

Truman Road Development Project Environmental Management Plan

Halfmoon Bay Living Ltd.



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Disclaimer

This report is rendered solely for the use of Halfmoon Bay Living Ltd. (the Owner) in connection with the Truman Road Development Project (the Project), and no person may rely on it for any other purpose without Triton Environmental Consultants Ltd.'s prior written approval. Should a third party use this report without Triton's approval, they may not rely upon it. Triton accepts no responsibility for loss or damages suffered by any third party as a result of decisions made or actions taken based on this report.

This report is based on facts and opinions contained within the referenced documents, including the results of any data collection programs carried out in relation to this report. We have attempted to identify and consider facts and documents relevant to the scope of work, accurate as of the time period during which we conducted this analysis. However, the results, our opinions, or recommendations may change if new information becomes available or if information we have relied on is altered.

We applied accepted professional practices and standards in developing and interpreting data. While we used accepted professional practices in interpreting data provided by the Owner or third-party sources, we did not verify the accuracy of any such data.

This report must be considered as a whole; selecting only portions of this report may result in a misleading view of the results, our opinions, or recommendations.

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1.0 Introduction

1.1 Purpose and Contents of the EMP

This Environmental Management Plan (EMP) provides information that outlines environmentally sensitive aspects of the proposed Project and provides mitigation and monitoring measures aimed at reducing or eliminating environmental impact at all levels of the Project or activity.

This EMP outlines the scope of work identified by Halfmoon Bay Living (the Owner) and provides an overview of the proposed Project works. A Feasibility Study Report (Triton 2021) was completed by a Triton Senior Wildlife Biologist for a site visit conducted on October 21, 2021. An Ecological Community Assessment (Triton 2022) was completed by a Triton Vegetation Ecologist on May 17, 2022. The site-specific information and specific environmental mitigation plans for the Owner in this EMP include:

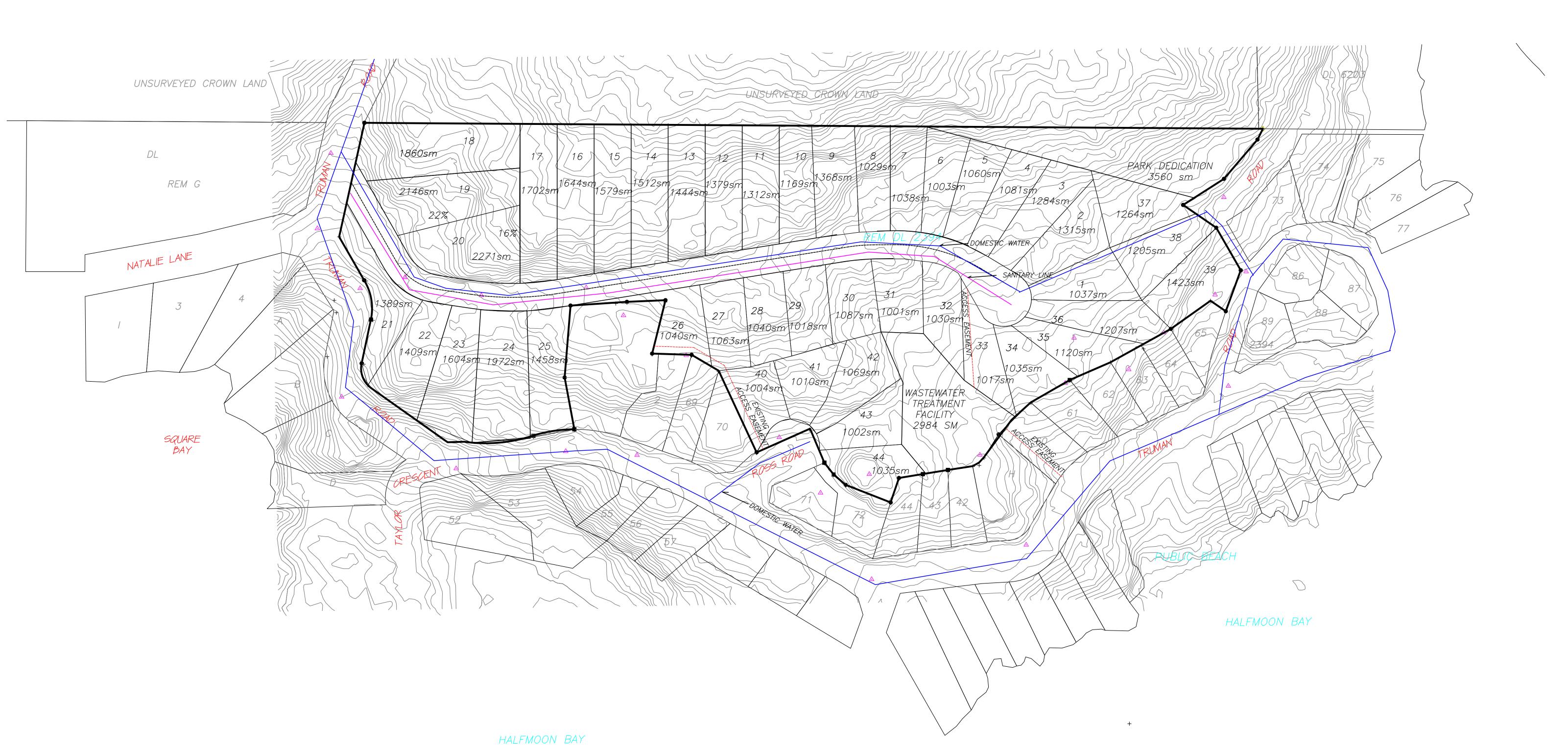
- A summary of environmental conditions and issues that must be addressed during construction;
- Specific controls/mitigation measures to minimize impact on the environment resulting from activities to be conducted by the Owner;
- Aquatic Resources Mitigation Plan;
- Vegetation Management Plan; and
- Wildlife Management Plan.

