luzula sp.</i>
Graminoid	Sedge	<i>Carex sp.</i>
Lichen	Reindeer lichen	<i>Cladina portentosa</i>
Moss	Fork moss	<i>Dicranum sp.</i>
Moss	Haircap moss	<i>Polytrichum sp.</i>
Moss	Oregon beaked moss	<i>Kindbergia oregana</i>
Moss	Step moss	<i>Hylacomium splendens</i>

### Mature Douglas-fir

Large, older Douglas-fir trees were observed near the eastern property boundary and at sporadic locations fringing the northern property boundary (Figure 1). Estimated DBHs and Universal Transverse Mercator (UTM) locations for each large tree (DBH  $\geq$ 50 cm) observed are presented in Table 2. Consideration should be given to preserve as many

of these trees as possible as less than 1% of the CDFmm subzone remains as mature or old forest in British Columbia (Warttig and Inselberg 2010).

**Table 2. Locations of Douglas-fir trees exceeding 50 cm DBH.**

<b>DBH</b>	<b>Zone</b>	<b>Easting</b>	<b>Northing</b>
60	10	432461	5484946
70	10	432452	5484948
75	10	432665	5484933
75	10	432481	5484949
75	10	432447	5484953
80	10	432721	5484922
80	10	432439	5484914
100	10	432733	5484923
100	10	432708	5484932
100	10	432664	5484929
100	10	432658	5484912
100	10	432662	5484933
100	10	432659	5484915
100	10	432595	5484926
100	10	432480	5484936
110	10	432682	5984920
120	10	432725	5484918
120	10	432682	5484914
120	10	432632	548918
120	10	432665	5484922
120	10	432682	5484924
150	10	432728	5484931
150	10	432665	5484933
170	10	432327	5484921

### Wildlife

For wildlife, Table 3 presents a list of the bird species incidentally observed during the site visits. Scat of Columbian Black-tailed Deer (*Odocoileus hemionus columbianus*) was observed at multiple locations during the May site visit and scat of Roosevelt Elk (*Cervus elaphus roosevelti*) was seen in the upper portion of the site. A Northern Alligator Lizard (*Elgaria coerulea*) was also seen just outside the upper eastern property boundary (UTM 10U 432728 5484957). None of the wildlife species or wildlife signs observed during the site visits is out of the norm for the area and none are considered to be Species at Risk.

**Table 3. Bird species detected during the site visits**

<b>#</b>	<b>Common Name</b>	<b>Scientific Name</b>
1	American Robin <sup>1,2</sup>	<i>Turdus migratorius</i>
2	Anna's Hummingbird <sup>2</sup>	<i>Calypte anna</i>
3	Canada Goose <sup>2</sup>	<i>Branta canadensis</i>

#	Common Name	Scientific Name
4	Cedar Waxwing <sup>1</sup>	<i>Bombycilla cedrorum</i>
5	Chestnut-backed Chickadee <sup>2</sup>	<i>Poecile rufescens</i>
6	Common Raven <sup>1,2</sup>	<i>Corvus corax</i>
7	Dark-eyed Junco <sup>2</sup>	<i>Junco hyemalis</i>
8	Golden-crowned Kinglet <sup>1</sup>	<i>Regulus satrapa</i>
9	Gull <sup>1,2</sup>	<i>Larus sp.</i>
10	Northern Flicker <sup>1</sup>	<i>Colaptes auratus</i>
11	Pacific Slope Flycatcher <sup>2</sup>	<i>Empidonax difficilis</i>
12	Red-breasted Nuthatch <sup>2</sup>	<i>Sitta canadensis</i>
13	Red-tailed Hawk <sup>1</sup>	<i>Buteo jamaicensis</i>
14	Spotted Towhee <sup>1</sup>	<i>Pipilo maculatus</i>
15	Steller's Jay <sup>1</sup>	<i>Cyanocitta stelleri</i>
16	Swainson's Thrush <sup>2</sup>	<i>Catharus ustulatus</i>
17	Yellow-rumped Warbler <sup>2</sup>	<i>Setophaga coronata</i>

<sup>1</sup>Observed during site visit on October 21, 2021.

