



Environmental Assessment at 230 Lawless Creek Road, Tulameen

Presented To: **Bob Reichert, Owner**

Dated: December 7, 2021

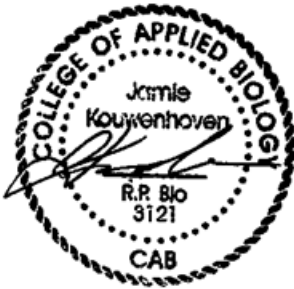
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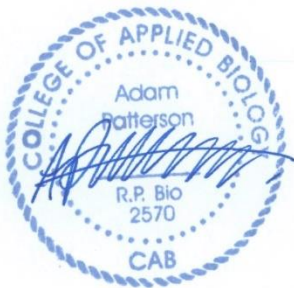


December 7, 2021

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Executive Summary

Ecora Engineering & Resource Group Ltd. (Ecora) was retained by Bob Reichert (the Proponent) to provide environmental services associated with the re-zoning and subdivision of 230 Lawless Creek Road, Tulameen, BC (the Property). The approximate 13 ha Property is legally described as District Lot 1020, Yale Division of Yale Land District, Except Plan 29020, 32820 and is currently zoned as Large Holdings (LH2) (Figure 1.0). It is proposed to amend the Community Plan from Large Holdings (LH), to Small Holdings (SH), and rezone the Property to SH3, Small Holdings 3 to allow a bare land strata subdivision of 1 ha parcels. The Property currently overlaps an Environmentally Sensitive Development Permit (ESDP) Area as outlined in the Regional District of Okanagan Similkameen (RDOS) Electoral Area "H" Official Community Plan (OCP Bylaw No. 2497, 2012). The Proponent has also retained Ecora to conduct the civil engineering services for the road construction and water services.

The Property is currently designated as LH and zoned LH2, with a minimum parcel area of 8 ha (20 ac). It is proposed to amend the Community Plan from LH, to SH (Small Holdings), and rezone the Property to SH3 (Small Holdings 3) to allow a bare land strata subdivision of 1 ha parcels (Zoning Bylaw No. 2498, 2012), which would then allow for 10 lots to be proposed for future development. The proposed subdivision layout includes a bare land strata concept with access from Lawless Creek Road at the southwestern end of the Property. There will be a development of a private roadway with a cul-de-sac to access the 10 lots, 5 on each side of the roadway, which will occur through the central area of the Property. Detailed drawings showing the extension of the site layout and roadway are provided in Appendix A (Ecora Drawing No. 190078; Rev. No. A; December 1, 2021).

The proposed layout design results in minor encroachment within Moderate (ESA 2) areas. Identified impacts to the environment include vegetation removal, habitat disturbance and loss, and potential direct and indirect impacts to sensitive wildlife and/or species at risk. However, it is anticipated that with the implementation and monitoring of the following strategies, potential adverse environmental effects will be mitigated. A summary of the proposed development impacts and mitigation strategies is provided below:

- The Property is roughly comprised of 6.86 ha of ESA 2, 5.74 ha of ESA 3, 0.06 ha of ESA 4 (i.e., total of 12.7 ha). There were no areas classified as ESA 1 (High) within the Property.
- The majority of the ESA 2 area (85%) will remain in its current natural state and act as a Wildlife Corridor and will not be impacted through development.
- Potential exists for enhancement opportunities for the sensitive woodland community values that exist within the ESA 2 and ESA 3 areas within the Property.
- The Proponent must retain a qualified environmental professional (QEP) as an environmental monitor (EM) to provide environmental oversight and document adherence to prescribed mitigation measures, Development Permit conditions, and other Best Management Practices (BMP) during construction and restoration activities.
- Construction works, including clearing, grubbing, grading, excavation, and other earthworks, must be avoided during identified sensitive wildlife periods and have a QEP conduct pre-construction surveys and/or monitoring to determine presence of wildlife and/or important wildlife habitats in the vicinity of the construction works.
- Construction activities must not cause direct or indirect impacts to wildlife and wildlife habitat occurring within and in the vicinity of the project and contractors must be cautious during construction and while operating equipment to reduce the potential for wildlife conflicts.
- All native vegetation, snags, stumps, stick nests, dens, burrows, and large woody debris that occurs outside of the permitted development footprint must be retained.

- The spread of invasive species during construction must be prevented by ensuring all equipment is cleaned before mobilizing to the site. Existing infestations of invasive species will be identified by the EM and methods to prevent further encroachment or manual removal will be recommended.
- All disturbed soils (e.g., cut and fill slopes) must be restored immediately following construction using a native grass hydroseed mix and/or native trees and shrubs under the direction of the EM.
- The contractor performing the works must adhere to the conditions of the Development Permit and the Ministry of Environment's Develop with Care 2014 Environmental Guidelines for Urban and Rural Land Development in British Columbia, as well as other relevant municipal, provincial, and federal policies, guidelines, and legislation, as described in this report.

As long as construction is conducted following the mitigation and recommendations provided in this report and adhering to the conditions of the DP and other pertinent legislations, regulations, and BMPs, the potential for adverse environmental impacts on environmentally sensitive areas will be low. Any alterations to the site design as presented in this report should be reviewed by a QEP. Additional site-specific Environmental Management Plans (EMP) may be required as the development plans are refined or at the time of construction to address the RDOS Electoral Area "H" OCP and Development Permit guidelines, as required.

Limitations of Report

This report and its contents are intended for the sole use of Bob Reichert (Proponent) and their agents. Ecora Engineering & Resource Group Ltd. (Ecora) does not accept any responsibility for the accuracy of any data, analyses, or recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Proponent, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user.

Where Ecora submits both electronic file and hard copy versions of reports, drawings, and other project-related documents, only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Ecora shall be deemed to be the original for the Project. Both electronic file and hard copy versions of Ecora's deliverables shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Ecora.

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Acronyms and Abbreviations

| | |
|-----------|---|
| BEC | Biogeoclimatic Ecosystem Classification |
| BMP | Best Management Practices |
| BLUE LIST | <i>any ecological community, and indigenous species and subspecies considered to be of special concern (formerly vulnerable) in British Columbia. Elements are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed elements are at risk, but are not Extirpated, Endangered or Threatened (http://www.env.gov.bc.ca/atrisk/red-blue.htm)</i> |
| CDC | BC Conservation Data Centre |
| COSEWIC | Committee on the Status of Endangered Wildlife in Canada |
| DF | Douglas Fir |
| DPA | Development Permit Area |
| EA | Environmental Assessment |
| EC | Environment Canada |
| EM | Environmental Monitor |
| EMP | Environmental Management Plan |
| ESA | Environmentally Sensitive Area |
| ESCP | Erosion and Sediment Control Plan |
| ESDP | Environmentally Sensitive Development Permit |
| IDF | Interior Douglas Fir |
| MOE | Ministry of Environment |
| MOFLNRO | Ministry of Forests, Lands, and Natural Resource Operations |
| MSDS | Materials Safety Data Sheets |
| OCP | Official Community Plan |
| PLA | Preliminary Layout Approval |
| PP | Ponderosa Pine |
| QEP | Qualified Environmental Professional |
| RDOS | Regional District Okanagan Similkameen |
| RED LIST | <i>any ecological community, and indigenous species and subspecies that is extirpated, endangered, or threatened in British Columbia. Extirpated elements no longer exist in the wild in British Columbia but do occur elsewhere. Endangered elements are facing imminent extirpation or extinction. Threatened elements are likely to become endangered if limiting factors are not reversed. Red-listed species and subspecies may be legally designated as, or may be considered candidates for legal designation as Extirpated, Endangered or Threatened under the Wildlife Act (http://www.env.gov.bc.ca/atrisk/red-blue.htm)</i> |

| | |
|---------|---|
| R.P.Bio | Registered Professional Biologist |
| SARA | <i>Species at Risk Act</i> |
| SER | Sensitive Ecosystem Rank |
| SOSCP | South Okanagan Similkameen Conservation Program |
| TEM | Terrestrial Ecosystem Mapping |
| TOR | Terms of Reference |
| WRA | Wildfire Risk Assessment |
| WSI | Wildlife Species Inventory |

1. Introduction

Ecora Engineering & Resource Group Ltd. (Ecora) was retained by Bob Reichert (the Proponent) to provide environmental services associated with the re-zoning and subdivision of 230 Lawless Creek Road, Tulameen, BC (the Property). The approximate 13 ha Property is legally described as District Lot 1020, Yale Division of Yale Land District, Except Plan 29020, 32820 and is currently zoned as Large Holdings (LH2) (Figure 1.0). It is proposed to amend the Community Plan from Large Holdings (LH), to Small Holdings (SH), and rezone the Property to SH3, Small Holdings 3 to allow a bare land strata subdivision of 1 ha parcels. The Property currently overlaps an Environmentally Sensitive Development Permit (ESDP) Area as outlined in the Regional District of Okanagan Similkameen (RDOS) Electoral Area “H” Official Community Plan (OCP Bylaw No. 2497, 2012). The Proponents have also retained Ecora to conduct the civil engineering services for proposed road construction and water services.

The RDOS Electoral Area “H” OCP guidelines for the DPAs require that the Proponent must have an environmental assessment completed by a Qualified Environmental Professional (QEP) to address proposed land use changes within identified DPAs. This report has been prepared according to the requirements set out in the Regional District of Okanagan Similkameen Development Procedures Bylaw (Bylaw No. 2500, 2011) and includes a review of the site’s existing biophysical resources at the local level to document the pre-development site conditions and assesses the potential development-related impacts. Where adverse impacts cannot be fully avoided through project design, the methodology and/or timing of development activities and mitigation measures are recommended to minimize the potential for, and severity of the adverse effects along with enhancement opportunities for the identified feature values.

This report provides a summary of the environmental assessment, including desktop review, biophysical inventory, ecosystem mapping, sensitivity ranking, and impact assessment and analysis. Other aspects of the Development Permit application, such as geotechnical or engineering considerations are outside of the scope of this report and have been addressed by other reports under a separate cover.

1.1 Scope of Work

The assessment is based on the following scope of work:

- Review existing publicly available land parcel information including the Official Community Plan (OCP), Development Procedures Bylaw, and associated development permit areas.
- Complete a desktop assessment of the Property, including reviews of any previous biophysical assessments and inventories, publicly available ecosystem mapping and inventory data (i.e., South Okanagan Terrestrial Ecosystem Mapping (TEM), Conservation Data Centre (CDC)), and other online resources to identify potential and known species and ecosystems at risk occurrences.
- Review of the conceptual site development plans, including road and lot boundary layouts.
- Complete an assessment of the Property, including identification of existing terrestrial, riparian and aquatic values, and the presence of unique or important wildlife species and/or habitat features.
- Complete terrestrial ecosystem mapping - updating previous mapping and preparing updated environmentally sensitive area (ESA) and connectivity corridor maps, each based on a consistent TEM base inventory.

- Prepare a report and mapping deliverables to incorporate into mitigation planning and design of the proposed development within the Property.

1.2 Study Area

The approximately 13 ha (32 acre) Property is currently in a natural undeveloped state and occurs west of Tulameen. The Property is currently designated as LH (Large Holdings) in the Regional District of Okanagan Similkameen (RDOS) Area “H” Community Plan and zoned LH2, with a minimum parcel area of 8 ha (20 ac).

The Property occurs within a 30 ha Ungulate Winter Range (u-3-003) and is within the Conditional Harvest Zone under the *Forest and Range Practices Act* (FRPA) and provides habitat for mule deer (MOE 2008).

The Property occurs within the Very Hot Dry Interior Douglas Fir (IDF_{xh1}) biogeoclimatic variant, as described by the Biogeoclimatic Ecosystem Classification (BEC) program (Lloyd et al. 1990). The Interior Douglas Fir (IDF) zone, named for the prominence of Douglas fir trees in mature forest ecosystems, is mapped within this relatively warm and dry region in BC that is subject to long growing seasons and relatively mild winters. Areas mapped as IDF_{xh1} are subject to moisture deficits in the summer and light snow cover during mild, cool winters. The Property is generally characterized by moderate sloping areas dominated by coniferous woodland ecosystem. No aquatic features were noted throughout the Property.

1.3 Background and Proposed Development

The Property is currently designated as LH and zoned LH2, with a minimum parcel area of 8 ha (20 ac). It is proposed to amend the Community Plan from LH, to SH (Small Holdings), and rezone the Property to SH3 (Small Holdings 3) to allow a bare land strata subdivision of 1 ha parcels (Zoning Bylaw No. 2498, 2012), which would then allow for 10 lots for future development. The proposed rezone application layout would include a bare land strata subdivision concept with access from Lawless Creek Road at the southwestern end of the Property. There will be a development of a private roadway with a cul-de-sac to access the 10 lots, 5 on each side of the roadway, which will occur through the central area of the Property. Detailed drawings showing the extension of the site layout and roadway is provided in Appendix A (Ecora Drawing No. 190078; Rev. No. A; December 1, 2021).

Development plans for these lots will be addressed in the Development Permit (DP) phase and in consultation with RDOS which may require subsequent assessment and/or ESDP applications.