2.0 Project Location and Description

Halfmoon Bay Living Ltd. (the Owner) has completed 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 (BC). The property was initially subdivided in the 1970s with approximately 75 houses constructed on 90 lots throughout the 1970s and 1980s. During this period, plans to construct a road through the proposed subdivision began with clearing and blasting a path through the site (Triton 2021). This unfinished road exists as a 6-metre wide trail extending east-west from the west side of the property on Truman Road near Natalie Lane for approximately 350 m into the site where it then curves southwest to meet Ross Road. The surrounding property was developed into existing houses during the previous few phases in the 1970s to 1980s after which further development was halted in 1993. The previous owner has now decided to sell the lot. The footprint of the proposed Project runs, generally, west to east between both ends of Truman Road (Rd.) and is bordered on the north side by the forest, while the southern side is bordered by where Truman Rd. meets Natalie Lane, Taylor Crescent, Ross Rd., and Truman Loop (Figure 1).

The Owner is proposing to subdivide the property into smaller parcels, requiring a rezoning application be submitted to the Sunshine Coast Regional District (SCRD) to amend the Official Community Plan. The site is a second growth forested area within the Coastal Douglas-fir (CDFmm) biogeoclimatic subzone that has been logged multiple times over the years. 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 (Golder Associates 1982). A site reconnaissance site visit was also conducted on May 2, 2022 by GES Geotech Inc. to describe the extent of geotechnical hazards and conduct a slope stability analysis to gauge how much of the subject property may be safely developed. There is little accumulation of granular soils anywhere on the property and the vegetation is typically shallow-rooting pines, firs, and underbrush.

Triton Environmental Consultants Ltd. (Triton) was retained by the Owner for the proposed Project, to prepare this Environmental Management Plan (EMP). This EMP is a dynamic document that may need to be updated throughout the duration of the proposed Project to address the construction activities and environmental mitigations to be implemented.



