



ECOLOGICAL ASSESSMENT (EA)

6824 Stoney Hill Road, Duncan, BC

PREPARED FOR:

**Cam Fox
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PREPARED BY:

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May 9, 2019

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DOSSIER: 19.0125



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ECOLOGICAL ASSESSMENT

6824 Stoney Hill Road, Duncan, BC

1 Introduction

1.1 Background

A development proposal on the subject property (6824 Stoney Hill Road, Duncan, BC) has triggered the requirement for an Ecological Assessment (EA). The Municipality of North Cowichan (MNC), who are responsible for managing development in the study area, have established Development Permit Areas (DPAs) to help protect the integrity of sensitive habitat types. In this particular case, DPA 3 (Natural Environment) is applicable and relevant to the completion of the EA. Prior to the field assessment, the landowner also made reference to a watercourse on the property. Potential implications of Riparian Area DPAs, the Riparian Areas Regulation and default watercourse setbacks were also considered as part of the EA.

The DPA process helps to identify areas and features that may be susceptible to ecological degradation and also helps to establish mitigation measures that can be applied to eliminate or reduce potential impacts. It also appears that parts of the property are affected by DPA 4 (Natural Hazard Areas). The scope of this EA does not include any requirements under DPA 4. It should also be noted that the EA does not consider potential archaeological implications.

Any proposed development activities in a designated DPA require the submission of an application for, and subsequent provision of, a Development Permit (DP). As such, this EA must be submitted by the client as part of a DP application requesting the placement of development footprints inside the DPA (Natural Environment DPA-3).

1.2 Objectives

The primary objective of the EA is to assess the scope of the construction activities inside the DPA (e.g. construction footprint and methods) and determine potential impacts to sensitive ecological features (including the watercourse and associated riparian area). Secondary objectives are to list mitigations to minimize impacts to sensitive habitats and rare elements. While the EA focused on the 30 m DPA, proposed construction activity in adjacent upland areas (beyond the 30 m area) were also considered. Figure 1 shows the location of the proposed construction area in relation to the DPA.

Prior to Madrone Environmental Services Ltd. (Madrone's) involvement, the client employed the services of a professional surveyor to accurately identify the location of the 30 m setback and to map the proposed construction area. The survey map is presented in Figure 2.

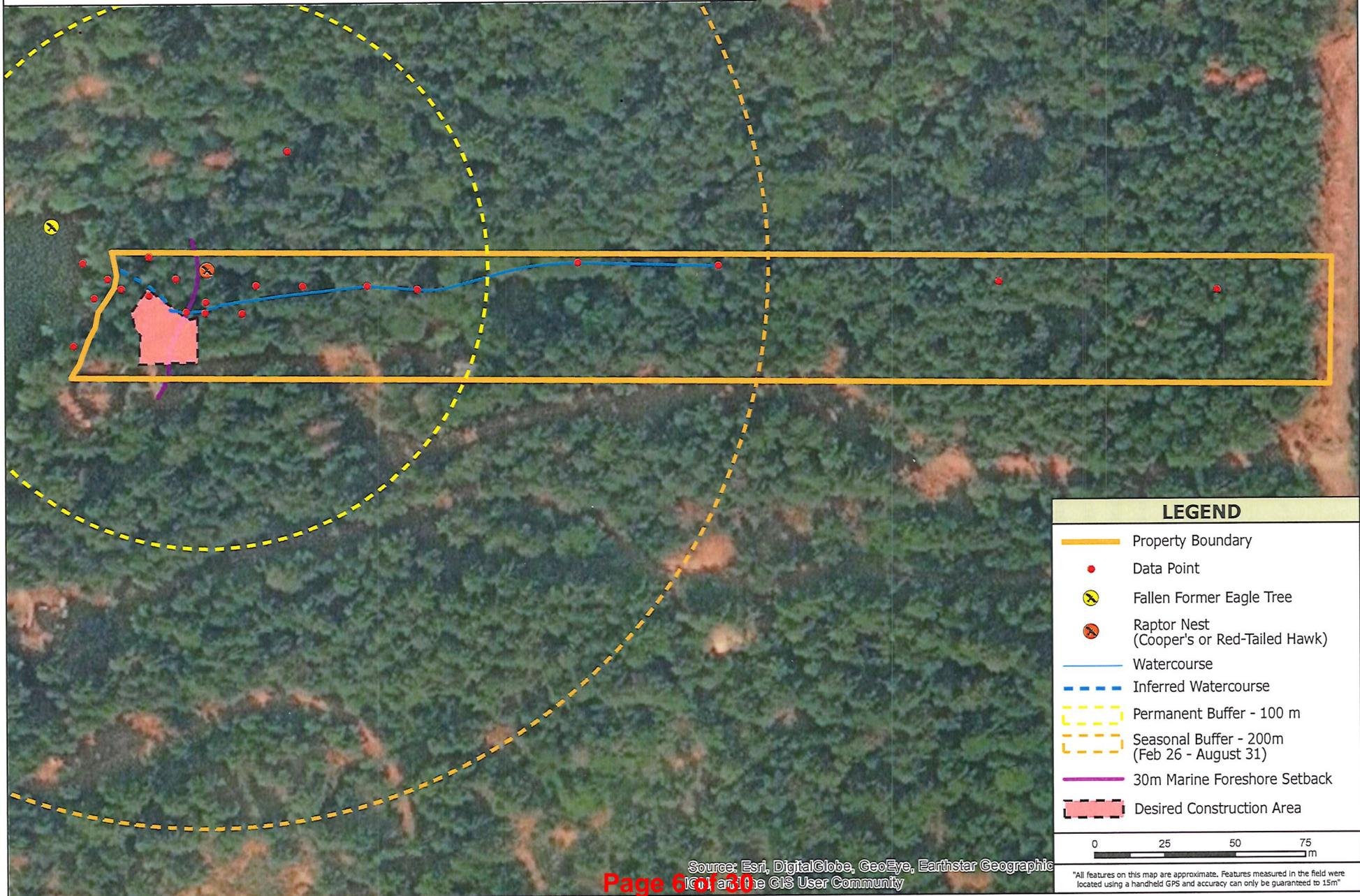
It is important to note that the scope of Madrone's involvement does not include the preparation or submission of a DP. It is understood that the client will be responsible for the DP application, using this EA as supporting documentation.