2. Background

The following section provides a summary of the regulatory context and sources of information used during the completion of the assessment.

2.1 Regulatory Overview

The environmental assessment requirements are outlined in the DP guidelines provided in the RDOS Electoral Area “H” Official Community Plan (OCP Bylaw No. 2497, 2012). The overarching legislation that pertains to proposed developments such as this includes the federal and provincial acts identified in Table 2.1.

Table 2.1 Federal and Provincial Legislation Applicable to the Project

| Jurisdiction | Applicable Legislation | Agency | Summary |
|--------------|--|---|---|
| Provincial | <i>Wildlife Act; Wildlife Amendment Act</i> | Ministry of Environment (MOE) | Provides protection of wildlife and wildlife habitats including raptors, owls, herons, and nests during nesting periods. |
| | <i>Water Sustainability Act</i> | Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) | Provides protection of water quality, quantity, and riparian habitat; Section 11 regulates activities or works that result in “changes in or about a stream” |
| | <i>Environmental Management Act</i> | Ministry of Environment (MOE) | Prohibits causing pollution by regulating the discharge or emissions of contaminants or waste and requires spill reporting regulations |
| | <i>Local Government Act</i> | Ministry of Environment | Provides local governments with a legal framework and foundation to represent the interests and acknowledge the needs of their communities. |
| | <i>Land Act</i> | Ministry of Forests, Lands and Natural Resource Operations | Protection and conservation of any land owned by the Province such as foreshore and the beds of lakes, rivers, and streams. |
| Federal | <i>Fisheries Act</i> | Fisheries and Oceans Canada (DFO) | Subsection 35 (1) states “no person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction (HADD) of fish habitat”; Subsection 36 (3) states “no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish” |
| | <i>Migratory Birds Convention Act</i> | Environment Canada (Canadian Wildlife Service) | Prevents capturing, injuring, killing or disturbing migratory birds as well as damaging, destroying, removing, or disturbing their nests. |
| | <i>Species at Risk Act</i> | Fisheries and Oceans Canada (DFO), Environment Canada (EC) | Provides legal protection of wildlife and their habitats designated under Schedule 1; prevents the killing, harm, harassment, capture or take of species that are listed as extirpated, endangered, or threatened |
| | <i>Canadian Environmental Protection Act</i> | Environment and Climate Change Canada | Intends to prevent pollution in order to protect the environment and human health while still permitting sustainable development |

Other relevant regulations include municipal bylaws and policies, as described in the OCP and regional Best Management Practices (BMP).

2.2 Information Sources

Information sources used in the desktop assessment and background review of the Property include:

- Ecora Drawing No. 190078; Rev. No. A; December 1, 2021;
- RDOS Electoral Area “H” Official Community Plan (OCP Bylaw No. 2497, 2012) and associated DP guidelines;
- RDOS Public Parcel Viewer (accessed November, 2021);
- Conservation Data Centre Species and Ecosystems Explorer (accessed November, 2021);
- Okanagan Habitat Atlas web application (accessed November, 2021);
- iMapBC web application (accessed November, 2021);
- Terrestrial Ecosystem Mapping (TEM) for the South Okanagan;
- Environment Canada (Canadian Wildlife Service) Critical Habitat Mapping for Species at Risk; and
- Provincial Best Management Practices (BMP), including Develop with Care (2014) and Keeping Nature in Our Future: A Biodiversity Conservation Strategy for the South Okanagan Similkameen (2012).

2.3 Terrestrial Ecosystem Mapping

Terrestrial Ecosystem Mapping (TEM) is a landscape level inventory of ecological communities. Built upon the provincial BEC framework, TEM ‘polygons’ represent homogeneous areas of the landscape that support consistent vegetation communities and that are the result of local topography (slope gradient and landscape position) and are subject to similar climate and soil development processes. In an ideal situation, a single ecosystem label will describe the conditions in the entire polygon; however, as landscape complexity typically results in microsites with differences in soil moisture and nutrient availability, most TEM polygons will contain more than one unique ecosystem and hence requires a complex label. TEM scales vary depending on the project size and requirements, although mapping at a scale of 1:5,000 or larger is typically utilized to provide a baseline inventory for smaller environmental inventories and detailed assessments of environmental effects. Iverson and Haney (2012) conducted an update to TEM for the area, which was used for the basis of the assessment. Based on the existing TEM information and the site visit, TEM was updated to reflect current site conditions and is shown on Figure 2.0.

2.4 Conservation Ranking

The South Okanagan-Similkameen Conservation Program has developed a Biodiversity Conservation Strategy for the Okanagan (SOSCP 2012). As part of this strategy, Conservation Ranking Polygons based on provincial Conservation Frameworks and local sensitive ecosystem management objectives have been delineated throughout the Okanagan Valley. The Conservation Rankings are divided into categories based on environmental sensitivity, and rare or ecologically important habitat features, with the categories defined as low, moderate, high, and very high. The conservation ranking for the Property and surrounding area is provided on Figure 3.0.

2.4.1 Species of Conservation Concern

The BC CDC iMap web application was queried for sensitive environmental occurrences and areas of conservation concern, and the BC CDC's Species and Ecosystems Explorer web tool was searched to provide a list of species at risk with the potential to occur in the area. Species at risk are determined using the provincial and national ranking systems. The provincial system applies to species that have been assessed by the BC Conservation Data Centre Species and Ecosystems Explorer (CDC) and are categorized as Yellow (Not Considered At Risk), Blue (Of special concern), or Red (Endangered or Threatened).

The national ranking system applies to species that have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Queries were run to identify all known sensitive plant, ecosystem and animal occurrence records using the CDC data and the Wildlife Species Inventory (WSI) data. Mapped critical habitats were searched using the Canadian Wildlife Service (CWS) database. The findings of the data searches are presented in Figure 4.0 and described in detail in Section 3.3.1.

2.5 Environmentally Sensitive Areas

The Terms of Reference (TOR) defined for the RDOS was used to define a four-class Environmentally Sensitive Area (ESA) ranking system. Factors considered during the assignment of ESA values within the Property include the refined ecosystem mapping, provincial status (i.e., Red or Blue-listed) and rarity of ecosystem communities, rare and potential for endangered species and habitat potential, general landscape condition (i.e., degradation, disturbance, isolation, connectivity, fragmentation), vegetation successional stage, relative biodiversity, local context of the Property, and professional judgment. Figure 5.0 depicts the ESA mapping within the Property. The four classes of ESA classification are described below:

- **ESA 1 (High)** – areas that provide significant local and/or provincial environmental value, due to the presence of rare physical features, rare ecosystems, or rare plants and animals. These areas represent habitat of great importance to the functioning of natural ecosystems and may include habitat of critical importance to wildlife. Various types of habitat will qualify as ESA 1 based on sensitivity, vulnerability, connectivity and biodiversity. For example, federally identified occurrence-based Critical Habitat, all wetlands, rare plant communities, and habitat for rare animal species have high value. Avoidance and conservation of ESA-1 designations is the primary objective.
- **ESA 2 (Moderate)** – areas that provide significant local and/or provincial environmental value, including ecosystems that are uncommon and important for rare plants and wildlife. These areas contain physical features, plants, animals and habitat characteristics that contribute towards the overall diversity and contiguous nature of the surrounding natural features. These will include sensitive ecosystems, as refined according to the ESA stratification criteria for the scale of mapping, or federally identified attribute-based Critical Habitat. They also include areas used to buffer ecological functions of high value (ESA 1) ecosystems. ESA 2 designations should be avoided, but if development is pursued, portions of the habitat must be retained and integrated to maintain the contiguous nature of the landscape.
- **ESA 3 (Low)** – areas that may contain important features or remnant stands/sites with ecological value but are not identified in the TEM nor considered neither locally nor regionally rare. Areas mapped as ESA 3 may be in a stage of succession that provides limited value to local wildlife species and expresses a level of previous disturbance.
- **ESA 4 (Not Sensitive)** – areas that contribute little or no value to the overall diversity of vegetation, soils, terrain, and wildlife characteristics of the area. Areas mapped as ESA 4

typically include heavily disturbed ecosystems, previously cleared areas (gravel pits, expose soil etc.) and areas of existing infrastructure such as roads.

Factors considered in the classification of ESA values include a review include habitat quality and suitability for species at risk, rare and endangered (i.e., Red or Blue-listed) species or ecosystems occurrence and/or potential, landscape context (e.g., proximity to other high value ESA areas, presence/abundance of significant landscape features), general condition (i.e., degradation, disturbance, isolation, connectivity, fragmentation), successional stage, regional rarity, relative biodiversity, presence of ecologically significant features (e.g., wildlife habitat features like corridors or wildlife trees, identified Critical Habitat) and professional judgment.

The Environmentally Sensitive Area (ESA) values determined during the initial EA were reviewed to determine whether the classifications are representative to current conditions. Figure 5.0 depicts the findings of the ESA mapping update within the Property, and the results of the updated ESA assessment is provided in Section 3.5.

3. Environmental Assessment

A site assessment of the Property was conducted on May 8, 2019 by Adam Patterson, R.P.Bio., and Jamie Kouwenhoven, R.P.Bio. The assessment included a site reconnaissance and identification of ecosystems, vegetation communities, wildlife habitats, and other potential sensitive features and natural resources within or adjacent to the Property.

Opportunistic Presence / Not Detected surveys were conducted during the site assessment. Focused surveys associated with rare plants and wildlife were not completed. This section describes the methods used in the field assessment.

The Proponent has provided confirmation to Ecora that nothing has been completed within the Property since the 2019 site assessment.

3.1 Ecosystem Communities

Ecosystem community types were classified using the available South Okanagan Sensitive Terrestrial Ecosystem Mapping (TEM) classifications (Iverson and Haney 2012). The Property occurs within the Okanagan Very Dry Hot Interior Douglas Fir (IDF_{xh1}) biogeoclimatic variant, as described by the Biogeoclimatic Ecosystem Classification (BEC) program (Lloyd et al. 1990). The following sections describe the results of the terrestrial ecosystem mapping and subsequent definition of environmentally sensitive areas.

3.1.1 Terrestrial Ecosystem Mapping (TEM)

The Property was mapped as eleven unique polygons, which represent eight different ecosystem types (Figure 2.0). The existing TEM polygons mapped by Iverson and Haney (2012) were refined and re-drawn for the Property based on the results of the site assessment and vegetation present. The summary of the mapped ecological communities present within the Property are shown in Table 3.1.

Table 3.1 Summary of mapped ecological communities within the Property

| Polygon | TEM Code/Site Series | Site Series Name ¹ | Provincial Status ² |
|------------------|----------------------|--|--------------------------------|
| 1,3,4,6,7,8,9,10 | DP/01 | Fd/Py - Pinegrass | Blue |
| 3,9 | DW/03 | Fd/Py – Bluebunch wheatgrass - Pinegrass | Blue |
| 1,2,5,6 | LP/01 | Fd/PI – Pinegrass - Feathermoss | Yellow |

| | | | |
|------|-------|-------------------------------|------|
| 8,10 | SP/04 | Fd/Py – Snowbrush - Pinegrass | Blue |
| 11 | RW | Rural | - |

¹ As described by Iverson and Haney (2004)

² Source: <http://www.env.gov.bc.ca/cdc/>

Blue: Of special concern. Yellow: Not considered at risk.

The Douglas fir – Ponderosa pine – Pinegrass (DP), Douglas fir – Ponderosa Pine – Bluebunch Wheatgrass – Pinegrass (DW), Douglas fir – Ponderosa Pine – Snowbrush – Pinegrass (SP) are Blue-listed in BC, which means they are of special concern for becoming Red-listed (endangered or threatened). The Rural (RW) polygon (Polygon 11) has relatively low habitat value and is not sensitive to disturbance. The Douglas fir – Lodgepole pine – Pinegrass – Feathermoss (LP) ecosystem is yellow listed and not considered at risk; however, its regional biodiversity and functionality is an important habitat feature for a diversity of wildlife species in this area.

3.1.2 Conservation Ranking

Based on the representative structural stage conditions (young to mature forest) and generally undisturbed condition, the majority of the Property has been ranked as having high conservation ranking according to the Biodiversity Conservation Strategy for the Okanagan (SOSCP 2012). However, due to the establishment of noxious weeds within the south and western portions of the Property as a result of recreational trails, development of roadways/paths, this area of the Property has been ranked as having a moderate conservation ranking and has been degraded from an ESA 2 to and ESA 3. Figure 3.0 shows the conservation ranking classifications for the area.

3.2 Vegetation

The Property contains an overstory vegetation dominated by young to mature interior Douglas-fir with some ponderosa pine, and lodgepole pine. The understory is dominated by a mix of low and tall shrubs with a pinegrass-dominated herb layer. The moderate to steep warm aspect slopes within the Property contain open Douglas fir and ponderosa pine with an understory dominated by bluebunch wheatgrass with scattered forbs and shrubs at climax. Anthropogenic disturbances occur frequently and are associated with the previously established roadways, and trails. Vegetation communities have been divided into two broad categories described below.