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NOTES: TOTAL NUMBER OF LOTS: 44 LOTS AVERAGE AREA OF LOTS: 1276 SM

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3.0 Proposed Project Works

Proposed Project activities are expected to occur in the following sequence:

Pre-construction activities:

- Kick-off meeting
- Approval of Project documentation

The proposed Project consists of roadwork, utility placement, surveying, and construction of residential lots. In addition, a functional ditch along the east side of Truman Rd. upslope of the property entrance and a culvert under the property access road were proposed to be installed to reduce erosion. The general nature of the work to be carried out for the development consists of, but is not necessarily limited to, the following:

- Mobilization to site
- Clearing and grubbing
- Surveying
- Grading
- Installation of temporary erosion and sediment control measures
- Excavation earthworks
- Installation of sanitary sewer and waterworks
- Paving
- Traffic management
- Quality management
- Demobilization
- Clean-up and site restoration

4.0 Environmental Sensitivities

4.1 Aquatic Resources

There is one unidentified stream to the east of the Project site which starts just south of the Sunshine Coast Highway and flows southeasterly past Brooks Rd., curves toward the southwest, and passes to the west of Jorgensen Dr. and joins Halfmoon Bay (PoBC 2022). This stream is located approximately 75 m east of the proposed Project boundary. There is an unidentified lake/lagoon to the south/southwest, approximately 120 m from site. An unidentified stream connects this lake with Halfmoon Bay.

Halfmoon Bay is approximately 200 m south of the Project area and 83 m to the east of the Project (PoBC 2022). However, there are no watercourses from the site leading to the water body. On the west side of the Project area, Square Bay is approximately 68 m from the site. Similarly, there are no watercourses leading from the site to Square Bay (PoBC 2022). No other watercourses were noted in the immediate vicinity of the Project area.

4.2 Mammals

During the Feasibility Study, only a Douglas Squirrel (*Tamiasciurus douglasii*) was seen, although it is likely that the site is also used or occupied by other rodents, mustelids (weasels, mink), and insectivores such as shrews and bats. Scat of Columbian Black-tailed Deer (*Odocoileus hemionus columbianus*) was observed at multiple locations during the Triton May 2022 site visit, and scat of Roosevelt Elk (*Cervus elaphus roosevelti*) was seen in the upper portion of the site (Triton 2022). Black Bear (*Ursus americanus*), Columbian Black-tailed Deer (*Odocoileus hemionus columbianus*), Coyote (*Canis latrans*), and Grey Wolf (*Canis lupus*) also occur in the area (Triton 2021).

4.3 Reptiles and Amphibians

A Northern Alligator Lizard (*Elgaria coerulea*) was seen during the Triton May 2022 site visit, outside the upper eastern property boundary (Triton 2022). While the site occurs within the range of several amphibian species including *Species at Risk Act* (SARA) Special Concern species such as the Western Toad (*Anaxyrus boreas*) and Red-legged Frog (*Rana aurora*), these species are unlikely to occur at the site given the lack of any wetlands or streams (Triton 2021). In addition, there is no suitable aquatic habitat beyond the Project site for amphibians to breed, so it is unlikely that other species occurring within the area such as the Rough-skinned Newt (*Taricha granulosa*), Northwestern Salamander (*Ambystoma gracile*), and Long-toed Salamander (*Ambystoma macrodactylum*) are likely to move into the site (Triton 2021).

Nearby residents have reported seeing gartersnakes, which could be any of BC's three species – Common Gartersnake (*Thamnophis sirtalis*), Western Gartersnake (*T. elegans*), or Northwestern Gartersnake (*T. ordinoides*), in the area (Triton 2021). These species may still occur at the site but should not affect Project development unless a hibernaculum is discovered, in which case a relocation salvage may be required to avoid contravention of the BC *Wildlife Act*. None of the wildlife species or wildlife signs observed during the

Triton Feasibility Study and Triton Ecological Community Assessment site visits were uncommon for the area and none are considered to be Species at Risk.