<sup>2</sup>Observed during site visit on May 17, 2022.

## **Conclusions**

Based on the formal descriptions of the Douglas-fir/dull Oregon-grape Ecological Community (Romer 1972; Green and Klinka, 1994; Pojar, Flynn and Cadrin, 2004; Warttig and Inselberg, 2010; de Groot and Cadrin, 2018; BC Conservation Data Centre, 2022), as well as comparison to a provincially-marked Douglas-fir/dull Oregon-grape Ecological Community near this site further along Brooks Road (Photos 5 & 6), the vegetation community observed on the project site does not fit that of a Douglas-fir/dull Oregon-grape Ecological Community.

Structurally, while mature Douglas-fir trees are present, the areas mapped as being the Douglas-fir/dull Oregon-grape Ecological Community overlapping the northern portions of the property were assessed to be more open than descriptions of the red-listed ecological community. The understory plant community on site also had a higher-than-expected diversity than expected of shrubs and forbs, while simultaneously lacking some key plants that are usually present in the red-listed community (e.g., broad-leaved starflower and vanilla leaf). The shrub community is also typically described as dominated by salal or dull Oregon-grape with a minor component of ocean spray. Across the site, ocean spray was the dominant shrub present, with salal and dull-Oregon grape comparatively uncommon (though still present). There is very little accumulation of soil in the upper parts of the site that are mapped to have this red-listed community, with primarily extremely shallow soils or mosses covering the exposed bedrock. The observed plant community also contains several species that are indicators of very shallow soils (Klinka et al, 1989). In contrast, the established site further along Brooks Road to the north, as well as published descriptions, show more closed canopies, very little understory plant community diversity, and well-developed soils – all features that were not prevalent at the Truman Road site.

As previously mentioned in Triton (2021), sometimes occurrences indicated on provincial databases are based on desktop TEM assessment without ground-truthing. It may be that the Douglas-fir/dull Oregon-grape Ecological Community shown on the BC iMap website overlapping into the property was derived from desktop evaluation without such ground-truthing.

Measures taken to protect the plant community that does exist on site, specifically including any large, older trees (e.g., Douglas-fir, Western redcedar) would be a voluntary stewardship initiative that would serve to enhance the ecological value of the site. If clearing can avoid some, or all, of these trees, the site will benefit from both an aesthetic and ecologically functional preservation perspective.

Overall, based on the desktop assessments and site visits conducted October 21, 2021, and May 17, 2022, there are no environmentally related issues observed that may have bearing on the proposed plan to purchase or further subdivide the site from a vegetation or wildlife perspective. While wildlife habitat loss will occur as a result of vegetation clearing, the risk of harming birds will be greatly reduced by conducting any habitat-altering activities outside of the bird breeding season. The other recommendations and mitigation considerations discussed in the October 2021 Memo (Triton 2021) should also be followed to help reduce the risk of any regulatory contraventions.

It should be clarified that this assessment, along with that conducted in October 2021 (Triton 2021) does not constitute a formal environmental assessment detailing project effects, but was meant to identify any potential Species at Risk issues gauging the feasibility of the proposed project from a terrestrial ecological perspective.

We trust that the information provided in this memo will be of use in informing your decisions with respect to your proposed project. If you have any further questions regarding the recommendations based on our site visits, please feel free to contact us.

Thank you,



Margarete Dettlaff, Ph.D., R.P.Bio.  
Vegetation Ecologist  
Triton Environmental Consultants



Brent M. Matsuda, M.Sc., R.P.Bio.  
Senior Wildlife Biologist  
Biodiversity West Environmental Consulting