3.2.1 Woodland and Grassland Ecosystem

The coniferous woodland community is characterized by young to mature interior Douglas-fir (*Pseudotsuga menziesii* var. *glauca*), and ponderosa pine (*Pinus ponderosa*), with localized lodgepole pine (*Pinus contorta* var. *latifolia*) that extend up the west facing slope, corresponding within every polygon (Figure 2.0). The interior Douglas-fir dominates the majority of the landscape along the cooler aspect slopes (north to east facing), very shallow outcrops, and within moist microclimates. The warmer aspect slopes facing south and west contain young to mature ponderosa pines (**Error! Reference source not found.**) with snags scattered throughout. The understory associated with the woodland community is comprised of scattered shrubs such as Saskatoon (*Amelanchier alnifolia*), tall Oregon grape (*Mahonia aquifolium*), juniper (*Juniperus spp.*), and common snowberry (*Symphoricarpos albus*).

Herbaceous vegetation includes a mixture of native grasses, including pinegrass, bluebunch wheatgrass (*Agropyron spicatum*), which are mixed with other herbaceous species such as yarrow (*Achillea millefolium*), field pussytoes (*Antennaria neglecta*), kinnikinnick (*Arctostaphylos uva-ursi*), twinflower (*Linnaea borealis*), heart-leaved arnica (*Arnica cordifolia*), and showy aster (*Aster conspicuus*). The Fd/PI woodland community contains a moderately developed shrub layer consisting of birch-leaved spirea (*Spiraea betulifolia*), and soopolallie

(*Shepherdia canadensis*) which are found in Polygon's 1, 2, 5, and 6. Mosses occur infrequently but the red-stemmed feathermoss (*Pleurozium schreberi*) is the most common.



Photo 3.1 View looking southwest within Polygon 6 at the woodland and grassland ecosystem



Photo 3.2 View looking southwest at the shrub and herbaceous layer dominated by pinegrass (Polygon 5)



Photo 3.3 Forested ecosystem within Polygon 8



Photo 3.4 View looking at a mature ponderosa pine located within Polygon 3

3.2.2 Disturbed Areas

Disturbed sites include areas cleared and graded during the development of roadways and trails. Weedy and invasive species observed throughout these areas include Dalmatian toad flax (*Linaria genistifolia*), hawkweed (*Heiracium sp.*), cheatgrass (*Bromus tectorum*), sulfur cinquefoil (*Potentilla recta*), yellow salsify (*Tragopogon porrifolius*), knapweed (*Centaurea sp.*), purple peavine (*Lathyrus nevadensis*), and great mullein (*Verbascum thapsus*) as well as agronomic grasses such as cheatgrass (*Bromus tectorum*) which were most prevalent within Polygon's 1, 2, 4, and 9.



Photo 3.5 View showing anthropogenic disturbances throughout Polygon 1.



Photo 3.6 View showing network of trails that occur throughout the Property (Polygon 2).

3.3 Wildlife and Habitat

The Property provides a variety of high value habitats, including rare and unique ecosystems, and wildlife trees. The undisturbed ecosystem communities provide suitable habitat for a variety of bird, mammal, and reptile species of the Interior region. This zone has a wide range of habitat niches for wildlife, as a result of the topographic variety and great diversity of both overstory and understory vegetation. The dominated Douglas-fir forest serves as a winter range for many ungulates (Meidinger, D., & Pojar, J. 1991). Signs of deer activity (i.e., browsing on shrubs, tracks, and scat) were observed throughout the Property. Even though the BC CDC's Species and Ecosystems Explorer results query doesn't show species at risk occurring within the Property doesn't indicate that the ecosystem doesn't provide suitable habitat. There are many species at risk such as the American badger (*Taxidea taxus*), Great Basin Pocketmouse (*Perognathus parvus*), Western Rattlesnake (*Crotalus oregonus*), and Gopher Snake (*Pituophis catenifer*) that often occur on the IDF grasslands (Meidinger, D., & Pojar, J. 1991). The scattered woody debris and stumps that occur throughout the Property provide suitable foraging and migrating habitat for snakes.

Many songbirds were observed during the assessment within the Property and surrounding areas. Birds observed onsite include Dark-eyed Junco (*Junco hyemalis*), Pine Siskin (*Spinus pinus*), Ruby-crowned Kinglet (*Corthylio calendula*), Chipping Sparrow (*Spizella passerine*), Red-breasted Nuthatch (*Sitta canadensis*), Yellow-rumped Warbler (*Setophaga coronate*), unknown hummingbird (*Trochilidae spp.*).

3.3.1 Species and Ecosystems at Risk

Prior to the site visit, Ecora conducted a background review of the BC CDC's Species and Ecosystems Explorer to identify the Blue and Red-listed vertebrate and invertebrate species with potential to occur within or near the study area. The results of the query are based on the following parameters and are provided in Appendix A.

- Regional District of Okanagan Similkameen (RDOS);
- IDF BEC Zones; and
- Habitat Subtypes: Forest coniferous (dry), and Grassland/Shrub.

Figure 4.0 displays the results of a search of identified element occurrences (from the CDC), or their ranges, using the public iMapBC online database and mapping at 1:30,000 scale, based on an approximate 3 km radius surrounding the approximate centre of the Property. The search included both publicly available and masked (confidential) records.

The results showed no observations within a 1 km radius of the Property. Although no observations have been made within 1 km buffer of the Property, there is still potential for a wide variety of other species to be present due to the natural state of the Property. The Property contains multiple ground burrows, a variety of shrub species, a few wildlife snags with nesting cavities, and is nearby natural ecosystems, therefore there is the potential for other species to migrate through the area to forage, breed, and hunt.

3.4 Environmentally Sensitive Areas

The ESA identified during the original assessment range are comprised of Moderate (ESA 2), Low (ESA 3), and Not Sensitive (ESA 4) values. Figure 5.0 illustrates the ESA values present within the Property. The ESA definitions and summary of the mapped area, and percentage of the Property, are outlined in Table 3.2.

Table 3.2 Environmentally Sensitive Area Coverage within the Property

| ESA Value | ESA Area (ha) | Percent of Total | Polygon |
|------------------|---------------|------------------|-----------------|
| ESA 1 (High) | 0 | 0 | - |
| ESA 2 (Moderate) | 6.86 | 54 | 3,5,6,7,8,10,12 |
| ESA 3 (Low) | 5.74 | 45.5 | 1,2,4,9 |
| ESA 4 (Nil) | 0.06 | 0.5 | 11 |
| Total | 12.7 | 100 | - |

The environmental sensitivity analysis indicates that the majority of the Property is within ESA 2 (54%) associated with the provincially Blue listed ecosystems and natural vegetated state (Polygon's 3,5,6,7,8,10,12) that abuts the northern portion of the Property. The ESA 3 areas (Polygon's 1,2,4,9) are comprised of young to mature tree/shrub habitats, and existing trails which make up 5.74 ha (45.5%) of the Property. The ESA 3 area provides habitat value for a variety of burrowing mammals as well as songbirds. The ESA 3 areas are generally suitable for development; however, should also be considered as candidate areas for restoration activities. Should a large portion of the ESA 3 area be cleared and developed, the remaining habitat should be improved with planting of native shrub species as well as ponderosa pine and Douglas fir saplings. The ESA 4 (Polygon 11) area along the eastern boundary of the Property is associated with historical development and is not sensitive to development.

4. Impact Assessment

The proposed development addressed by this report is subdivision only and therefore the development footprint is conceptual and includes only the private road, cul-de-sac, reservoir, pump station, and wells which includes approximately 1.64 ha or 12.9 % of the total Property area.

A site plan is provided in Appendix A. The plan was overlaid on the ESA mapping (Figure 5.0) to show the potential impact from the development on identified ecological values and environmentally sensitive areas. The overlap between the proposed development footprint and the ESA is shown on Figure 6.0.

Table 4.1 summarizes the overlap between the proposed development with the ESA classification.

Table 4.1 Analysis by Environmentally Sensitive Area

| ESA Class / Value | Total Area (Ha) | Area Overlap (Ha) | % Retained |
|-----------------------|-----------------|-------------------|------------|
| ESA 1 (High) | 0 | 0 | N/A |
| ESA 2 (Moderate) | 6.86 | 1.04 | 85 |
| ESA 3 (Low) | 5.74 | 0.59 | 90 |
| ESA 4 (Not sensitive) | 0.06 | 0.02 | 67 |
| Total | 12.7 | 1.65 | 87 |

The total proposed development disturbance footprint within the Property is approximately 1.65 ha, or 13%. Of this, approximately 0.02 ha (33%) occur within ESA 4, 0.59 ha (10%) occur within ESA 3 areas, and 1.04 ha (15%) occur within ESA 2 areas. Given that 85% of ESA 2 will be retained, the loss of habitat value is considered low.).

Detailed building plans have not been defined as part of this application, as it pertains to the subdivision and earthworks to prepare the lots for future construction. Development will occur on a lot by lot basis, and may be subject to future development permitting. The developer will work with the RDOS as these lots are built out to ensure that development is consistent with the guidelines and objectives of the OCP and incorporates the following recommendations during the planning and construction of future development. A covenant or similar measure will be applied at the development permit stage to ensure protection of the environmental values.

The re-zoning to develop the subdivision within the Property is consistent with the OCP policy to establish 1.0 ha as a minimum lot size for parcels without community sewer (OCP Bylaw No. 2497, 2012; Section 7.4).

Additional restoration and/or compensation will be undertaken at the discretion of the environmental monitor (EM) and will depend on the final footprint of disturbance, performance of the contractor, and to mitigate other unforeseen or unexpected impacts.

4.1 Environmental Effects

The potential direct and/or indirect impacts resulting from the proposed residential development upon local plants, ecosystems and wildlife include:

- Loss and degradation of vegetation, including sensitive and at-risk plants and ecosystems;
- Introduction and spread of invasive plants;
- Loss and degradation of soil;
- Loss of potential nesting, denning, and/or basking habitat or habitat features (i.e., wildlife trees);

- Changes to wildlife movement and or habitat use patterns, i.e., through visual and/or auditory disturbance;
- Increased potential for wildlife mortality; and
- Changes in natural hydrology.

Apart from direct habitat / ecosystem loss, project activities during construction may also result in the following specific effects:

- Release of fine sediments to adjacent natural habitats during clearing, grading, stripping, hauling, and other onsite construction works.
- Improper handling, storage, or disposal of waste materials and/or construction debris that results in the release of deleterious substances to aquatic, riparian, or terrestrial habitats and causes subsequent negative impacts to wildlife and/or habitat.
- Spills or leaks of deleterious substances (e.g., fuel, oil, hydraulic fluid) to the environment as a result of improper storage, vehicle and equipment re-fueling, and/or poorly maintained equipment.
- Direct (e.g., injury, harassment, habitat loss) or indirect impacts (e.g., noise, dust) to wildlife and wildlife habitat, including species at risk, important habitats, and other sensitive features (e.g., dens, burrows, nests, wildlife trees, etc.) during construction activities.
- Disturbance beyond the identified development limits that facilitates encroachment of non-native and invasive plant species, which degrades the ecological values of adjacent natural communities.

These potential impacts to the environment may be reduced through adhering to provincial BMPs and implementing mitigation measures to address sources of these potential impacts. Site specific Mitigation measures (Section 5) have been prepared based on measures outlined in the provincial *Procedures for Mitigating Impacts on Environmental Values* (BC MOE 2014), Provincial BMPs, and guidance from municipal, provincial, and federal sources pertaining to environmental protection during construction.

4.2 Mitigation Strategy

The provincial mitigation hierarchy (Avoid, Minimize, Restore, and Offset) from the *Procedures for Mitigating Impacts on Environmental Values* (BC MOE 2014) was used to guide and develop the impact assessment and mitigation approach, and applied during the design of the development plan. The application of the mitigation hierarchy is described below.

- The avoidance principle includes the possibility of not proceeding with the development. However, the development is considered important to meet housing needs and municipal growth goals within Tulameen, as well as being in alignment with future development planning. The Property is currently zoned as LH2, with a minimum parcel area of 8 ha (20 ac). It is proposed to amend the Community Plan from LH, to SH, and rezone the Property to SH3 to allow a bare land strata subdivision of 1 ha parcels (Zoning Bylaw No. 2498, 2012). This would then allow for 10 lots to be proposed for future development which aligns with planning goals in a reduced impact manner.
- Other avoidance strategies associated with the development include:

- The development plan avoids sensitive habitat to the extent possible within safe engineering constraints and makes use of an area previously disturbed by land alteration and adjacent development.
- To avoid direct impacts to wildlife, initial construction (clearing, grubbing) will be adhere to best practices for identified least-risk work windows for birds and snakes (described further below).
- Minimization strategies include:
 - Temporary disturbance (i.e., graded areas, exposing soils, etc.) within the Property will be limited to within low sensitivity areas, and the extent will be reduced as much as possible.
 - Disturbance boundaries will be clearly identified to reduce the incidence of disturbance beyond the necessary footprint.
 - Building foundations and development footprints will be designed in such a way as to utilize the existing environment as much as possible and can be engineered safely (e.g., anchoring foundation to bedrock, rather than excavating and filling).
 - Utilizing existing disturbance and utility corridors to limit the extent of impacts from site servicing.
 - Minimize roadway footprint through the use of retaining walls rather than extensive cuts and fills, where feasible.
 - Designs to strive for the retention of snags, woody debris and other sensitive habitats and features within the Property
- Restoration measures include:
 - Restore all cut/fill slopes with topsoil and/or native hydroseed and plantings, as described in Section 5.10.
 - Install barrier fencing along development footprint boundaries to prevent unintentional encroachment beyond developable areas.
 - Adapting restoration measures, including additions to the restoration plan, as the development occurs to address any unforeseen or accidental disturbance to identified environmental values.
 - Additional enhancement of habitat present on the site through managing invasive species and native plantings in degraded areas, like the area surrounding the house. Further measures for habitat enhancements are outlined in more detail in Section 5.