4.4 Invertebrates

There are no Species at Risk invertebrates (e.g., insects, arachnids, crustaceans, mollusks) known to occur at the Site or in close proximity (PoBC 2022) nor were any noteworthy invertebrates observed during the Feasibility Study (Triton 2021).

4.5 Birds

There were 21 bird species detected during the site assessments (Table 1). None of the birds observed indicated any behavioural cues reflective of nesting. No sensitive species or Species at Risk were detected.

Table 1. Bird species detected during the Triton Feasibility Study and Ecological Community Assessment

#	Common Name	Scientific Name	
1	American Robin	Turdus migratorius	
2	Anna's Hummingbird	Calypte anna	
3	Canada Goose	Branta canadensis	
4	California Gull	Larus californicus	
5	Cedar Waxwing	Bombycilla cedrorum	
6	Chestnut-backed Chickadee	Poecile rufescens	
7	Common Raven	Corvus corax	
8	Dark-eyed Junco	Junco hyemalis	
9	Golden-crowned Kinglet	Regulus satrapa	
10	Gull	Larus sp.	
11	Hairy Woodpecker	Dryobates villosus	
12	Northern Flicker	Colaptes auratus	
13	Pacific Slope Flycatcher	Empidonax difficilis	
14	Pileated Woodpecker	Dryocopus pileatus	
15	Red-breasted Nuthatch	Sitta canadensis	
16	Red-tailed Hawk	Buteo jamaicensis	
17	Spotted Towhee	Pipilo maculatus	
18	Steller's Jay	Cyanocitta stelleri	
19	Swainson's Thrush	Catharus ustulatus	
20	Yellow-rumped Warbler	Setophaga coronata	
21	Western Tanager	Piranga ludoviciana	

4.6 Plants

A complete list of plants observed during the Triton Feasibility Study and Ecological Community Assessment site visits is provided in Table 2. The forest along the upper north portion of the property was determined to be made of 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 (Triton 2022).

The Triton Ecological Community Assessment report notes the sizes of large, older Douglas-fir trees observed near the eastern property boundary and at sporadic locations along the northern property boundary (Triton 2022).

Species Type	Common Name	Scientific Name
Tree	Arbutus	Arbutus menziesii
Tree	Bigleaf maple	Acer macrophyllum
Tree	Douglas-fir	Pseudotsuga douglasii
Tree	Lodgepole pine	Pinus contorta
Tree	Red alder	Alnus rubra
Tree	Western redcedar	Thuja plicata
Shrub	Baldhip rose	Rosa gymnocarpa
Shrub	Cotoneaster	Cotoneaster sp.
Shrub	Dull Oregon-grape	Berberis nervosa
Shrub	Kinnikinnick	Arctostaphylos uva-ursi
Shrub	Oceanspray	Holodiscus discolor
Shrub	Red huckleberry	Vaccinium parvifolium
Shrub	Salal	Gaultheria shallon
Shrub	Saskatoon berry	Amelanchier alnifolia
Shrub	Scotch broom	Cytisus scoparius
Shrub	Snowberry	Symphoricarpous albus
Shrub	Trailing blackberry	Rubus ursinus
Shrub	Twinflower	Linnea borealis
Shrub	Western trumpet honeysuckle	Lonicera ciliosa
Forb	Bigrooted geranium	Geranium macrorhizum
Forb	Black raspberry	Rubus leucodermis
Forb	Bracken fern	Pteridum aquilinum
Forb	Chickweed monkeyflower	Mimulus alsinoides
Forb	Cleavers	Gallium aparine
Forb	Common wood sorrel	Oxalis acetosella
Forb	Dandelion	Taraxicum spp.
Forb	Dovefoot geranium	Geranium molle
Forb	English ivy	Hedera helix
Forb	Green spleenwort	Asplenium viride
Forb	Hairy cat's ear	Hypochaeris radicata
Forb	Herb robert	Geranium robertianum
Forb	Himalayan blackberry	Rubus armeniacus
Forb	Liquorice fern	Polypodium glycyrrhiza