2 Assessment Area

The subject property is located on the eastern side of Maple Bay on Stoney Hill Point, opposite the Maple Bay Marina. The property is currently accessed using the driveway on the neighbouring property to the south – parts of which appear to straddle the property line. At 450 m long and approximately 30 m wide, the 2 ha property (5 acres) is long and narrow (Figures 1 and 2).

	PROJECT: Ecological Assessment: 6824 Stoney Hill Road	LOCATION: North Cowichan, BC	CLIENT: Cam Fox	DOSSIER: 19.0125	
	ASSESSED BY: Harry Williams, MSc, RPBio, PAg, QEP	FIELD VISIT: April 9, 2019	MAP SCALE: 1:1,800	MAPPING DATE: April 18, 2019	

FIGURE 1 : Site Plan Showing Location of Desired Construction Area



LEGEND	
	Property Boundary
	Data Point
	Fallen Former Eagle Tree
	Raptor Nest (Cooper's or Red-Tailed Hawk)
	Watercourse
	Inferred Watercourse
	Permanent Buffer - 100 m
	Seasonal Buffer - 200m (Feb 26 - August 31)
	30m Marine Foreshore Setback
	Desired Construction Area



All features on this map are approximate. Features measured in the field were located using a handheld GPS and accuracy can only be guaranteed to 15m

**TOPOGRAPHIC SURVEY FOR
LOT A, SECTION 3, RANGE 6,
COMIAKEN DISTRICT, PLAN 51112.**

SCALE 1 : 500



LEGEND

All distances and elevations are in metres.
Elevations are derived from RB450 with an assumed Elevation of 34.46 m.
Contour Interval = 1 m.

- denotes standard iron post found.
- denotes guy wire
- denotes utility pole
- △ denotes traverse hub placed.
- ⊙⁹⁵¹ denotes fir tree with average dia. 40 cm

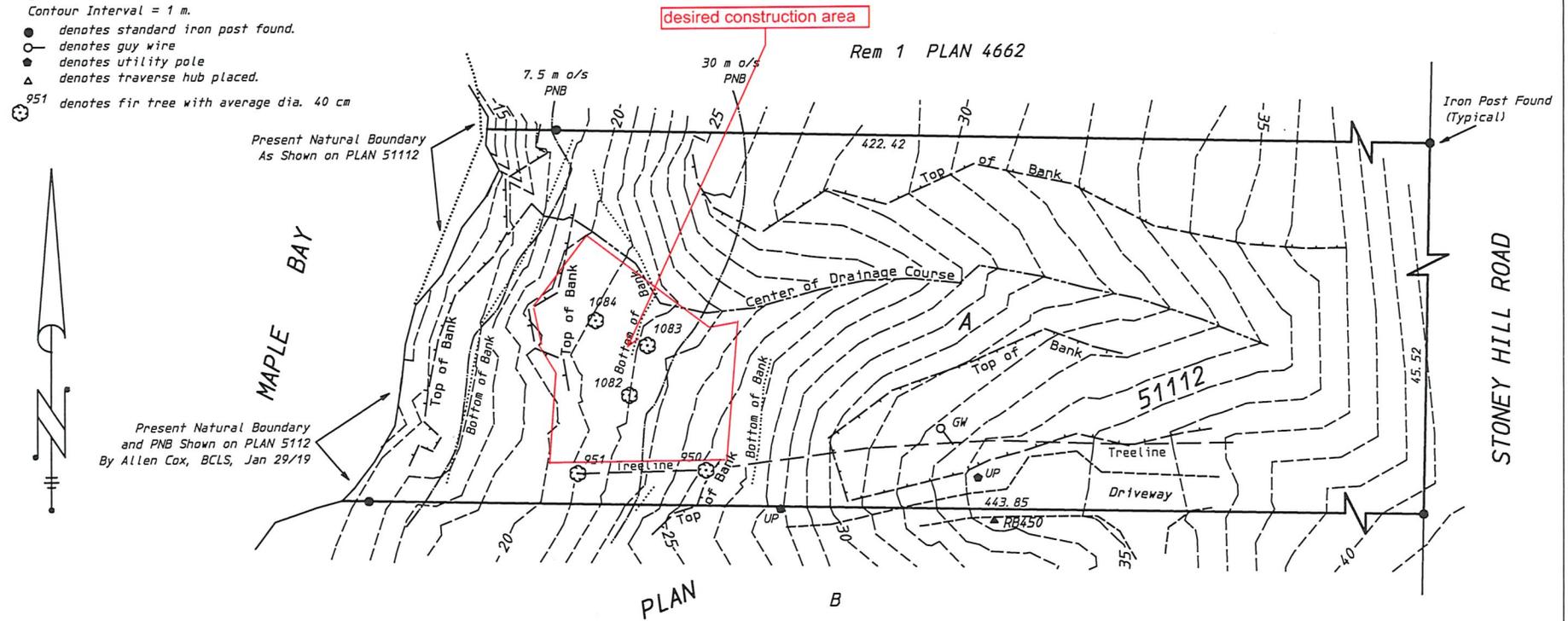
Note: Lot A lies within the Corporation of the District of North Cowichan and is zoned A2.

Bylaw setback requirements are as follows:

Principal Buildings	Accessory Buildings
Front 6.0 m	Front 8.0 m
Side 3.0 m	Side 3.0 m
Rear 8.0 m	Rear 8.0 m

Watercourse (Sea) Natural Boundary 7.5 m

This property is subject to Statutory Right of Way BC Hydro and Telus Document CA5789685.



Present Natural Boundary and PNB Shown on PLAN 5112 By Allen Cox, BCLS, Jan 29/19

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FILE 18-8402B.TOP

3 Proposed Development Activities

Development inside the construction area consists of the construction of a 2000 feet² (186 m²) house. The proposal, as it stands, has about 2/3 of the building footprint within the DPA, and 1/3 outside the DPA (Figures 1 and 2).