4.3 Impact Summary

The Property is considered a suitable location for the proposed subdivision from an environmental perspective as it abuts the western boundary of Tulameen, and each proposed lot will have a minimum 1 ha parcel size allowing for areas to remain in their current natural state. Approximately 5.82 ha (85%) of the ESA 2 will remain in its natural state along the northern boundary and serve as a Wildlife Corridor for wildlife to move north.

Overall, the proposed subdivision is considered reasonable for the Property, as it minimizes the effects of habitat loss with the following strategies:

- The developer will work with the RDOS to ensure that additional restoration and/or compensation will be undertaken at the discretion of an environmental monitor (EM), and will depend on the final footprint of disturbance, and will be followed throughout future development and building permitting;
- Avoidance of direct impacts to sensitive wildlife by completing construction activities within least-risk work windows.

At this stage of this application, building plans have not been defined as the development will be developed on a lot by lot basis. Therefore, the developer will work with the RDOS to ensure that the following guidelines are enforced throughout future development. A covenant or similar measure will be applied at the Development Permit stage to ensure protection of the environmental values.

Additional restoration and/or compensation will be undertaken at the discretion of the environmental monitor (EM) and will depend on the final footprint of disturbance, performance of the contractor, and to mitigate other unforeseen or unexpected impacts.

Additional, site-specific Environmental Management Plans (EMP) may be implemented as development plans for each lot are proposed or at the time of construction to address the RDOS ESDP guidelines, as required.

5. Mitigation and Recommendations

The following recommendations and mitigation strategies for proposed development within the Property are based on the current condition of the Property and results of the environmental sensitivity analysis. Avoidance of impacts through planning and design is the most preferable method of preventing adverse impacts to the environment. As avoidance is not always possible or realistic, impacts should be reduced or eliminated through the use of procedures and planned mitigations. The recommendations in this section are provided as a guide for future development within the Property to reduce or avoid potential impacts and to maintain consistency with municipal and regional guidance documents and provincial Best Management Practices (BMP), as described in *Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia* (2014) and *Keeping Nature in Our Future: A Biodiversity Conservation Strategy for the Okanagan* (2012).

5.1 Environmental Monitoring

An environmental monitor (EM) must be retained to conduct site inspections and document compliance with BMPs, permit conditions, and other guidelines and recommendations. Inspections will be scheduled to coincide with or prior to higher risk activities and the proponent and/or contractor will provide the EM with construction schedules to determine an appropriate inspection frequency. If greater disturbance occurs due to unforeseen circumstances, the EM will recommend measures to protect or restore the natural integrity of the site.

- An onsite pre-construction meeting will be held between the EM and the contractor(s) undertaking the work to ensure a common understanding of the mitigation measures and best practices required for the project as per the DP and any other relevant permits. The EM will attend other regular meetings, as required. The EM will conduct a site inspection on a minimum monthly basis during construction.
- The EM will be an appropriately qualified environmental professional (QEP) authorized to halt construction activities as deemed necessary to prevent harm to terrestrial, aquatic, or riparian resource values.

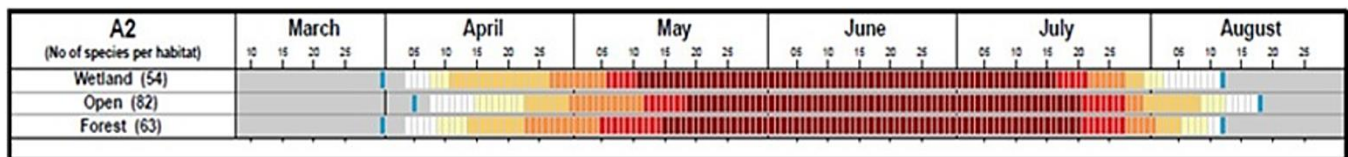
- A copy of this report describing mitigation measures and BMPs must be kept readily available at the site for reference while the work is being conducted. Copies of relevant permits and emergency contact information must also be kept on site and readily available.
- Summary monitoring reports will be submitted on a regular basis to the contractor and the RDOS. A final report will be generated upon the substantial completion of construction works summarizing the project activities and listing any deficiencies noted throughout the works.
- The EM will be responsible for conducting pre-construction wildlife surveys as required based on the timing of works.

5.2 Reduced Risk Timing Windows

There is a potential for disturbance to sensitive wildlife during the proposed development. As such, least-risk timing windows should be followed to reduce the potential to adversely affect wildlife directly or indirectly during the works. Least-risk windows for each species or wildlife group are discussed further below.

5.2.1 Birds

The breeding bird window for Tulameen which occurs within the South Okanagan Basin’ eco-district (Zone A2) has a regional nesting period of early April to mid-August (see screenshot below).



Source: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html#_zoneA_calendar

To maintain compliance with the federal *Migratory Birds Convention Act*, all vegetation and ground disturbance for construction should be completed outside of the breeding bird window (i.e., prior to April or after August). Vegetation clearing or removal activities that are proposed within the breeding bird window will require notification to the RDOS.

- To maintain compliance with the federal *Migratory Birds Convention Act*, all vegetation and ground disturbance for construction must be completed during the least-risk period.
- If trees or other vegetation must be cleared outside of the least-risk window, pre-construction surveys to identify active nests must be completed by the EM or another Qualified Environmental Professional (QEP). Surveys will include searches for raptor and heron nests, stick nests or ground nests, and snags and cavities that may be used over multiple years or year-round.
- If active nests are found within the proposed disturbance footprint, construction must be halted, and the EM will establish and clearly delineate a non-disturbance buffer around the nest until such time that the EM can determine that nest has become inactive. The size of the buffer will depend on the species and nature of the surrounding habitat. Buffer sizes will generally follow provincial BMP guidelines or other accepted protocol (e.g., Environment Canada). In general, a minimum 20 m buffer will be established around songbird nests or other non-sensitive (i.e., not at risk) species. Works may proceed outside the buffer at the direction of the EM, who may specify additional mitigations to be followed.

- Wildlife trees with cavities, stick nests, or other active breeding habitats must be protected. While no wildlife trees are present within the proposed development footprint, there may be overlap of protection setbacks with the work area. Depending on the activity at the nest and species associated with it, these features may be protected by the provincial Wildlife Act, the federal Migratory Birds Convention Act, and/or the Species at Risk Act. Recommended buffers for raptor nests are provided in Table 6 of the 2013 Guidelines for Raptor Conservation BMP. Raptor nests within rural areas should be protected with a no-disturbance buffer of 100 to 200 m, depending on the nature of the species (i.e., ability to co-exist). During the breeding season, an additional 100 m noise buffer is recommended.

5.2.2 Reptiles and Amphibians

Sensitive times for reptiles generally occur in the late spring during emergence from hibernacula and early fall during the return to hibernacula. The overwintering period is also a vulnerable time for reptiles. Based on the low suitability for denning, basking, or hibernating habitats within the proposed development footprint, there are no recommended timing windows for reptiles. General mitigation measures that should be followed are provided in Guidelines for Amphibian and Reptile Conservation during Urban and Rural Development in British Columbia (2014).

- If snakes are observed basking or moving through the Property, works must be halted or suspended until the snake has moved a safe distance away. The EM must be notified of any snake observations onsite and may provide additional mitigations to be followed during works.
- All Project staff and contractors will be advised of areas within the Property with a higher potential of encountering snakes, particularly in the eastern portion of the Property, near natural forested areas with a bunchgrass dominated understory.

5.3 Site Preparation

All mitigation measures must be in place and functioning as required prior to the initiation of construction activities. Mitigation measures must be maintained, repaired, replaced, or otherwise adapted as necessary to ensure appropriate protection of the natural environment.

- Staging, parking, storing of equipment, and stockpiling of materials must be within designated areas within the construction footprint and not encroaching beyond the disturbance limits associated with the construction project. Staging, parking, and storage areas must be situated at least 30 m from watercourses and drainage features, including stormwater features.
- All stockpile areas, if located outside of the development footprint, must be located within ESA 3 areas, and the locations of any stockpile or storage areas must be reviewed with the EM prior to the placement of material.
- Phasing of construction activities will be utilized to reduce the amount of time soils remain exposed to erosion potential. Clearing, stripping, grubbing and other earthworks should be completed in as short of a duration as possible.
- A geohazard assessment has not been completed at the time of writing this report. The result of geotechnical and subsurface investigations may affect the proposed development footprint and/or construction activities and any major changes should be addressed with further assessment and addendum reports, as required.

5.4 Plants and Ecosystems

A detailed rare plant survey was not completed but since the majority of the development occurs within ESA 3 areas, the potential for rare plants to occur within the proposed footprint is estimated to be low.

- The clearing and grubbing limits will be clearly identified in the field and there will be no disturbance permitted beyond those limits. Impacts to native vegetation and soils beyond the project boundary must be avoided at all times.
- All existing native vegetation outside of the permitted disturbance footprint, including trees, snags, shrubs, grasses, and groundcover, must be retained. Soil disturbance must be limited to the disturbance footprint.
- Flagging or snow fencing will be used to clearly delineate the construction limits prior to the commencement of works. The EM will review the clearing limits with the contractor to ensure a common understanding of the works, the type of boundary marking used (flagging, fencing, or other), and to prevent encroachment beyond the identified disturbance footprint. Areas at risk of sediment and erosion related issues will be identified and silt fencing or other appropriate mitigation measures (e.g., filter fabric, ditches, berms, poly sheeting, sandbags, etc.) will be installed.
- All contractor vehicles and equipment will be operated or stored within the construction limits. All stockpiles and storage of other materials will occur within the construction limits.

5.5 Wildlife and Species at Risk

Important wildlife habitat, including nests, dens, burrows, wildlife trees, coarse woody debris, and other unique features (if any), will be identified by the EM prior to the initiation of construction works. Encroachment beyond the identified construction limits may not occur at any time.

- Identified wildlife features, such as standing dead or partially dead trees (snags), trees with cavities, and/or trees with stick nests or other unique cover features for wildlife (e.g., rock outcrops) must be conserved. Construction works will be conducted within the least-risk window for breeding birds, described above and using the appropriate disturbance and noise buffers.
- The Property overlaps an ungulate winter range which is defined as an area that contains habitat necessary to meet the winter habitat requirements for mule deer. Therefore, maintain connectivity to the natural forested area north of the Property and minimize disturbance and ensure this valuable mule deer habitat is protected (FLNRORD 2018).
- If stick nests are found to occupied and/or active at the time of construction, no-disturbance buffers will be implemented surrounding the tree. The minimum recommended buffer for raptors with a moderately high tolerance to human activity in a rural setting is 100 m (BC MOE 2020). The noise buffer recommended during the breeding season (generally March to September) is an additional 100 m (200 m total buffer).
- Wildlife related BMPs and guidelines that should be followed during planning and construction include Best Management Practices for Bats in British Columbia (2016), Guidelines for Amphibian and Reptile Conservation during Urban and Rural Development in British Columbia (2014), and Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia (2013), each of which is available at <http://www.env.gov.bc.ca/wld/BMP/>, in order to limit wildlife disturbances and mortalities as a result of construction and earthworks.

5.6 Site Restoration

As there is no development currently proposed for the lot, this section contains only general recommendations for restoration. Site cleanup and restoration refers to activities used to return disturbed areas within the project site to a state resembling the original habitat characteristics. Protection of existing ecosystems is generally much more efficient than ecosystem enhancement and restoration following construction. A landscape design plan has not been developed at the time of writing. Ecora has provided the following site restoration and landscaping recommendations to guide future landscaping planning, if it occurs, as well as any enhancement measures applied following construction. Any landscape plans prepared should be approved by a QEP prior to finalization and implementation.