Table 2. Plant, moss, and lichen species observed during Triton Feasibility Study and Ecological Community Assessment

Species Type	Common Name	Scientific Name
Forb	Meadow alumroot	Heuchera chlorantha
Forb	Meadow death-camas	Zigadenus venenosus
Forb	Northwestern twayblade	Neottia banksiana
Forb	Parsley fern	Cryptogramma crispa
Forb	Plantain	Plantago sp.
Forb	Purple peavine	Lathyrus nevadensis
Forb	Rattlesnake plantain	Goodyera oblongata
Forb	Sea blush	Plectritus congesta
Forb	St. John's wort	Hypericum sp.
Forb	Small flowered blue-eyed mary	Collinsia parvifolium
Forb	Small-flowered alumroot	Heuchera micrantha
Forb	Small-flowered nemophila	Nemophila parviflora
Forb	Spikemoss	Selaginella sp.
Forb	Sword fern	Polystichum munitum
Forb	Wild strawberry	Fragaria virginiana
Forb	Yarrow	Achillea millefolium
Forb	Yellow monkeyflower	Mimulus guttatus
Graminoid	Rush	Juncus or Luzula sp.
Graminoid	Sedge	Carex sp.
Lichen	Reindeer lichen	Cladina portentosa
Moss	Fork moss	Dicranum sp.
Moss	Haircap moss	Polytrichum sp.
Moss	Oregon beaked moss	Kindbergia oregana
Moss	Step moss	Hylocomium splendens

4.7 Species at Risk

There are several species listed as *at-risk* under Federal (SARA and COSEWIC) or Provincial (BC *Wildlife* Act) legislation that are known to occur within the vicinity of the Project area (Table 3 to Table 5) (PoBC 2022).

Таха	Scientific Name	COSEWIC	SARA	BC Wildlife Act
Northern Red-legged Frog	Rana aurora	Special concern	Special concern	Blue
Western Toad	Anaxyrus boreas	Special concern	Special concern	Yellow

Table 4. List of COSEWIC, SARA, and BC Wildlife Act Birds

Ταχα	Scientific Name	COSEWIC	SARA	BC Wildlife Act
Marbled Murrelet	Brachyramphus marmoratus	Threatened	Threatened	Blue

Ταχα	Scientific Name	COSEWIC	SARA	BC Wildlife Act
Douglas-fir / dull Oregon- grape	Pseudotsuga menziesii / Mahonia nervosa	-	-	Red
Grand fir / three-leaved foamflower	Abies grandis / Tiarella trifoliata	-	-	Red

Table 5. List of COSEWIC, SARA, and BC Wildlife Act Plants

4.8 Site History and Contamination

A site visit was conducted by INF Planning and Design Corporation (INF) on November 5, 2021, to confirm site conditions (INF 2021). The property was partially developed and a road approximately 6 m wide with two side ditches was built by the previous developer. The INF report mentioned three main geotechnical conditions on the property which matched the findings in Golder's report. The previous owner confirmed with the Owner that the site conditions remained the same since the 1980s (INF 2021).

A soil test was conducted by INF with Sunco Civil Consulting Ltd. on September 16, 2021. Eleven test pits were dug to 0.3 m deep, covering an area of approximately 4,046 m². The soil was sandy gravel, and no contamination was found. INF (2021) indicates that current site conditions are consistent with assessments conducted by Golder in the 1980s. The findings in the Golder report did not find any site contamination and only noted the area was extensively logged several times, but "...no undue ground disturbance has been effected..." (Golder Associates 1982).

5.0 Environmental Protection and Mitigation Measures

5.1 Aquatic Resources

Since there are no freshwater habitats at the site (e.g., wetlands, streams, ditches), there are no issues associated with freshwater fish or amphibian breeding. There are no mitigation measures recommended at this time.