Development activities beyond the 30 m DPA have not been established at the time of this report, but could include building an access lane to the driveway, parking, and materials storage. As noted, the focus of the assessment was the 30 m DPA, but these other development activities and/or proposals beyond the DPA were also considered. At the date of this assessment no work had been completed on the property.

4 Assessment Methodology

4.1 Background Research

While the focus of this project is driven by applicable DPA requirements, documented rare and/or sensitive features that may occur elsewhere on the property or in the surrounding area were also taken into account. Therefore, applicable provincial and municipal data bases were consulted for attributes related to the following features.

4.1.1 Sensitive and Rare Ecosystems

An ecosystem is defined as a portion of landscape with relatively uniform dominant vegetation; a sensitive ecosystem is one that is fragile and/or rare. Sensitive ecosystems are particularly valuable in that they provide critical habitat for Species at Risk, are often associated with a high level of biodiversity, and may provide wildlife travel corridors. Due to historical and current land use pressures, numerous ecosystems that occur within the Coastal Douglas Fir moist maritime (CDFmm) biogeoclimatic subzone (south-east coast of Vancouver Island), are considered to be rare and susceptible to disturbance.

In order to gain an insight into the known distribution of sensitive ecosystems, the Sensitive Ecosystem Inventory (SEI) mapping for eastern Vancouver Island was accessed, to determine the extent of sensitive ecosystems throughout the study area, especially those that intersected with the subject property. Madrone's recent work related to ecosystem mapping in the general study area was also used to help describe and assess potential impacts to sensitive ecosystems.

4.1.2 Rare Element Occurrences

The Ministry of Environment's (MoE) Conservation Data Centre (CDC) maintains a database of potentially occurring red and blue listed animal and plant species for BC. This database (using the mapping function) was checked to determine whether any rare plants, animals or ecosystems were documented as occurring on or around the subject property.

4.1.3 Wildlife Tree Atlas

Depending upon the scope of construction-related activities, there is always the potential for indirect noise-related disturbance to sensitive life phases of nesting birds. As such, the Wildlife Tree Atlas was accessed to determine the distribution of Wildlife Trees (e.g. raptor nests) on or around the subject property. Local knowledge and previous work conducted in the general study area related to Bald Eagle (*Haliaeetus leucocephalus*) was also used to locate the distribution of nesting territories in relation to the subject property.

4.1.4 Local Government Habitat Mapping

The Municipality of North Cowichan's interactive map was used to determine whether any sensitive habitat types had been identified on or near the subject property.

4.1.5 Riparian Areas

As noted, the landowner made reference to a watercourse occurring on the property prior to the site assessment. The Fisheries Information Summary System (FISS) was accessed to determine if any other streams occurred on or near the subject property, and to establish whether the stream on the property had been previously documented.

4.2 Field Assessment

A field assessment was completed on April 9th 2019. As mentioned, the main focus of the site visit was to review the proposed development in relation to the 30 m foreshore protection zone; however, the entire property was traversed to ensure that all potential impacts were considered. The neighbouring property was also accessed to determine the status of a documented Bald Eagle nest.

5 Results

5.1 Documented Sensitive Elements

5.1.1 Sensitive Ecosystems

A check of the SEI mapping database did not reveal the occurrence of any listed sensitive ecosystems on or near the study area.

5.1.2 Rare Element Occurrences

Based on the background research conducted through the CDC database, the red-listed Douglas-fir / dull Oregon grape (zonal – site series 01) plant community (polygon 52629) was shown to occur throughout the subject property. This ecosystem occurs over the majority of Stoney Hill Point, as it represents the plant association that develops under “average” conditions of soil moisture and soil nutrients in the CDF mm subzone.

5.1.3 Wildlife Tree Atlas

As per the Wildlife Tree Atlas, the closest documented raptor nest is approximately 100 m to the north east of the subject property. The nest, known to have supported Bald Eagles (registration number BAEA 104-018), was last confirmed to be active in 2001.

In addition to nest BAEA 104-018, monitoring of Bald Eagle nesting behaviour by Madrone staff in 2015 confirmed that there is a cluster of nests on the north-western tip of Stoney Hill Point (900 m distance from the subject property): BAEA 104-005; BAEA 104-004 (former nest); BAEA 104-023, and BAEA 104-002. In addition to these nests, breeding was confirmed at a new nest located in the same general area in 2015. At the time of writing (2019), it is not known which of these nests are still active.

5.1.4 Local Government Habitat Mapping

Apart from the 30 m marine waterfront area (designated as DPA 2), no other terrestrial sensitive habitat types have been identified by the local government on the subject property or in the immediate vicinity.

5.1.5 Riparian Areas

Based on the background research, no documented streams were shown to occur on or near the subject property. The watercourse that was referred to by the landowner represents an un-named and un-gazetted feature.

5.2 Site Description

The subject property slopes down steeply from Stoney Hill Road towards the eastern shore of Maple Bay. A shared gravel access driveway with the property to the south allows for vehicle access. The majority of the property is treed, with second-growth Douglas-fir the dominate tree. In moist areas, western redcedar (*Thuja plicata*) and bigleaf maple (*Acer macrophyllum*) also occur. Common shrubs include salal (*Gaultheria shallon*), Oregon grape (*Mahonia nervosa*), and oceanspray (*Holodiscus discolor*).

The 30 marine foreshore area consists of mature Douglas-fir, western redcedar and scattered arbutus (*Arbutus menziesii*) and western yew (*Taxus brevifolia*). The interface between the upper intertidal zone and the vegetated foreshore area is well-defined by an obvious slope break. Beyond the slope break, the DPA becomes moderately to gently sloping. The vegetated foreshore zone along the slope break is providing important biological function in the form of bank stability, shading over the adjacent marine foreshore and provision of nutrients to the marine ecosystem. There is an old logging road (now grown over) parallel to the beach just above the slope break.