- Restoration measures will be implemented at all disturbed areas, including cut/fill slopes and other exposed soils. At a minimum, re-graded slopes must be stabilized (as per the recommendations of the geotechnical engineer) and covered with a suitable hydroseed comprised of mulch, tackifier, and a mix of native grass seed. Restoration measures will be overseen by the EM and will include additional measures, as appropriate and based upon the final disturbance footprint and/or performance of the contractor.
- Restoration measures must include the placement of 10 to 30 cm of weed-free topsoil over disturbed surfaces (topsoil salvaged from the site is acceptable) and seeding with a suitable native grass seed mix (hydroseed or dispersed by hand). The area must then be planted with a suitable mix of native stock trees and/or shrubs as directed by the EM.
- Grass seed must be certified as Canada #1 Grade by Agriculture Canada to minimize the weed seed count. The seed mixture must include native species appropriate for the ecological conditions and will be reviewed and approved by the EM prior to application. A recommended restoration grass/perennial seed mix composed of native grass species suitable for the site is provided below:

| Scientific name | Species | Percent by Weight |
|--------------------------------|----------------------|-------------------|
| <i>Festuca campestris</i> | Rough fescue | 25% |
| <i>Festuca idahoensis</i> | Idaho fescue | 15% |
| <i>Koeleria macrantha</i> | Prairie junegrass | 5% |
| <i>Lolium perenne</i> | Perennial ryegrass | 10% |
| <i>Poa secunda</i> | Sandberg's bluegrass | 5% |
| <i>Pseudoroegneria spicata</i> | Bluebunch wheatgrass | 20% |

Any trees and shrubs planted as part of landscaping should utilize native species and the selection of trees and shrubs should use xeriscape principles.

- Native plants should be installed under the direction of the EM and/or QEP and may require ongoing maintenance (i.e., watering, weeding, fertilizing, etc.) depending on the local conditions and timing of planting.
- The timing, distribution, and density of plantings will be determined in a field-fit manner and under the direction of the EM. Planting densities should target a natural distribution, and so be planted in clusters unevenly within the restoration area, rather than equally distributed.
- Plants must be obtained from a reputable nursery that grows plants from indigenous stock. The planting works must be completed by a suitably qualified landscape or restoration contractor with knowledge and experience related to the selection and installation of native plants.
- Control of invasive species is to be managed by non-chemical means (i.e., hand pulling, mowing, etc.) and in accordance with the RDOS Electoral Area "H" Development Procedures

Bylaw (Bylaw No. 2500, 2011) and policies regarding noxious weed management. Weed populations within the restoration areas is to be managed by hand pulling where feasible and occur in the spring and summer.

- A survival rate of 80% is targeted for native shrub and tree plantings. The success of the plantings, as well as noxious weed control measures (Section 5.9) will be monitored during the growing season for two years post completion of the works.
- Silt fencing and other temporary mitigation features will be removed upon substantial completion of works if the risk of surface erosion and sediment transport has been adequately mitigated with other permanent measures.
- All equipment, supplies, waste, and other non-biodegradable materials will be removed from the site following the completion of construction.

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| Figure 6.0 | Impact Assessment |

SITE LOCATION

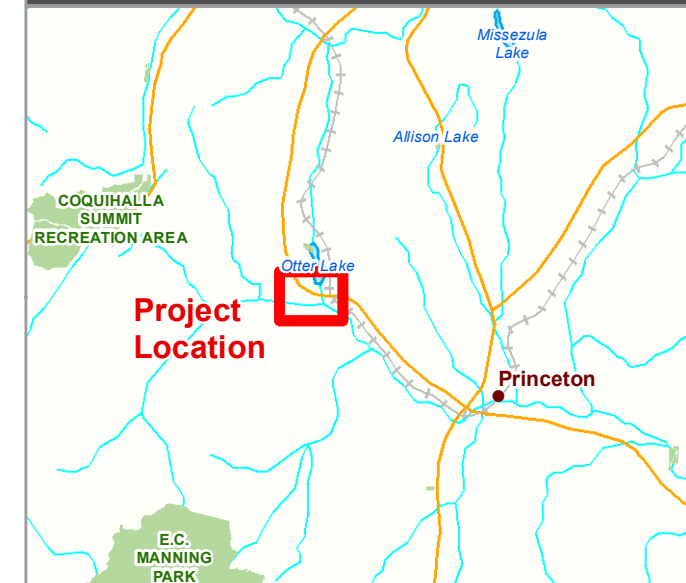


SITE LOCATION 1020 LAWLESS CREEK RD TULAMEEN, BC

Legend

- 20m Contours
- Fresh Water Atlas Streams
- Digital Atlas Roads
- Property Boundary
- Lakes

LOCATION MAP



1:20,000



Project No.: 190078
Client: Bob Reichert

Date: 2021/12/08
Drawn: DT Check: JK

NAD 1983 UTM Zone 11N

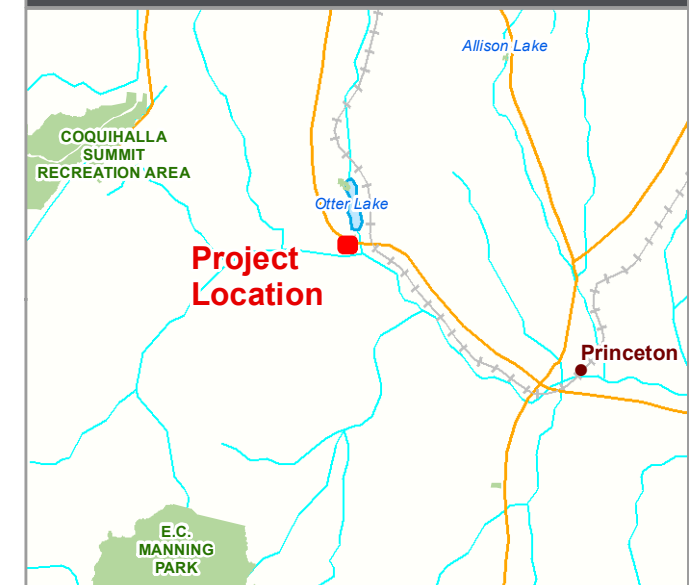
Figure 1.0

ENVIRONMENTAL ASSESSMENT 1020 LAWLESS CREEK RD TULAMEEN, BC

Legend

- 20m Contours
- Fresh Water Atlas Streams
- Digital Atlas Roads
- RDOS Legal Parcels
- TEM Polygons
- Property Boundary

LOCATION MAP



1:2,500



Project No.: 190078

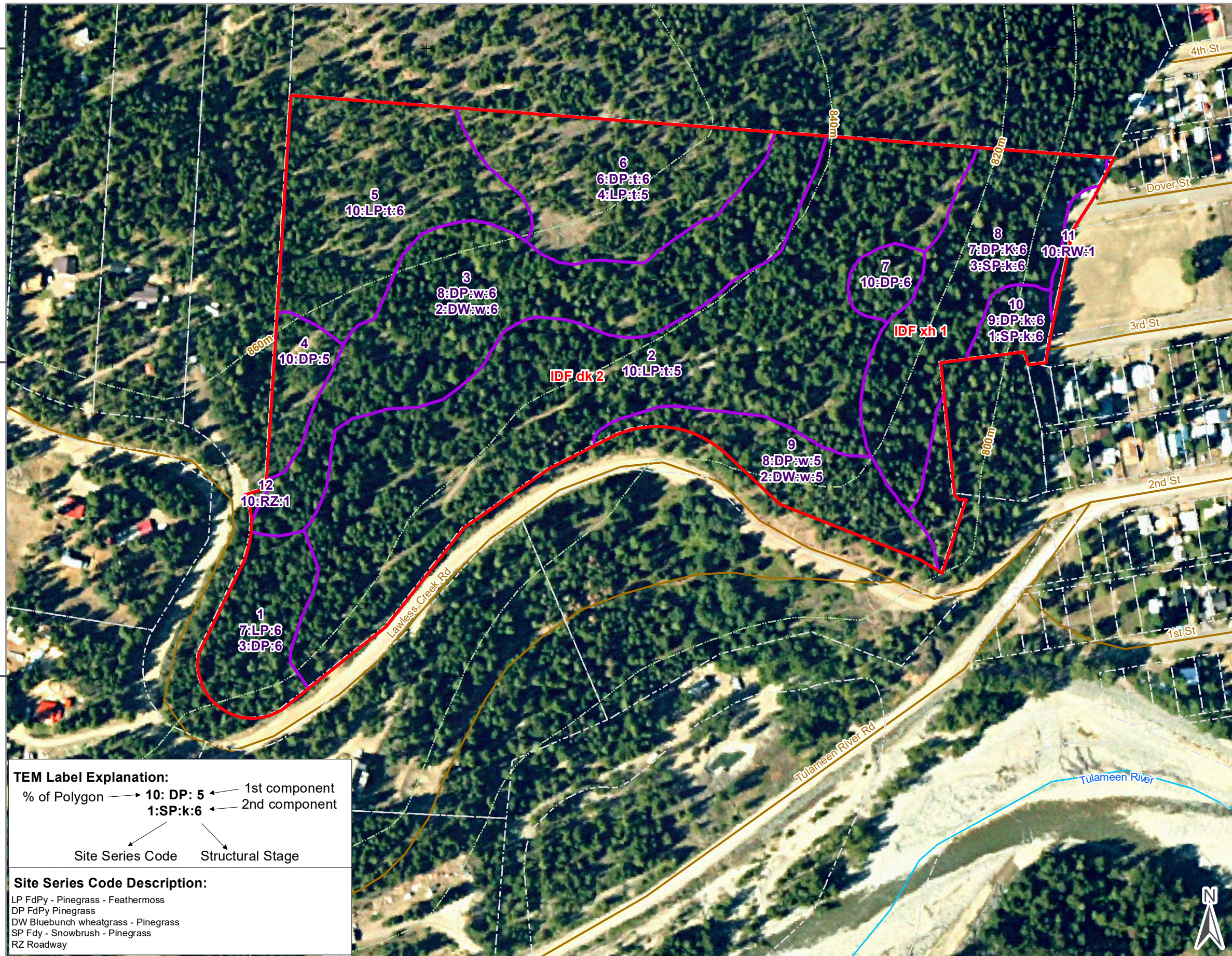
Date: 2021/12/08

Client: Bob Reichert

Drawn: DT Check: JK

NAD 1983 UTM Zone 11N

Figure 2.0



ENVIRONMENTAL ASSESSMENT 1020 LAWLESS CREEK RD TULAMEEN, BC

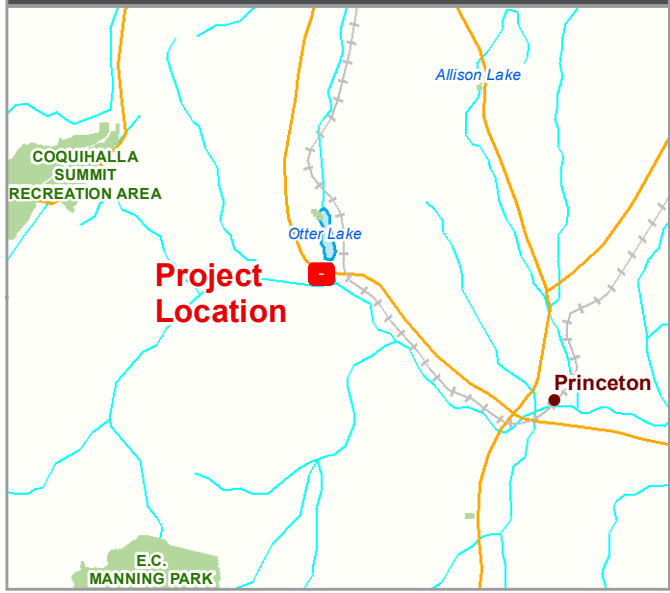
Legend

- 20m Contours
- Fresh Water Atlas Streams
- Digital Atlas Roads
- RDOS Legal Parcels
- Property Boundary