5.2 Vegetation Management Plan

A tree location plan was prepared by the Owner, noting large diameter tree locations, and is attached in Appendix 1. The Owner has indicated that only tree 24 will be removed. All other trees noted in the plan will be protected. In addition, the Owner has planned to include a 5-m protection setback zone from the north property line from lot 17 to lot 4 (west to east), and protection for the park dedication area. It is recommended that a certified arborist conduct a survey to verify that ample space has been designated for the long-term health of trees planned for protection.

Workers will minimize the potential for negative impacts to native vegetation during construction-related activities through implementation of mitigation measures such as the following:

- Minimize visual impact on existing vegetation to preserve natural landscape features by limiting vegetation clearing.
- No trees should be cut down unless stated in the Tree Clearing Permit. Precautions should be taken to prevent damage to existing trees and shrubs, protect branches, foliage, trunks and stems, and prevent machinery from travelling over roots within the 'dripline' of the trees by placing and maintaining snow fencing around each tree outside of the 'dripline'. Excavated material should not be piled within the dripline of existing trees.

5.2.1 <u>Clearing and Grubbing</u>

The Owner does not anticipate any clearing or grubbing will take place during the regional bird nesting season. The nesting season for species known to occur in the area is between March 1 and August 30 (Birds Canada, 2022).

Raptors such as Bald Eagle and some owl species may nest prior to this window, so it would be prudent to conduct a raptor nest survey prior to any vegetation clearing occurring from mid-January onward, particularly for Bald Eagles, given the proximity to Halfmoon Bay. If a Bald Eagle nest is found, mitigation measures will follow the Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia (MFLNRO 2013), as raptor nests are protected year-round under Section 34 of the BC Wildlife Act, regardless of whether the nest is active (i.e., occupied).

Care must be taken to protect and preserve all vegetation outside of the clearing boundary to reduce the amount of vegetation clearing required for the Project to the greatest extent possible. Trees within SCRD can only be cleared with a Tree Cutting Permit issued by the SCRD. For those trees permitted for removal, and shrubs and grasses to be grubbed within the Project area, the following measures to mitigate these potential impacts will be adhered to:

- All clearing and/or grubbing will extend only to the designated limits defined in the Project.
- Limits of clearing and grubbing will be marked on-site with established flagging tape conventions or barriers, as per the Tree Location Plan, to ensure clarity on 'no-go-zones' to prevent clearing beyond Project limits.
- Prior to the commencement of land clearing activities, construction personnel should familiarize themselves with the environmental requirements and acceptable construction practices associated with the Project.
- Trees cleared or protected will be consistent with the Project's Tree Clearing permit.
 - Trees designated to be protected will be done so in accordance with Tree Cutting Permit Bylaw No. 350.
 - Tree protection will remain in place until the Project clean-up phase or otherwise approved by SCRD.

5.2.2 Invasive Plant Management

Best management practices (BMPs) to ensure that noxious weed and invasive plants are not spread or propagated throughout the construction areas include the following:

- All equipment will be washed clean of soil, seeds, and plant parts prior to entering the site at the start of the Project. All equipment will be inspected for soil/seeds/plant parts when the Project is completed, and any organic material will be removed prior to equipment leaving site.
- Any removed invasive species will be properly transported and disposed of at an approved facility.
- Soil disturbance will be minimized and disturbed areas re-vegetated as quickly as possible.
- If possible, staging and laydown areas will not be located in infested areas.
- Any observation of an invasive plant or noxious weed is to be reported to the designated Project Environmental Monitor (EM). Coordinates will be taken and these sites will be flagged and reported to the Invasive Alien Plant Program (IAPP).
- The Contractor is responsible for inspecting any mulch supplies, should they be used, to ensure they are weed-free.
- Straw (mulch) sources shall be certified weed-free, and visually inspected prior to application to ensure no invasive plant seeds are present. Hay shall not be used as mulch unless it is from a local area demonstrated to be free of invasive species.

