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June 17, 2013

Onkar Manhas
O.M. Development Inc.
2232 Wilgress Road,
Nanaimo, B.C. V9S-4N4

Re: Rare Species Survey of 141 Westwood Road, Nanaimo.

Introduction

I, Steve Toth, AScT, R.P.Bio. (Toth and Associates Environmental Services) conducted a survey for rare species on the 1.19ha (2.95 acre) forested property located at 141 Westwood Road on June 6, 2013. The survey involved 2.3km of survey transects (Figure 1). The survey did not identify any rare plant or wildlife species on the property but did document several relatively common visually appealing flowering plant species typical of rock outcrop areas around Nanaimo, as well as many exotic (introduced) plant species. The timing of the survey coincided with the peak time of year for identifying most of the rare plant species found in the Nanaimo area. The survey documented 7 tree species, 22 shrub species and 58 herb species. Introduced exotic plant species included 4 shrub species and 19 herb species. Table 1 provides a list of the plant species identified on the property. Table 2 provides a list of animal species documented during the survey. Representative photographs of introduced and native wildflower species are provided on Plates 1 and 2.

Site Description

The subject property consists of a relatively flat parcel with a very gradual southerly slope. The parcel is forested with mature Douglas-fir and Garry oak trees in a relatively open park-like setting. Soils appear to be shallow over most of the property, with exposed bedrock in some areas. Due to the presence of bedrock at or near the surface, rainwater derived run-off appears to have a tendency to collect in a few low spots on the property. This is reflected in the plant species documented on the property, with some of the species generally associated with vernal seepage sites.

Development Plan + Garry oak tree preservation

The revised (dwg. 11002-7) Preliminary Lot Layout (PLL) for the property includes a 26 Lot subdivision (Figure 1), with Lots arranged in 3 rows and serviced by two roads running east-west from Westwood Road. Deletion of former Lot 20 on the revised plan allows the proposed parklands in the central part of the property to extend across the entire property from east-west and includes preservation of the largest Garry oak groves identified by B. Furneaux (May, 2013) within the parklands. The PLL and Tree Management Plan (TMP) for the property indicate that the design has considered and preserved the areas on the property with the greatest number of

Garry oak trees within the parklands or within oak tree / vegetation removal restrictive covenant areas. Of the 59 Garry oak trees identified on the property 23 will be preserved in parklands, approximately 11 will be located within "no oak tree removal" restrictive covenant areas, and 4 will be located in the "no vegetation removal" covenant area along the southern boundary of the property. The revised PLL indicates that 6 Garry oak trees will be within proposed roads, and 14 will be located outside covenant areas within development lot boundaries / building envelopes.