Conservation Rank

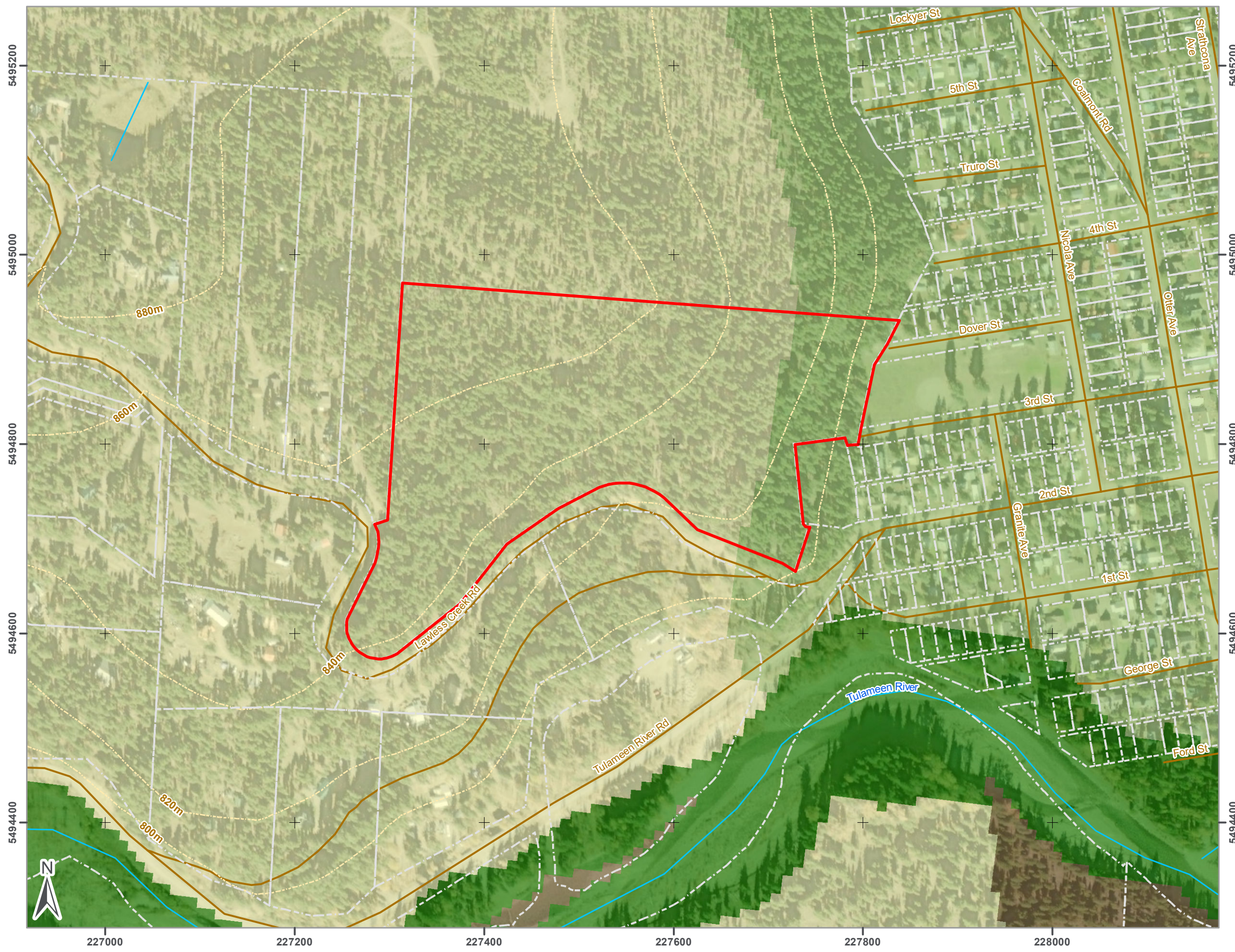
- 1 = Very High
- 2 = High
- 3 = Moderate
- 4 = Low

LOCATION MAP



Project No.: 190078 Date: 2021/12/08
 Client: Bob Reichert Drawn: DT Check: JK

NAD 1983 UTM Zone 11N **Figure 3.0**



Map coordinates: X-axis (227000 to 228000), Y-axis (5494400 to 5495200)

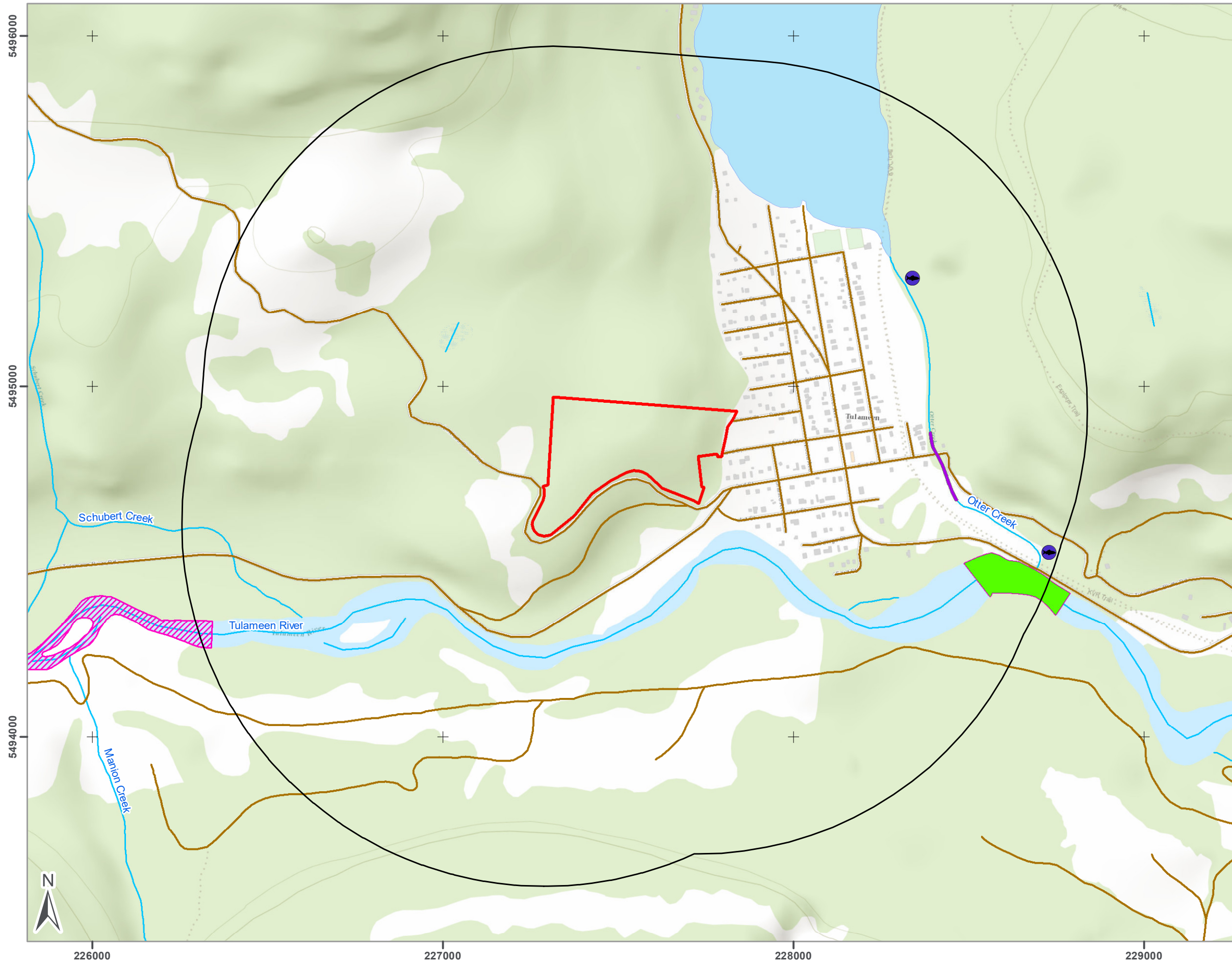
Street names: Lockyer St, 5th St, Truro St, 4th St, 3rd St, 2nd St, 1st St, George St, Ford St, Nicola Ave, Otter Ave, Stratcona Ave, Coalmont Rd, Dover St, Granite Ave.

Road names: Lawless Creek Rd, Tulameen River Rd.

Contour labels: 880m, 860m, 840m, 820m, 800m.

Water bodies: Tulameen River, Allison Lake, Otter Lake.

KNOWN CDC ELEMENT OCCURRANCES

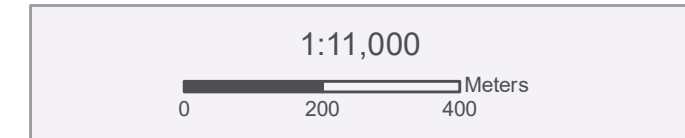
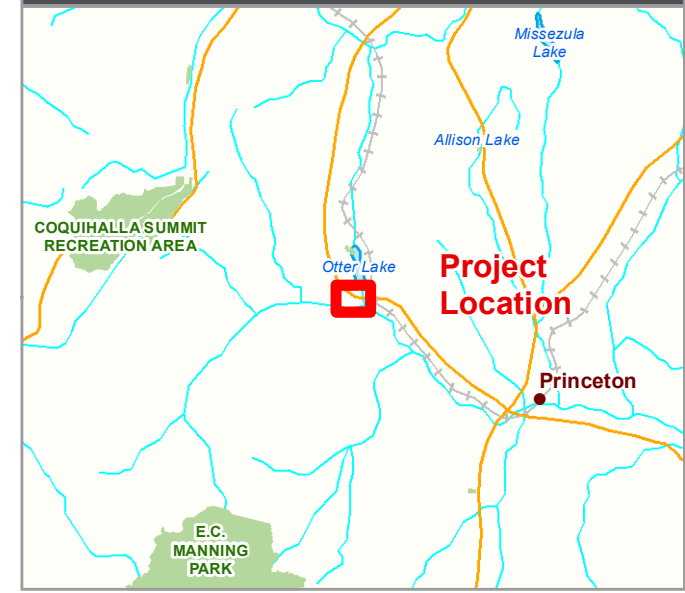


ENVIRONMENTAL ASSESSMENT 1020 LAWLESS CREEK RD TULAMEEN, BC

Legend

- Digital Atlas Roads
- Fresh Water Atlas Streams
- Lakes
- 1km Buffer of Property Boundary
- Property Boundary
- Aquatic Invasive Species**
- Brook trout
- Conservation Data Centre Element Occurrences**
- Columbia Sculpin
- Cordilleran Sucker
- Umatilla Dace

LOCATION MAP










Project No.: 190078 Date: 2021/12/08
 Client: Bob Reichert Drawn: DT Check: JK

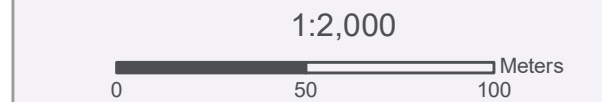
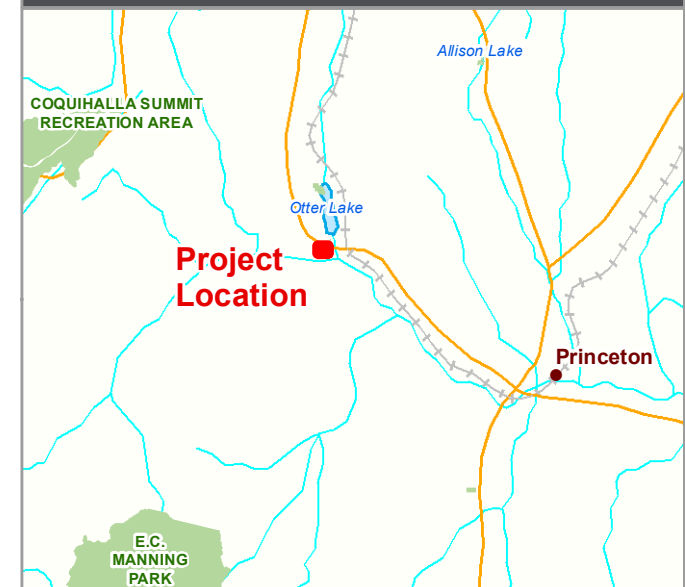
ENVIRONMENTALLY SENSITIVE AREAS

ENVIRONMENTAL ASSESSMENT 1020 LAWLESS CREEK RD TULAMEEN, BC

Legend

-  Fresh Water Atlas Streams
-  Digital Atlas Roads
-  RDOS Legal Parcels
-  Property Boundary
- ESA Ranking
-  ESA 2 - Moderate
-  ESA 3 - Low
-  ESA 4 - Not Sensitive

LOCATION MAP



Project No.: 190078 Date: 2021/12/08
 Client: Bob Reichert Drawn: DT Check: JK

NAD 1983 UTM Zone 11N **Figure 5.0**

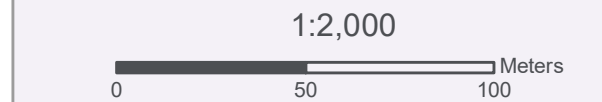
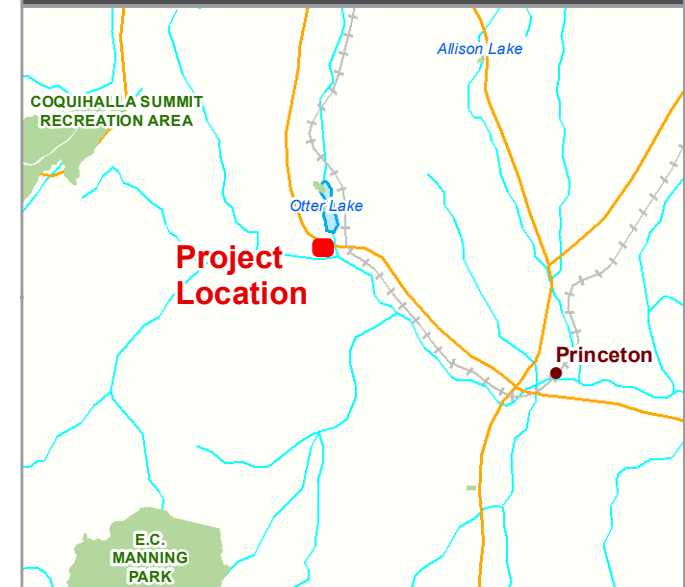


ENVIRONMENTAL ASSESSMENT 1020 LAWLESS CREEK RD TULAMEEN, BC

Legend

- Fresh Water Atlas Streams
- Digital Atlas Roads
- RDOS Legal Parcels
- Property Boundary
- ESA Ranking
 - ESA 2 - Moderate
 - ESA 3 - Low
 - ESA 4 - Not Sensitive