While archaeological investigations were not part of this EA, no indications of archaeological deposits were noted during the field work. Archaeological investigations conducted by a professional archaeologist are still recommended, however, to ensure that proposed development activities do not impact upon archaeological attributes.

To the east of the foreshore zone and up to Stoney Hill Road, the majority of the vegetation on the property consists of well-spaced second growth Douglas-fir, big leaf maple, and an understory of oceanspray, salal, Oregon grape and sword fern (*Polystichum munitum*).

The watercourse noted by the landowner was found on the property during the site assessment, and its location is shown on Figures 1 and 2. There were signs of water movement in a few places – such as scouring – but there was no water flowing in the creek at the time of the site visit. The wetted width of the watercourse varies between 50 – 75 cm. Furthermore, at about the edge of the 30 m DPA, any ephemerally-flowing water appears to go to ground, with no obvious channel occurring. In addition, any surface water would drop over a short but steep bank down to the beach. The surrounding vegetation lacks any well-developed riparian vegetation. Instead, the composition of the riparian zone mirrors the vegetation of the surrounding forest.

Based on the fact that the steep bank occurring at tidewater represents a physical barrier that prevents fish from accessing the drainage and there is no perennially-available habitat anywhere in the system, the drainage is not considered a “stream” under the Riparian Areas Regulation. Despite not being applicable to the Riparian Areas Regulation, the drainage still represents a “watercourse” as per local government bylaws (discussed in more detail in Section 6.1.8).

A raptor nest was found in a 35 cm diameter Douglas-fir tree close to the northern property line (Figure 1), but no birds were identified on the nest or in the immediate vicinity. No recent signs of use (e.g. whitewash, pellets and/or prey remains) were noted underneath the nest. Based on the time of year, evidence of use around the base of the tree would likely be scarce - even if the nest were active. It is also possible that an incubating female could have been on the nest, due to the fact that it was difficult to look into the nest, because of its height. The dimensions of the structure suggests that the most likely species to use the nest would be either Cooper’s Hawk (*Accipiter cooperii*), or Red-Tailed Hawk (*Buteo jamaicensis*).

During the assessment, the neighbouring property was visited to check on the status of documented Bald Eagle nest BAEA 104-018. Following discussions with the owner of the property, it became apparent that the nest tree had blown down several years ago. The upper stem of the tree (a veteran Douglas-fir) was located on the beach where it had fallen.

6 Discussion and Recommendations

6.1 Mitigation Measures

6.1.1 General Vegetation Management

Several mature Douglas-fir trees will be removed to clear the house site. While these trees occur at least 20 m back from the high tide line, and their removal should not have a significant impact on the biological function of the marine foreshore zone, loss of trees within the 30 m DPA is usually mitigated by planting new trees. However, the property (outside the proposed house site) is fully stocked with trees, with few planting spots available for replanting. Instead, it is proposed that the client commit to retaining the balance of the forest on the property.

At the time of the field assessment, numerous windfall trees were present, resulting from the severe windstorm in December 2018. Removing these trees would create further damage to the forest, and the financial return from selling the wood would be negligible.

On the other hand, the coarse woody debris (CWD) that results from fallen trees has known benefits such as:

- Providing habitat for wildlife
- Shading and protecting the soil surface
- Provision of nutrients to the soil.

Therefore, the following measures are recommended:

- The wood cleared from the house site can be cut into firewood length and stored for later use, shared with the neighbours, or donated
- Branches and greenery remaining in the house site after tree removal should be chipped and stockpiled for use in erosion and sediment control
- Wood within other parts of the DPA and elsewhere on the property can be bucked into 4' lengths and left on the forest floor to decay; and
- Avoid excessive trampling and/or disturbance to the native vegetation while completing the work on the downed trees.

6.1.2 Tree Management During Construction

It is important that no tree removal occurs inside the 30 m marine DPA outside of the removal required for house construction. Any tree removal on the remainder of the property must be limited to what is absolutely necessary to allow for future access to the proposed house footprint.

There are several young Douglas-fir trees within the general area of the proposed footprint that may be indirectly impacted by construction. These trees (all Douglas-firs) range from 20 – 40 cm in diameter. Construction-related activities such as excavating, piling soil/fill around tree stems and compaction of soil from machinery could cause damage to the roots and stems of these surrounding trees.

It should be noted that the construction activities that are proposed in the 30 m DPA will likely not involve significant excavations, based on the shallow soils and occurrence of bedrock close to the surface. This decreases the potential for direct or indirect damage to the nearby trees. Nonetheless, care must be taken when operating machinery to prepare the house foundation to avoid or limit impacts to the surrounding trees. The following measures must be taken during construction within and outside the 30 m DPA to help protect trees:

- avoid damaging the stems and/or limbs of the surrounding trees during the operation of machinery;

- do not pile soil or other material around the stems of trees;
- avoid compacting the soil within the rooting zones of surrounding trees (this can change the drainage regime);
- excavate carefully and avoid damaging roots (especially roots that are greater than 3 cm in diameter); and
- if roots are encountered and absolutely need to be cut, avoid shattering the roots – the roots must be cut cleanly.

6.1.3 Rare Ecosystem Conservation

The red-listed ecosystem represented by the Douglas-fir / dull Oregon grape plant community is widespread throughout Stoney Hill Point and occurs over the majority of the subject property. This ecosystem type is common in the CDFmm, as it occurs on sites with average soil and moisture levels. Despite being reasonably common, due to historical and continued impacts from development, continuous tracts of mature forest are relatively rare. Significant portions of this ecosystem occur in the Municipal Forest Reserve land in the Stoney Hill area, and have been harvested over the years.

With regard to development on the subject property, avoiding tree removal beyond the proposed construction area anywhere on the property will help to maintain healthy examples of the Douglas-fir – dull Oregon grape forest type. As an added measure, an arborist should also be on site during excavation activities for the house foundation to help ensure that the recommended tree management measures are implemented.

6.1.4 Hydrocarbon Management

In addition to being clean (i.e., free from leaks and excessive grease/oil on the body) and in good working order, any heavy equipment working anywhere on site (e.g. excavator) must contain a small, storable emergency spill containment kit with at least a 30 litre sorbent capacity. In addition, a larger spill containment kit (sorbent capacity of at least 80 litres) must be located on the subject property when machinery is in operation.