5.3 Wildlife Management Plan

Both the Federal Migratory Bird Convention Act and BC Wildlife Act prohibit the disturbance of birds, nests, or eggs. Work crews should be aware that, except for crows, nests of raptors and herons are protected year-round, active or inactive, under both Acts, and that disturbance to the birds, whether adults, chicks, or eggs, including harassment, flushing, or other stress, is a regulatory violation. Contravention of these acts will be avoided by scheduling clearing outside of sensitive life-history timing periods (e.g., the bird breeding period), or by conducting non-intrusive bird nesting surveys prior to and during construction within the bird breeding period.

It is important that work crews follow general BMPs regarding birds on-site, including the following:

- Be vigilant for birds and bird nests.
- Do not damage, destroy, remove, or disturb any active bird nests.
- Nests under construction (i.e., no eggs or chicks present) are considered to be active and live. If adult birds are present, they cannot be intentionally flushed from the nest. The designated Project Qualified Environmental Professional (QEP) should be contacted about any nests discovered or suspected.

In the absence of a QEP, if any nests, or birds displaying nesting behaviour (e.g., carrying nesting material or food in their mouths), are observed within the site or in close proximity to areas potentially affected by Project activities (i.e., within 30 m), observations should be noted with photo documentation if possible and provided to a QEP to assess status. In such situations, a non-disturbance buffer around a nest is delineated until the nestlings fledge.

If vegetation clearing must occur during the nesting window, it is recommended that at least three nest sweeps be conducted given the size and habitat complexity at the site. Ideally the sweeps are conducted on consecutive days under ideal survey conditions, by an experienced QEP knowledgeable with nesting behaviour of the species known or likely to occur at the site. Clearing or brushing activities should then commence within 72 hours of the nest sweep completion.

Wildlife will likely avoid areas of construction activity; however, if wildlife such as deer are observed near or within the Project site, they will be avoided, and construction will stop in the immediate area until the wildlife leaves the site. If wildlife is observed, the QEP may determine that specific deterrent measures, such as air horns, be used (depending on wildlife species identified).

Wildlife sightings will be reported directly to the QEP. Any aggressive behaviour by wildlife toward the construction crew will result in work shutdown until the wildlife vacates the area, or a Conservation Officer is dispatched to resolve the conflict. Harassment of wildlife is illegal under the BC *Wildlife Act*, and crews will be made aware of this potential during Toolbox Safety meetings.

Apart from some specific non-native species (e.g., Norway Rat, European Starling), most native vertebrate wildlife in BC is also protected under the BC *Wildlife Act*. This includes native small mammals (e.g., rodents, weasels, bats, shrews), amphibians, and reptiles. While a salvage (i.e., relocation) will not be required for these groups prior to habitat alteration, exceptions may be required under rare circumstances such as the discovery of a snake or bat hibernaculum, active den, or similar situation that may arise during clearing or construction activities.

The following general mitigations measures will be applied to Project work to minimize impacts to wildlife at the Project site:

- Work crews will be oriented and aware of work activity restrictions associated with sensitive habitats or known wildlife features.
- A QEP will be consulted as required if wildlife or wildlife features are encountered at the site.
- Crews will take care to scan for wildlife on or near roads when driving to/from site, especially at dusk and dawn when wildlife is most active.
- Domestic animals shall not be brought to the Project site.