LOCATION MAP

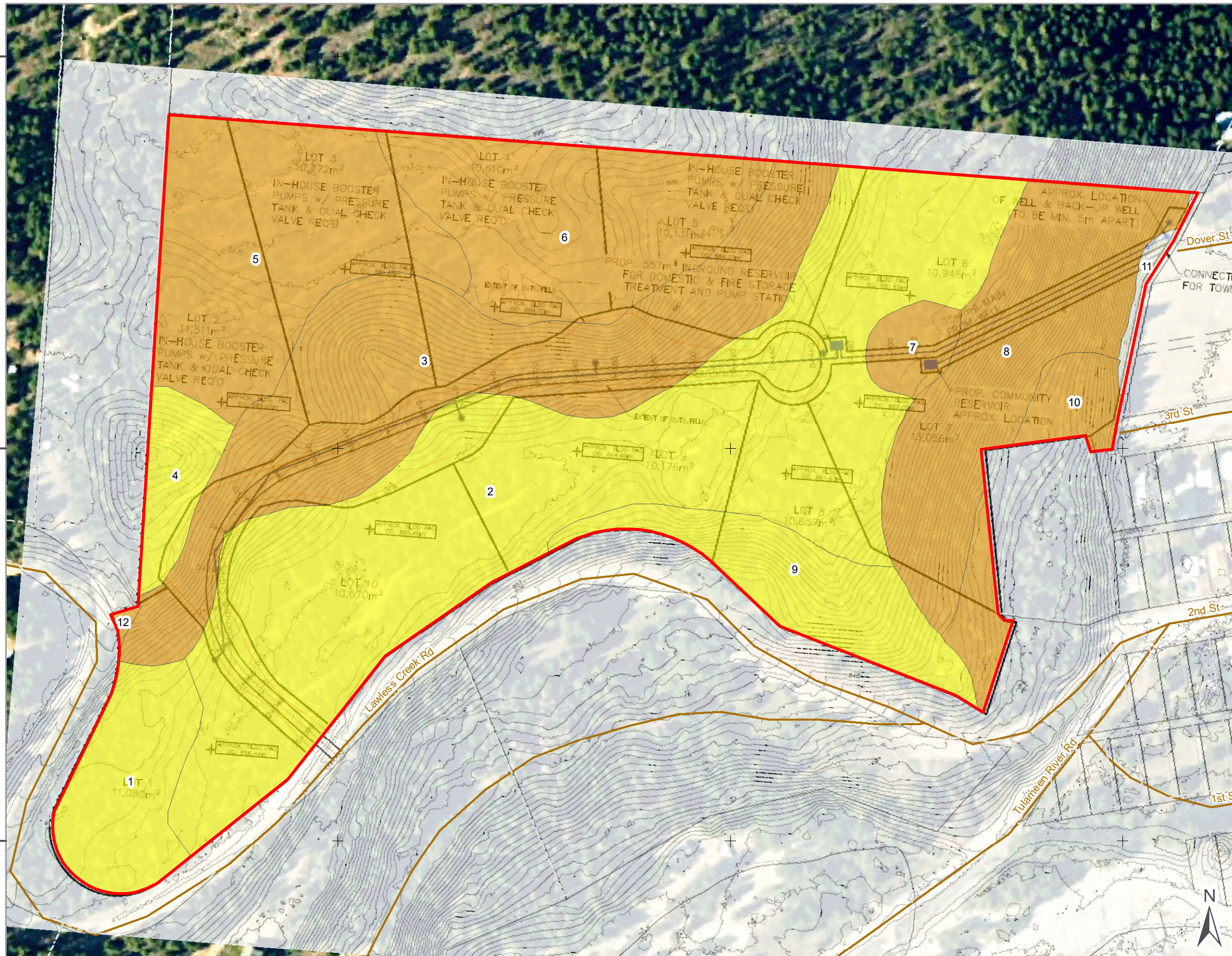


Project No.: 190078
Client: Bob Reichert

Date: 2021/12/08
Drawn: DT Check: JK

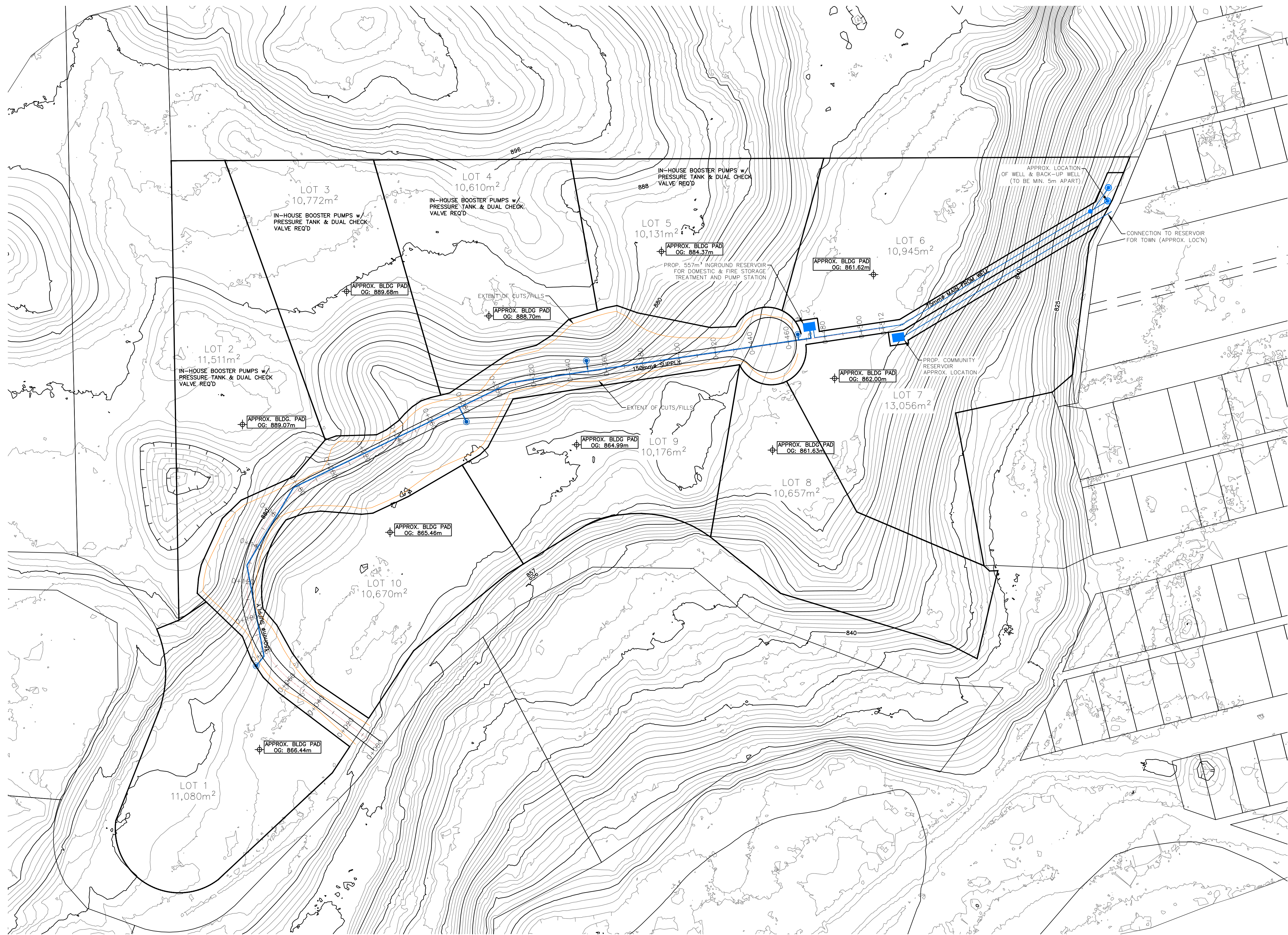
NAD 1983 UTM Zone 11N

Figure 6.0



Appendix A

Site Plan



| LEGEND | |
|--------|----------------|
| | WATER |
| | SANITARY SEWER |
| | STORM SEWER |
| | EOA |
| | CURB |

| PROP | |
|------|---------------|
| | MANHOLE |
| | CATCH BASIN |
| | WATER VALVE |
| | CURB STOP |
| | HYDRANT |
| | IC |
| | P.P. |
| | LAMP STANDARD |
| | DRYWELL |

| EX | |
|----|--|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

| NO. | DATE (YY/MM/DD) | DRN | REVISION | CHKD |
|-----|-----------------|-----|----------------------|------|
| A | 21/12/01 | KD | ISSUED FOR RE-ZONING | MDY |

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 #201-284 MAIN STREET PENTICTON, B.C.
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 PHONE: 250-492-2227
 www.ecora.ca

| |
|------------------|
| DESIGN: MDY |
| DRAWN: KD |
| CHECKED: DB |
| DATE: DEC. 1, 21 |
| SCALE: 1:1000 |

TULAMEEN
DEVELOPMENT-LAWLESS CREEK RD.
BOB REICHERT
SITE SERVICING PLAN

| Drawing No. | Rev.No |
|-------------|--------|
| 190078 | A |

FILE LOCATION: N:\2021\12-01\211201-01-01-0000\211201-01-01-0000.dwg PRINTED ON: 12/7/2021 3:47 PM

Appendix B

Conservation Data Centre Query Results

Conservation Data Center Query Results

| Scientific Name | English Name | COSEWIC | BC List | MBCA | SARA | Habitat Subtype |
|------------------------------|---------------------------------------|----------------|---------|------|-----------------|--|
| <i>Ammodramus savannarum</i> | Grasshopper Sparrow | | Red | Y | | Pasture/Old Field; Meadow; Grassland; Sagebrush Steppe; Antelope-brush Steppe |
| <i>Anaxyrus boreas</i> | Western Toad | SC (Nov 2012) | Blue | | 1-SC (Jan 2005) | Bog; Fen; Swamp; Marsh; Riparian Forest; Riparian Shrub; Stream/River; Lake; Meadow; Grassland; Deciduous/Broadleaf Forest; Conifer Forest - Mesic (average); Conifer Forest - Dry; Conifer Forest - Moist/wet; Mixed Forest (deciduous/coniferous mix); Pond/Open Water; Riparian Herbaceous; Warm Spring; Gravel Bar |
| <i>Antrozous pallidus</i> | Pallid Bat | T (Nov 2010) | Red | | 1-T (Jun 2003) | Caves; Cliff; Talus; Grassland; Sagebrush Steppe; Conifer Forest - Dry; Urban/Suburban; Pond/Open Water; Industrial |
| <i>Ardea herodias</i> | Great Blue Heron, herodias subspecies | | Blue | | | Swamp; Marsh; Vernal Pools/Seasonal Seeps; Riparian Forest; Stream/River; Lake; Pasture/Old Field; Cultivated Field; Hedgerow; Meadow; Deciduous/Broadleaf Forest; Conifer Forest - Mesic (average); Conifer Forest - Dry; Conifer Forest - Moist/wet; Mixed Forest (deciduous/coniferous mix); Urban/Suburban; Pond/Open Water; Riparian Herbaceous |
| <i>Asio flammeus</i> | Short-eared Owl | SC (Mar 2008) | Blue | | 1-SC (Jul 2012) | Estuary; Marsh; Pasture/Old Field; Cultivated Field; Hedgerow; Meadow; Grassland; Urban/Suburban; Pond/Open Water; Riparian Herbaceous; Alpine/Subalpine Meadow; Alpine Grassland |
| <i>Athene cunicularia</i> | Burrowing Owl | E (Apr 2006) | Red | | 1-E (Jun 2003) | Sub-soil; Pasture/Old Field; Cultivated Field; Hedgerow; Grassland; Urban/Suburban |
| <i>Botaurus lentiginosus</i> | American Bittern | | Blue | Y | | Estuary; Marsh; Lake; Pasture/Old Field; Cultivated Field; Hedgerow; Grassland; Pond/Open Water; Riparian Herbaceous |
| <i>Buteo swainsoni</i> | Swainson's Hawk | | Red | | | Riparian Forest; Riparian Shrub; Pasture/Old Field; Cultivated Field; Hedgerow; Meadow; Grassland; Sagebrush Steppe; Deciduous/Broadleaf Forest; Conifer Forest - Mesic (average); Conifer Forest - Dry; Mixed Forest (deciduous/coniferous mix); Urban/Suburban; Antelope-brush Steppe; Industrial; Alpine Grassland |
| <i>Catherpes mexicanus</i> | Canyon Wren | NAR (May 1992) | Blue | Y | | Cliff; Rock/Sparsely Vegetated Rock; Sagebrush Steppe; Conifer Forest - Dry; Antelope-brush Steppe |