## References

- BC Conservation Data Centre. 2010 [internet]. Ecological Community Summary: Douglas-fir / dull Oregon-grape. BC Ministry of Environment. Available at: <https://a100.gov.bc.ca/pub/eswp/> Accessed May 2022.
- de Groot, A. and C. M. Cadrin. 2018. Ecosystem Status Report for *Pseudotsuga menziesii* / *Mahonia nervosa* (Douglas-fir / dull Oregon-grape) Ecological Community in British Columbia. Prepared for: B.C. Ministry of Environment and Climate Change Strategy, Conservation Data Centre, Victoria, B.C. 34 pp. Available at: <https://a100.gov.bc.ca/pub/eirs/viewDocumentDetail.do;jsessionid=26B2A8AFE99AA547862CDD8F48DC7A53?fromStatic=true&repository=BDP&documentId=12790> Accessed May 2022.
- Green, R.N. and K. Klinka. 1994. A field guide to site identification and interpretation for the Vancouver Forest Region. Land Management Handbook No. 28. BC Ministry of Forests, Victoria, BC. Available at: <https://www.for.gov.bc.ca/hfd/pubs/docs/lmh/lmh28/lmh28-01.pdf>. Accessed May 2022.
- Golder Associates. 1982. Geotechnical Appraisal for Proposed Subdivision, Halfmoon Bay, Sechelt, BC.
- Klinka, K., V.J. Krajina, A. Ceska, and A.M. Scagel. 1989. Indicator Plants of Coastal British Columbia. University of British Columbia Press. Vancouver, BC.
- Klinkenberg, B. (Editor) 2021. E-Flora BC: Electronic Atlas of the Flora of British Columbia [eflora.bc.ca]. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver, BC. Accessed May 2022.
- Pojar, J., S. Flynn, and C. Cadrin. Accounts and Measures for Managing Identified Wildlife. V 2004. [Internet]. Douglas-fir/dull Oregon-grape *Pseudotsuga menziesii*/*Mahonia nervosa* plant community. BC Ministry of Forests and Range. Available at: [DOUGLAS-FIR/DULL OREGON-GRAPE Pseudotsuga menziesii/Mahonia nervosa \(gov.bc.ca\)](https://www.gov.bc.ca/DOUGLAS-FIR/DULL_OREGON-GRAPE_Pseudotsuga_menziesii/Mahonia_nervosa) Accessed May 2022.
- [RISC] Resources Information Standards Committee. 2018. Inventory and Survey Methods for Rare Plants and Lichens. Standards for Components of British Columbia's Biodiversity No. 43. Prepared by Ministry of Environment and Climate Change Strategy, Ecosystems Branch, For the Resources Information Standards Committee. May 2018. Version 1.0. Available at: [https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nr-laws-policy/risc/inventory\\_and\\_survey\\_methods\\_for\\_rare\\_plants\\_and\\_lichens.pdf](https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nr-laws-policy/risc/inventory_and_survey_methods_for_rare_plants_and_lichens.pdf) Accessed May 2022.

Roemer, H.L. 1972. Forest vegetation and environments on the Saanich Peninsula, Vancouver Island. Ph.D. thesis. University of Victoria, Victoria, BC.

Triton Environmental Consultants. 2021. Memorandum Site Visit, Truman Road Feasibility Study. 12 November 2021.

Warttig, W. and A. Inselberg. 2010. BC's Coast Region: Species & Ecosystems of Conservation. Plant Community: Douglas-fir / Dull Oregon-grape (*Pseudotsuga menziesii* / *Mahonia nervosa*) for the South Coast Conservation Program (SCCP) in partnership with: International Forest Products (Interfor), Capacity Forestry (CapFor) and the BC Ministry of Environment (BC MoE), E-Flora and E-Fauna the Electronic Atlas of the Flora and Fauna of BC, Species at Risk & Local Government: A Primer for BC. Available at: [http://www.valdes-island-conservancy.org/uploads/5/6/1/8/BC\\_Conservation\\_Data\\_Centre\\_5618893/douglasfir\\_dulloregongrape\\_cdfmm01.pdf](http://www.valdes-island-conservancy.org/uploads/5/6/1/8/BC_Conservation_Data_Centre_5618893/douglasfir_dulloregongrape_cdfmm01.pdf). Accessed May 2022.

### Appendix 1 – Photos

Photo 1: Plant community at north eastern edge of property.



Photo 2: Plant community in the middle of the northern edge of property.



Photo 3: Community along northern edge of property showing limited soil development over bedrock and open canopy.



Photo 4: Community along northern edge of property showing limited soil development over bedrock and open canopy.



Photos 5: Forest community at reference site showing limited understory and more closed canopy.



Photo 6: Forest community at reference site showing more limited understory and more closed canopy.