The smaller (30 litre sorbent capacity) spill kits to be located in heavy machinery must contain the following:

- 20 absorbent pads (for oil, gas and diesel);
- 2 3”x 4’ absorbent socks;

- 2 disposal bags; and
- 1 pair of Nitrile gloves.

The larger (80 litre sorbent capacity) site-level spill kit must contain the following:

- 30 absorbent pads (for oil, gas and diesel);
- 15 universal absorbent pads;
- 2 18" x 18" oil absorbent pillows;
- 3 3" x 4' absorbent socks (for oil, gas and diesel);
- disposal bags;
- 2 pairs of Nitrile gloves;
- 1 spill instruction sheet; and
- 1 laminated list of contents.

Refuelling of all machinery must occur at least 30 m back from the high tide line, and also at least 30 m away from the watercourse, even if the watercourse is dry. Any chainsaws that are used in the 30 m DPA must run on non-toxic biodegradable chain oil.

6.1.5 Concrete Management

Concrete will be used for the foundation and house pad. Uncured concrete and related materials containing limestone products are alkaline. Accidental spills of uncured concrete into water, therefore, have the ability to change the pH to unacceptable toxic levels, potentially impacting aquatic organisms. There is the potential for concrete to enter the watercourse, which occurs close to the northern edge of the proposed construction area. This watercourse acts as a potential conduit for concrete and other deleterious substances to enter the marine environment. Care must be taken, therefore, to ensure that concrete that is used in the 30 m DPA does not migrate into the ocean via the watercourse or elsewhere.

The main focus with concrete use must be spill prevention – especially when working close to the watercourse located to the north of the construction footprint. There are guidelines as to the proper use of carbon dioxide diffusers as a means of neutralizing the strong alkalinity associated with uncured concrete, should a spill occur, but spill avoidance is the primary focus. All concrete forms must be structurally sound. Concrete pours must occur during favourable weather conditions to reduce the curing time and to reduce the

potential for uncured concrete to become mobilized. Care must also be taken when pouring concrete to ensure that it is placed only in the desired locations and that concrete splatter beyond the confines of the forms is avoided.

6.1.6 Erosion and Sediment Control

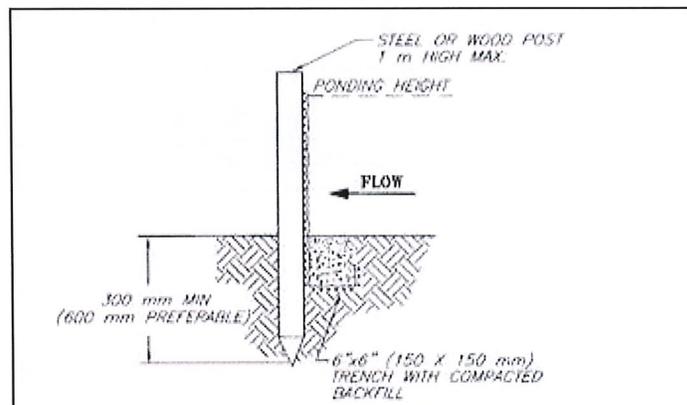
Based on restrictions associated with the protection of breeding birds (described in the following section), it will be difficult to undertake excavation activities during drier parts of the year. Nonetheless, it is important to try to limit the operation of heavy machinery and exposure of soils anywhere on the property (both inside and outside the 30 m DPA) during periods of wet weather. This will help to minimize the potential for erosion and associated sediment mobilization.

With regard to development activities in the 30 m DPA, there is the potential for the movement of sediment into the nearby watercourse and possibly into the marine environment. While surface water flow only occurs seasonally in the watercourse, Erosion and Sediment Control (ESC) measures must still be implemented.

The main goal of ESC in this case is to prevent sediment from entering the marine environment either directly or via the watercourse. The following ESC measures, which focus on the control of potential erosion sources, as opposed to the capture of sediment, must be implemented during construction:

- Limit the spatial extent of vegetation clearance to the absolute minimum;
- Stage vegetation clearance, as opposed to clearing entire areas, to maintain as much vegetation as possible for as long as possible;
- Complete clearing activities during dry periods of weather;
- Mulch areas prone to erosion (e.g. areas on steeper slopes and/or areas consisting of silt or clay) with straw (not hay) and/or wood chips from the site. The mulch should be applied evenly at a thickness of 2.5 cm - 5.0 cm and should cover at least 80% of exposed areas. Mulching in this way should be focused in areas of deeper soils, and may not be required where bedrock occurs at or near the surface;
- To protect any stockpiles of fill or soil that are generated during site activities, temporary polyethylene sheeting should be used. Covering the material will prevent it from being displaced by rain and/or surface flowing water. This is a short-term erosion control measure, and would be used in cases where stockpiles of material are to be moved;

- In order to inhibit erosion of exposed areas, surfaces should be left in a roughened state, and compaction avoided (where applicable to do so). Compaction generally leads to decreased infiltration and increased surface erosion, as a result of surface-flowing water. Compacted areas are prone to the formation of rills and gullies, which have the ability to detach and entrain sediment. Surface roughness and loose soils not only encourage infiltration and the prevention of surface erosion, but also provide preferred growing conditions for vegetation. Compacted, smoothed surfaces are generally unsuitable for vegetation establishment; and
- While the focus must be on erosion control, sediment fencing must be installed along the length of the northern edge of the construction footprint (between the construction area and the watercourse edge). The eastern and western ends of the sediment fence must curve to the south, thereby isolating the construction area from the watercourse. To be effective, the sediment fencing must be installed properly (see diagram below).