| Scientific Name | English Name | COSEWIC | BC List | MBCA | SARA | Habitat Subtype |
|--------------------------------------|--|----------------|---------|------|-----------------|--|
| <i>Chondestes grammacus</i> | Lark Sparrow | | Blue | Y | | Pasture/Old Field; Cultivated Field; Hedgerow; Meadow; Grassland; Sagebrush Steppe; Antelope-brush Steppe |
| <i>Chrysemys picta pop. 2</i> | Painted Turtle - Intermountain - Rocky Mountain Population | SC (Nov 2016) | Blue | | 1-SC (Dec 2007) | Bog; Fen; Swamp; Marsh; Riparian Forest; Riparian Shrub; Lake; Urban/Suburban; Pond/Open Water; Riparian Herbaceous; Gravel Bar; Industrial |
| <i>Coluber constrictor</i> | North American Racer | T (Nov 2015) | Blue | | 1-SC (Aug 2006) | Cliff; Rock/Sparsely Vegetated Rock; Talus; Meadow; Grassland; Sagebrush Steppe; Conifer Forest - Dry; Antelope-brush Steppe |
| <i>Corynorhinus townsendii</i> | Townsend's Big-eared Bat | | Blue | | | Riparian Forest; Caves; Grassland; Shrub - Natural; Deciduous/Broadleaf Forest; Conifer Forest - Mesic (average); Conifer Forest - Dry; Conifer Forest - Moist/wet; Mixed Forest (deciduous/coniferous mix); Urban/Suburban; Shrub - Logged; Industrial |
| <i>Crotalus oreganus</i> | Western Rattlesnake | T (May 2015) | Blue | | 1-T (Jul 2005) | Riparian Forest; Riparian Shrub; Caves; Sub-soil; Cliff; Rock/Sparsely Vegetated Rock; Talus; Meadow; Grassland; Sagebrush Steppe; Conifer Forest - Mesic (average); Conifer Forest - Dry; Riparian Herbaceous; Antelope-brush Steppe; Gravel Bar |
| <i>Dolichonyx oryzivorus</i> | Bobolink | T (Apr 2010) | Blue | Y | | Pasture/Old Field; Cultivated Field; Meadow; Grassland |
| <i>Eremophila alpestris merrilli</i> | Horned Lark, merrilli subspecies | | Blue | | | Alkali Ponds/Salt Flats; Pasture/Old Field; Cultivated Field; Hedgerow; Meadow; Grassland; Urban/Suburban |
| <i>Euderma maculatum</i> | Spotted Bat | SC (Nov 2014) | Blue | | 1-SC (Jul 2005) | Marsh; Riparian Shrub; Pasture/Old Field; Cliff; Rock/Sparsely Vegetated Rock; Talus; Sagebrush Steppe; Conifer Forest - Dry |
| <i>Euphagus carolinus</i> | Rusty Blackbird | SC (Apr 2006) | Blue | | 1-SC (Mar 2009) | Bog; Fen; Swamp; Marsh; Lake; Conifer Forest - Moist/wet; Mixed Forest (deciduous/coniferous mix); Urban/Suburban; Pond/Open Water; Industrial |
| <i>Falco mexicanus</i> | Prairie Falcon | NAR (May 1996) | Red | | | Pasture/Old Field; Cultivated Field; Hedgerow; Cliff; Tundra; Meadow; Grassland; Sagebrush Steppe; Antelope-brush Steppe |
| <i>Falco peregrinus anatum</i> | Peregrine Falcon, anatum subspecies | SC (Apr 2007) | Red | | 1-SC (Jun 2012) | Bog; Fen; Swamp; Marsh; Alkali Ponds/Salt Flats; Stream/River; Lake; Pasture/Old Field; Cultivated Field; Hedgerow; Cliff; Rock/Sparsely Vegetated Rock; Talus; Meadow; Grassland; Shrub - Natural; Sagebrush Steppe; Beach; Urban/Suburban; Pond/Open Water; Riparian Herbaceous; Antelope-brush Steppe; Gravel Bar |

| Scientific Name | English Name | COSEWIC | BC List | MBCA | SARA | Habitat Subtype |
|--|---|----------------|---------|------|----------------|---|
| <i>Hirundo rustica</i> | Barn Swallow | T (May 2011) | Blue | Y | | Estuary; Bog; Fen; Swamp; Marsh; Riparian Forest; Riparian Shrub; Stream/River; Lake; Pasture/Old Field; Cultivated Field; Hedgerow; Meadow; Grassland; Shrub - Natural; Sagebrush Steppe; Deciduous/Broadleaf Forest; Conifer Forest - Mesic (average); Conifer Forest - Dry; Conifer Forest - Moist/wet; Mixed Forest (deciduous/coniferous mix); Urban/Suburban; Pond/Open Water; Riparian Herbaceous; Antelope-brush Steppe; Gravel Bar; Shrub - Logged; Industrial |
| <i>Hydroprogne caspia</i> | Caspian Tern | NAR (May 1999) | Blue | Y | | Estuary; Marsh; Stream/River; Lake; Intertidal Marine; Subtidal Marine; Beach; Urban/Suburban; Gravel Bar; Sheltered Waters - Marine |
| <i>Hypsiglena chlorophaea</i> | Desert Nightsnake | E (May 2011) | Red | | 1-E (Jun 2003) | Stream/River; Rock/Sparsely Vegetated Rock; Talus; Meadow; Grassland; Sagebrush Steppe; Conifer Forest - Dry; Antelope-brush Steppe |
| <i>Icteria virens</i> | Yellow-breasted Chat | E (Nov 2011) | Red | Y | 1-E (Jun 2003) | Riparian Forest; Riparian Shrub; Hedgerow; Shrub - Natural; Deciduous/Broadleaf Forest; Mixed Forest (deciduous/coniferous mix) |
| <i>Larus californicus</i> | California Gull | | Blue | Y | | Estuary; Kelp Bed; Marsh; Alkali Ponds/Salt Flats; Stream/River; Lake; Pasture/Old Field; Cultivated Field; Hedgerow; Intertidal Marine; Meadow; Grassland; Subtidal Marine; Beach; Urban/Suburban; Pond/Open Water; Gravel Bar; Sheltered Waters - Marine |
| <i>Lepus townsendii</i> | White-tailed Jackrabbit | | Red | | | Pasture/Old Field; Rock/Sparsely Vegetated Rock; Tundra; Grassland; Shrub - Natural; Sagebrush Steppe; Conifer Forest - Dry; Antelope-brush Steppe |
| <i>Megascops kennicottii macfarlanei</i> | Western Screech-Owl, macfarlanei subspecies | T (May 2012) | Red | | 1-E (Jan 2005) | Riparian Forest; Pasture/Old Field; Cultivated Field; Hedgerow; Deciduous/Broadleaf Forest; Conifer Forest - Mesic (average); Conifer Forest - Dry; Conifer Forest - Moist/wet; Mixed Forest (deciduous/coniferous mix); Urban/Suburban |
| <i>Melanerpes lewis</i> | Lewis's Woodpecker | T (Apr 2010) | Blue | Y | 1-T (Jul 2012) | Riparian Forest; Pasture/Old Field; Cultivated Field; Hedgerow; Meadow; Grassland; Sagebrush Steppe; Deciduous/Broadleaf Forest; Conifer Forest - Dry; Urban/Suburban; Antelope-brush Steppe |

| Scientific Name | English Name | COSEWIC | BC List | MBCA | SARA | Habitat Subtype |
|--|--------------------------------------|---------------|---------|------|-----------------|--|
| <i>Myotis ciliolabrum</i> | Western Small-footed Myotis | | Blue | | | Riparian Forest; Riparian Shrub; Caves; Cliff; Rock/Sparsely Vegetated Rock; Talus; Conifer Forest - Dry; Riparian Herbaceous; Gravel Bar |
| <i>Myotis thysanodes</i> | Fringed Myotis | DD (May 2004) | Blue | | 3 (Mar 2005) | Stream/River; Caves; Cliff; Rock/Sparsely Vegetated Rock; Talus; Meadow; Grassland; Sagebrush Steppe; Deciduous/Broadleaf Forest; Conifer Forest - Mesic (average); Conifer Forest - Dry; Conifer Forest - Moist/wet; Mixed Forest (deciduous/coniferous mix); Antelope-brush Steppe |
| <i>Numenius americanus</i> | Long-billed Curlew | SC (May 2011) | Blue | Y | 1-SC (Jan 2005) | Pasture/Old Field; Cultivated Field; Intertidal Marine; Meadow; Grassland; Mudflats - Intertidal |
| <i>Oreamnos americanus</i> | Mountain Goat | | Blue | | | Cliff; Rock/Sparsely Vegetated Rock; Talus; Tundra; Avalanche Track; Meadow; Grassland; Shrub - Natural; Sagebrush Steppe; Conifer Forest - Mesic (average); Conifer Forest - Dry; Conifer Forest - Moist/wet; Krummholtz; Alpine/Subalpine Meadow; Alpine Grassland |
| <i>Oreoscoptes montanus</i> | Sage Thrasher | E (Nov 2010) | Red | Y | 1-E (Jun 2003) | Sagebrush Steppe |
| <i>Ovis canadensis</i> | Bighorn Sheep | | Blue | | | Cliff; Rock/Sparsely Vegetated Rock; Talus; Tundra; Avalanche Track; Meadow; Grassland; Shrub - Natural; Sagebrush Steppe; Conifer Forest - Mesic (average); Conifer Forest - Dry; Krummholtz; Antelope-brush Steppe; Alpine/Subalpine Meadow; Alpine Grassland |
| <i>Perognathus parvus</i> | Columbia Plateau Pocket Mouse | | Blue | | | Sub-soil; Grassland; Sagebrush Steppe; Antelope-brush Steppe |
| <i>Phrynosoma douglasii</i> | Pygmy Short-horned Lizard | XT (Apr 2007) | Red | | 1-XX (Jun 2003) | Meadow; Grassland; Sagebrush Steppe; Antelope-brush Steppe |
| <i>Picoides albolarvatus</i> | White-headed Woodpecker | E (Nov 2010) | Red | Y | 1-E (Jun 2003) | Riparian Forest; Conifer Forest - Mesic (average); Conifer Forest - Dry; Mixed Forest (deciduous/coniferous mix) |
| <i>Pituophis catenifer deserticola</i> | Gopher Snake, deserticola subspecies | T (Apr 2013) | Blue | | 1-T (Jan 2005) | Riparian Forest; Riparian Shrub; Sub-soil; Rock/Sparsely Vegetated Rock; Talus; Meadow; Grassland; Sagebrush Steppe; Urban/Suburban; Riparian Herbaceous; Antelope-brush Steppe; Gravel Bar; Industrial |
| <i>Plestiodon skiltonianus</i> | Western Skink | SC (Nov 2014) | Blue | | 1-SC (Jan 2005) | Riparian Forest; Riparian Shrub; Stream/River; Sub-soil; Rock/Sparsely Vegetated Rock; Talus; Meadow; Grassland; Sagebrush Steppe; Conifer Forest - Mesic |

| Scientific Name | English Name | COSEWIC | BC List | MBCA | SARA | Habitat Subtype |
|----------------------------------|---|---------------|---------|------|-----------------|---|
| | | | | | | (average); Conifer Forest - Dry; Mixed Forest (deciduous/coniferous mix); Riparian Herbaceous; Antelope-brush Steppe; Gravel Bar |
| <i>Reithrodontomys megalotis</i> | Western Harvest Mouse | SC (Apr 2007) | Blue | | 1-SC (Mar 2009) | Riparian Shrub; Pasture/Old Field; Cultivated Field; Hedgerow; Meadow; Grassland; Sagebrush Steppe; Conifer Forest - Dry; Urban/Suburban; Riparian Herbaceous; Industrial |
| <i>Sorex merriami</i> | Merriam's Shrew | | Red | | | Grassland; Sagebrush Steppe; Conifer Forest - Dry; Mixed Forest (deciduous/coniferous mix); Antelope-brush Steppe |
| <i>Sorex preblei</i> | Preble's Shrew | | Red | | | Marsh; Riparian Shrub; Grassland; Sagebrush Steppe; Antelope-brush Steppe |
| <i>Spea intermontana</i> | Great Basin Spadefoot | T (Apr 2007) | Blue | | 1-T (Jun 2003) | Lake; Meadow; Grassland; Sagebrush Steppe; Conifer Forest - Mesic (average); Conifer Forest - Dry; Pond/Open Water; Antelope-brush Steppe |
| <i>Spizella breweri</i> | Brewer's Sparrow, <i>breweri</i> subspecies | | Red | | | Sagebrush Steppe; Antelope-brush Steppe |
| <i>Sylvilagus nuttallii</i> | Nuttall's Cottontail | SC (Nov 2016) | Blue | | 1-SC (Dec 2007) | Riparian Forest; Riparian Shrub; Pasture/Old Field; Grassland; Sagebrush Steppe; Conifer Forest - Dry; Riparian Herbaceous; Antelope-brush Steppe; Gravel Bar |
| <i>Taxidea taxus</i> | American Badger | E (Nov 2012) | Red | | 1-E (Jun 2003) | Sub-soil; Pasture/Old Field; Talus; Meadow; Grassland; Shrub - Natural; Sagebrush Steppe; Conifer Forest - Mesic (average); Conifer Forest - Dry; Krummholtz; Antelope-brush Steppe; Shrub - Logged; Alpine Grassland |
| <i>Tyto alba</i> | Barn Owl | T (Nov 2010) | Red | | 1-SC (Jun 2003) | Marsh; Riparian Forest; Riparian Shrub; Pasture/Old Field; Cultivated Field; Hedgerow; Meadow; Grassland; Sagebrush Steppe; Mixed Forest (deciduous/coniferous mix); Urban/Suburban; Riparian Herbaceous; Antelope-brush Steppe; Gravel Bar |