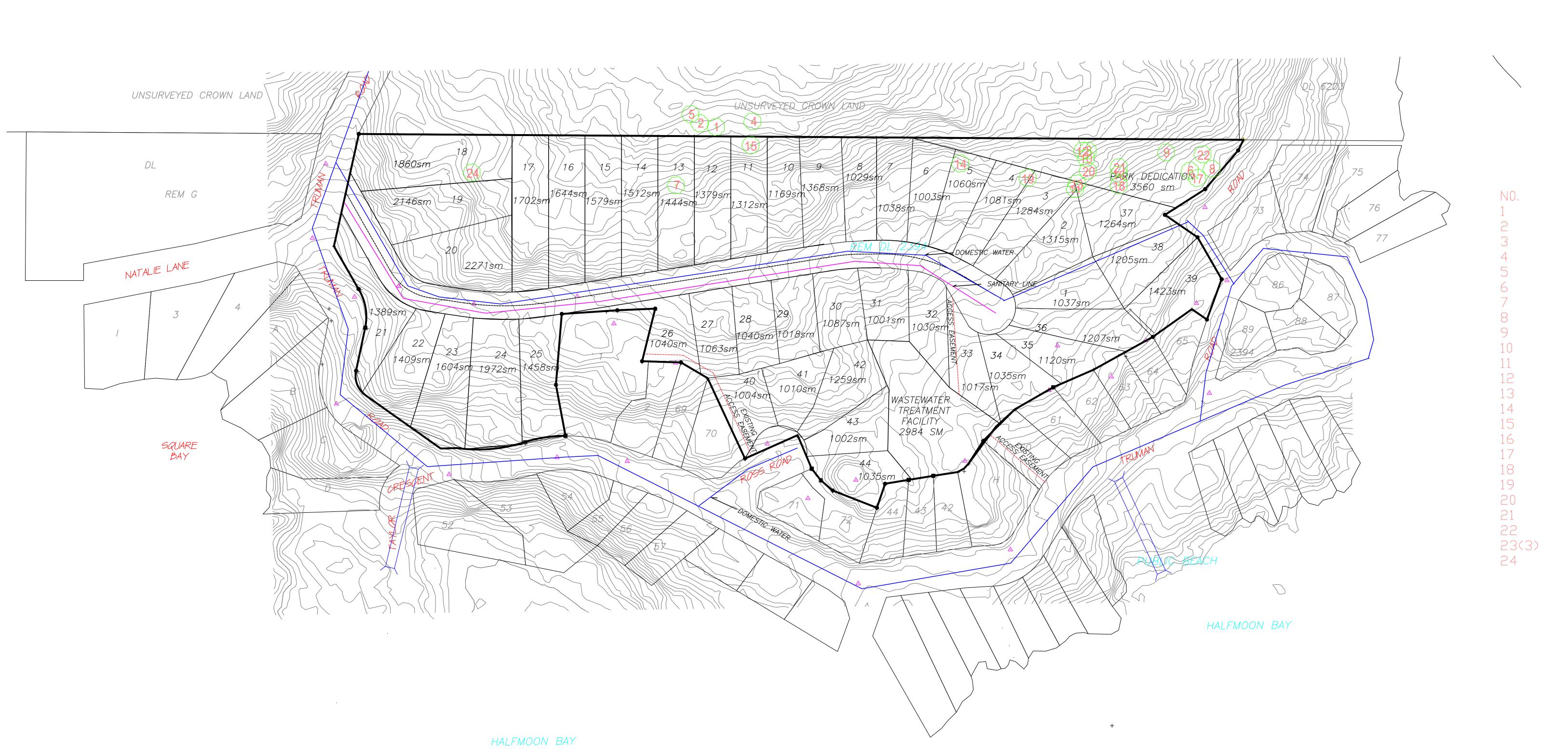
Construction works have the potential to increase human-wildlife interactions; therefore, the following measures will be utilized to reduce the likelihood of those interactions:

- Food scraps and garbage will be removed from the site daily.
- When moving off-site, personnel will use as few vehicles as necessary, with multiple people per vehicle to reduce traffic on roads and reduce wildlife collision potential.
- Workers will adhere to posted speed limits.
- Dangerous human-wildlife incidents will be reported to the BC Conservation Service.
- Wildlife vehicle collisions will be immediately reported to the QEP.
- All personnel are prohibited from disturbing, feeding, or harassing wildlife.
- If wildlife is encountered at the site, wildlife will be given the right of way and allowed to pass freely.
- If wildlife does not disperse from the site, crews will contact the QEP for advice.
- Crews shall not relocate or handle wildlife of any kind.

6.0 References

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APPENDIX 1 TREE LOCATION PLAN



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NOTES: TOTAL NUMBER OF LOTS: 44 LOTS AVERAGE AREA OF LOTS: 1276 SM

FEB 2 2023