6.1.7 Protection of Breeding Birds

6.1.7.1 General Mitigation

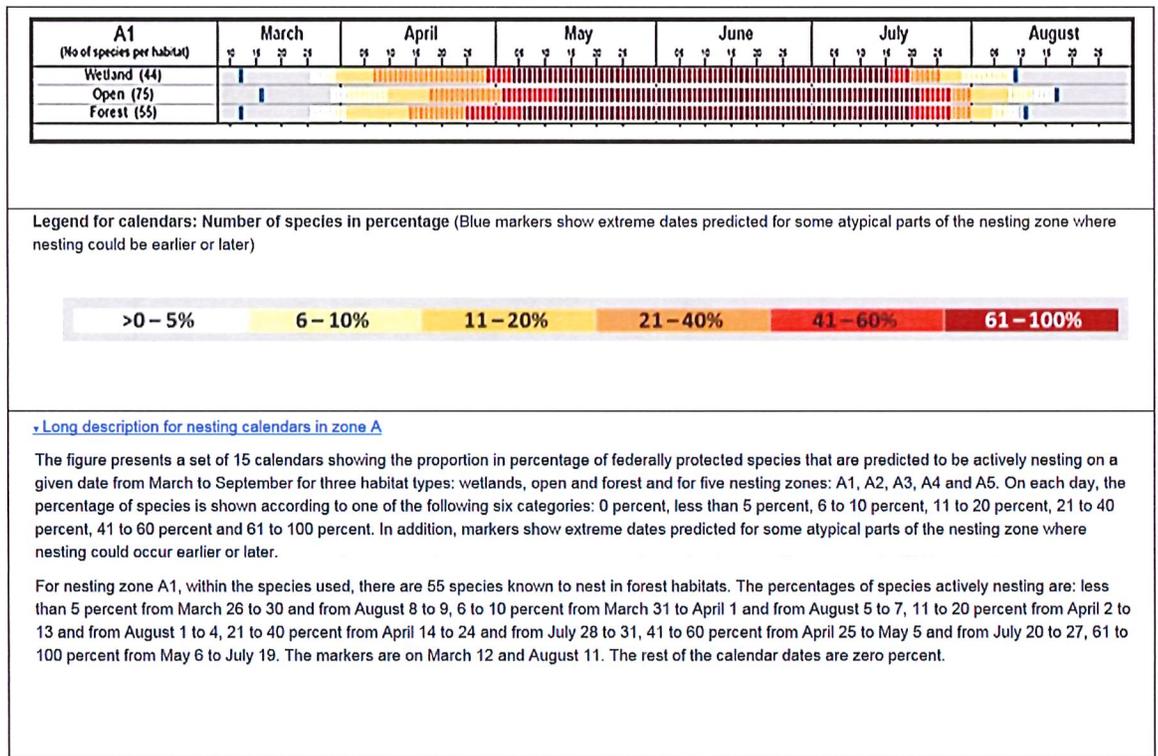
The provincial Wildlife Act (Section 34C) affords protection to nesting birds, and it is illegal to possess, take, injure, molest or destroy the nest of a bird when the nest is occupied by a bird or its eggs.

In addition to Section 34C of the provincial Wildlife Act, migratory birds are also afforded protection under the federal Migratory Birds Convention Act (Section 6). This legislation prohibits the destruction, harm, or disturbance of a migratory bird, its nest, and its young during the breeding season. It also prohibits the deposition of harmful substances in areas frequented by migratory birds.

Migratory birds that are covered under the *Migratory Bird Convention Act* include a number of species known to visit and likely to breed in terrestrial habitats within the general vicinity of the assessment area, including but not limited to, hummingbirds, thrushes, warblers, flycatchers, swallows, and swifts. With the exception of raptors, common black bird species, and some game birds, all birds and their nests are protected under the *Migratory Bird Convention Act* including birds listed as Species at Risk (Federal Species at Risk Act- SARA).

The breeding season for bird species that may be nesting on the subject property extends from March 25th to August 10th, as identified in the nesting calendar for zone A1 where the subject property is located (see Table 1). The blue markers in Table 1, taken from Environment Canada, show extreme dates predicted for some atypical parts of the nesting zone where nesting could occur earlier or later (i.e., between March 12th and March 25th or between August 10th and August 12th).

Table 1. Zone A1 Migratory Bird Nesting Periods (Environment Canada).



To avoid potential impacts to nesting birds or their habitats, and to comply with existing (current) legislation requirements, development activities that could lead to the loss of

potential nest sites (i.e. the clearance of any vegetation, including ground cover) must be suspended between March 25th and August 10th. If activities cannot be suspended during this period, specific areas would need to be checked for nest sites prior to disturbance to prevent impacts to nesting birds. Additional precautionary measures should be considered if vegetation clearing is to take place between March 12th and 25th, or between August 10th and 12th (to include the “outlier” breeding potential).

Based on the restrictions imposed by the breeding bird season, if clearing the building site is completed before March 12th 2020 (but after August 12th 2019), work on the house can occur during the breeding season to ensure compliance to the general nesting period (refer to specifics in Section 6.1.7.3 for additional raptor-related restrictions). It is important that no additional clearing occurs during the breeding season while the house is being constructed.

6.1.7.2 Bald Eagle Nesting Territories

As noted in Section 5.1.3, there are several recorded Bald Eagle nests on Stoney Hill Point including Nest BAEA-104-018, which was recorded close to the north-western corner of the property (Figure 3). As noted, field work and communications with the current residents indicate that this nest tree has blown down, with the trunk lying on the beach (confirmed during the field assessment).

Bald Eagle nests are legally protected under Section 34 (b) of the provincial Wildlife Act. In addition, Section 34 states that a person cannot “injure, molest or destroy” a nest site. Development activities have the potential of injuring, molesting or destroying a nest site (e.g. if the development activity results in birds abandoning a nest). The implementation of protective buffers around nests helps prevent nest abandonment.

As per Figure 3, the 100 m permanent buffer and 200 m seasonal buffer (February 5th to August 31st) associated with nest BAEA 104-018 would extend onto the subject property; however, this nest is no longer present. With this nest being absent, only the seasonal blasting buffers associated with nests BAEA 104-005, BAEA 104-023 and the new (2015) nest located between BAEA 104-023 and former nest BAEA 104-004 extend onto the subject property.

Based on the locations of the eagle nests in relation to the subject property, none of the permanent (100 m) or general (200m) seasonal buffers apply. While the 1000 m blasting buffers do extend onto the property, these buffers are not applicable due to the fact the client is proposing on clearing and preparing the building pad using an excavator, with no

rock blasting required. These buffers are in keeping with provincial Best Management Practices (BMPs) included in the Ministry of Environment's Guidelines for Raptor Conservation (2013).



PROJECT:
Ecological Assessment - 6824 Stoney Hill Road

ASSESSED BY:
Harry Williams MSc, RPBio, PAg, QEP

LOCATION:
North Cowichan, BC

FIELD DATE:
April 9, 2019

CLIENT:
Cam Fox

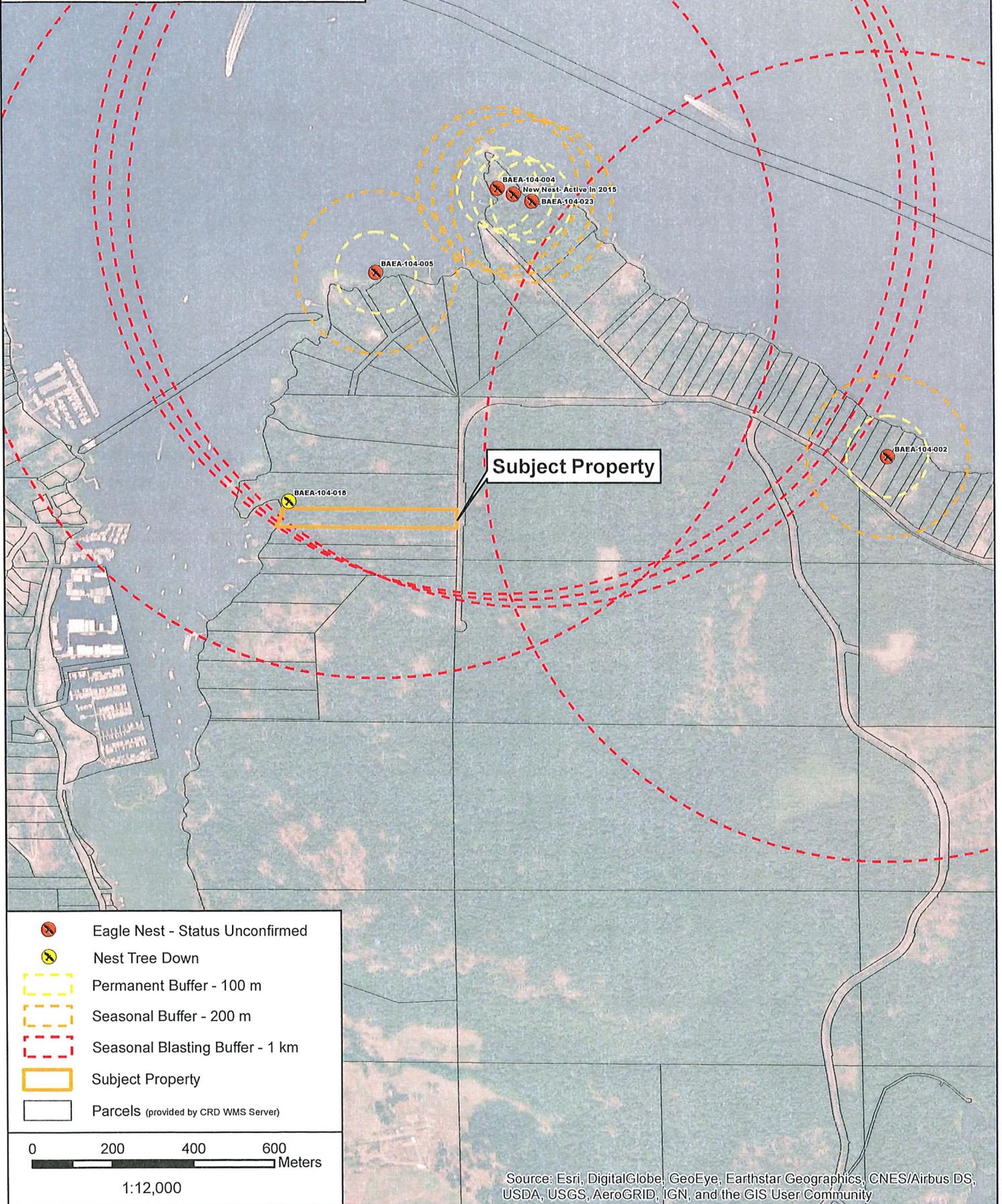
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1:12,000

ATTACHMENT 7

DRAWN BY:
Jessi Yellowlees



FIGURE 3: Bald Eagle Nests and Protective Buffers



6.1.7.3 Raptor Nest Protection (Cooper's or Red-tailed Hawk)

Raptors, including hawks, are important for ecological values (regulating prey populations), economic values (controlling pests), scientific values, and recreational and aesthetic values (bird-watching). Loss of habitat is a threat facing raptors. However, both Cooper's and Red-tailed hawks are considered to have a "moderate to high" ability to co-exist with humans (MoE 2013) and are not "At-Risk" species (provincially yellow-listed).

With regard to the raptor nest on the subject property, the status of the nest could not be confirmed, meaning that the default is to consider it active. As per the Guidelines for Raptor Conservation (MoE 2013), a 100 m permanent buffer is recommended around nests belonging to species that have a moderate to high ability to co-exist. A seasonal "quiet" buffer of 200 m is recommended during the breeding season. As per Figure 1, both these buffers encompass the proposed construction area. Based on the width of the property, the limited distribution of potential building sites and the understandable desire of the landowner to take advantage of the oceanfront property, constructing inside the 100 m buffer is deemed acceptable in this case. The majority of the buffer would remain intact on the subject property, due to the fact that one of the main recommendations of the EA is to maintain the balance of the forested stands on the property beyond the construction footprint. There will be an undisturbed buffer of approximately 12-15 m between the northern edge of the development area and the nest tree.

The application of the seasonal buffer, during which time development activities would need to be curtailed, would depend upon the species using the nest. Based on documented breeding activity, Red-tailed Hawks could be actively breeding between February 26th and August 10th and Cooper's Hawks could be active between May 1st and August 31st (MoE 2013). If the species of raptor using the nest could be confirmed, then the dates for implementation of the seasonal buffer could be determined. If not, the seasonal buffer would encompass the breeding period of both species, and extend between February 26th and August 31st. The specific end date of the seasonal buffer could be shortened, if it could be shown that the juveniles have fledged and left the nest. In addition, if it could be proven that the nest was inactive in any given year, then seasonal restrictions related to development would not apply (the general breeding bird restrictions discussed in Section 6.1.7.1 would still be applicable).

6.1.8 Watercourse Considerations

As mentioned in the results section, the watercourse on the property is a low magnitude system with widths varying between 50-75 cm. Riparian vegetation (plants typically found

along watercourses) is sparse, including those areas close to the proposed house site. Evidence of water movement can be seen in some sections of the watercourse; however, there is no well-defined drainage channel close to the house site (where much of the water appears to go to ground).

From a regulatory standpoint, the watercourse is not defined as a stream under the Riparian Areas Regulation (RAR), because it does not support fish or connect by surface flow to fish habitat. However, the drainage is defined as a “watercourse” under the Municipality of North Cowichan’s bylaws, and a 15 m watercourse setback applies to the drainage. Therefore, the client will need to seek a variance to the watercourse setback to allow for the construction of the house. Relaxation of setbacks is often considered where topographic and environmental constraints result in a lack of suitable building sites.

Considering the characteristics of the watercourse, and paucity of potential building sites on the property, we think it is acceptable for the house footprint to be placed within 4 m of the watercourse. North Cowichan may also consider a variance whereby the house setback from the southern property line could be reduced and the house footprint shifted in that direction accordingly. Other measures that are recommended include:

- During construction, place temporary fencing along the watercourse buffer (4 m minimum);
- The buffer area must remain undisturbed from such activities/footprints as machine work, septic tanks or deposit fields, gardening, lawn establishment, storage of materials, or dumping of garden refuse; and
- Trees on the north side of the drainage must not be cut in order to maintain the integrity of the habitat around the hawk nest.

7 Summary of Mitigations and Recommendations

The following points are taken from sections of the report:

- Windfall wood outside the building footprint can be cut into 4’ lengths and left on-site to decompose. This Coarse Woody Debris (CWD) is beneficial for wildlife and general biodiversity values;
- Wood on the building site resulting from windfall and harvested trees can be cut into firewood length for personal use, given to neighbours, or donated;
- Branches and greenery on the house site should be mulched and used for erosion and sediment control;

- Remaining trees adjacent to the construction footprint need to be protected using the specified measures during construction;
- Machinery on the property must be clean, in good working condition, and have the specified spill kits on board;
- Un-cured concrete must be contained;
- Soil disturbance must be kept to the absolute minimum, and machine activity must be confined to the construction footprint area. Wood mulch from the site should be put on exposed soil to minimize erosion;
- The breeding bird season extends from March 25th to August 10th. No site clearing can be carried out during this period unless the area is first examined by a biologist and confirms that no active nests are present;
- Based on the characteristics of the drainage course on the property, the building can extend to within 4 m of the drainage. The buffer area must remain undisturbed;
- Trees on the north side of the drainage course must not be cut in order to maintain the integrity of the hawk nest. The activity of the nest is not confirmed, meaning that the default is to consider it active. This species does have moderate to high tolerance of human activity, and can nest close to residential areas. However, the client must take all steps necessary to protect this nest tree, most importantly the application of the specified seasonal construction windows;
- The former Bald Eagle nest BAEA 104-018 no longer exists, indicating that the protective buffers around this nest no longer apply. The nests further away are assumed to be active, but with no blasting planned, protective buffers are not applicable on the subject property; and
- The landowner must commit to preserving the existing forest on the property (east of the 30 m DPA), preferably through the implementation of covenants or other protective measures. Preserving the existing forest will help maintain general biodiversity and ecosystem values.

Please contact the undersigned with questions or comments.

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References

Conservation Data Centre:

<http://maps.gov.bc.ca/ess/hm/cdc/>

Municipality of North Cowichan – Interactive Web Map

http://maps.northcowichan.ca/mnc_public/

Sensitive Ecosystem Inventory (SEI):

<http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=2124>

Wildlife Tree Stewardship Atlas:

<http://cmnmaps.ca/wits/>

Ministry of Environment – Guidelines for Raptor Conservation. 2013.

http://www.env.gov.bc.ca/wld/documents/bmp/raptor_conservation_guidelines_2013.pdf



APPENDIX 1

Site photos (taken on April 9th 2019)



Typical forest in eastern portion of the property. The forest is dominated by young Douglas-fir trees with an age range of 35-60 years. Less windfall has occurred in this area compared to areas that are closer to the water.



Photo of the small seasonal watercourse. Water is only present in the creek after storm events. The drainage follows a shallow gully down towards the ocean. Close to the house site the watercourse goes to ground with only a poorly defined channel beyond. The creek goes over a steep bank and down onto the beach. It was confirmed that the watercourse is not applicable to the RAR.



The upper beach area and lower bank was examined for any shell fragments and shell middens (informal assessment only). None were found, the bank being largely composed of fractured bedrock with pockets of mineral soil.



View of the house site from the top of bank – looking east. The house site lies on a gently sloping area covered in scattered Douglas-fir trees. In this and subsequent photos, windfall Douglas-fir tree can be seen – falling as a result of the windstorm in December 2018.



Another view of the house site – looking west with Bird's Eye Cove visible in the background.



View of Bird's Eye Cove from the proposed house site. Note the abundant windfall.



View of hawk nest. It is thought to be have been built by either a Cooper's or Red-Tailed hawk. It was not confirmed whether the nest was actively being used or not. The nest tree occurs close to the northern boundary of the property and is a 35 cm diameter Douglas-fir with a broken top.



Photo of forested area in eastern portion of the property. The shrub in this photo is ocean spray (*Holodiscus discolor*).