Figure 1. Revised Preliminary Lot Layout on 2009 orthophoto

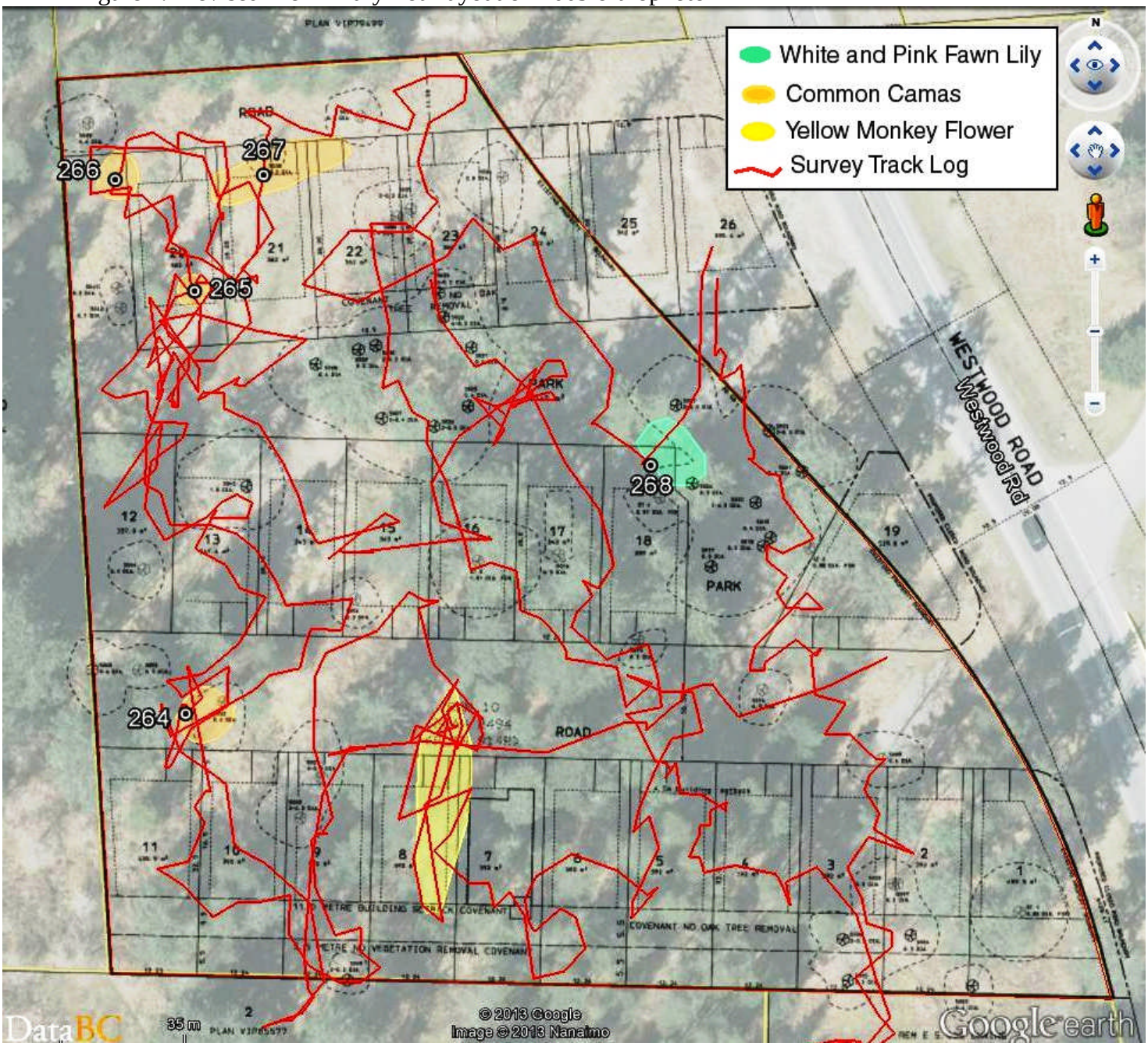


Table 1. Plant species on 141 Westwood Road

Species Name	Scientific Name	Species Name	Scientific Name
Trees			
Arbutus	*Arbutus menziesii*	Garry oak	*Quercus garryana*
Bitter cherry	*Prunus emarginata*	Red alder	*Alnus rubra*
Coastal western redcedar	*Thuja plicata*	Shore pine	*Pinus contorta*
Douglas-fir	*Pseudotsuga menziesii*		
Shrubs			
Baldhip rose	*Rosa gymnocarpa*	Red elderberry	*Sambucus racemosa*
Blackcap	*Rubus leucodermis*	Red huckleberry	*Vaccinium parvifolium*
Common snowberry	*Symphoricarpos albus*	Salal	*Gaultheria shallon*
Spurge laurel	*Daphne laureola* *	Salmonberry	*Rubus spectabilis*
Dull Oregon grape	*Mahonia nervosa*	Saskatoon	*Amelanchier alnifolia*
Hairy honeysuckle	*Lonicera hispidula*	Scotch broom	*Cytisus scoparius* *
Hardhack	*Spiraea douglasii*	Tall Oregon-grape	*Mahonia aquifolium*
Himalayan blackberry	*Rubus discolour* *	Thimbleberry	*Rubus parviflorus*
Nootka rose	*Rosa nutkana*	Trailing blackberry	*Rubus ursinus*
Oceanspray	*Holodiscus discolor*	Western trumpet honeysuckle	*Lonicera ciliosa*
Pacific ninebark	*Physocarpus capitatus*	Common hawthorn	*Crataegus monogyna* *
Herbs			
Alaska oniongrass	*Melica subulata*	Reed canary-grass	*Phalaris arundinacea* *
Blue wildrye	*Elymus glaucus*	Ribwort	*Plantago lanceolata* *
Bladder campion	*Silene vulgaris* *	Scouler's popcornflower	*Plagiobothrys scouleri*
Black medic	*Medicago lupulina* *	Sea blush	*Plectritis congesta*
Bracken fern	*Pteridium aquilinum*	Sheep sorrel	*Rumex acetosella* *
Broad-leaved starflower	*Trientalis latifolia*	Siberian miner's lettuce	*Claytonia sibirica*
Bugle-weed	*Ajuga reptans* *	Small-flowered blue-eyed mary	*Collinsia parviflora*
Cleavers	*Galium aparine*	Small-flowered lotus	*Lotus micranthus*
Common camas	*Camassia quamash*	Small-flowered forget-me-not	*Myosotis laxa*
Common foxglove	*Digitalis purpurea* *	Small-leaved montia	*Montia parvifolia*
Common rush	*Juncus effusus*	Star-flowered false Solomon's-seal	*Smilacina stellata*
Common St. John's-wort	*Hypericum perforatum* *	Stinging nettle	*Urtica dioica*
Common velvet-grass	*Holcus lanatus* *	Striped coralroot	*Corallorhiza striata*
Creeping buttercup	*Ranunculus repens*	Sweet vernalgrass	*Anthoxanthum odoratum* *
Cut-leaved geranium	*Geranium dissectum* *	Sword fern	*Athyrium felix-femina*
Common comfrey	*Symphytum officinale* *	Tiger lily	*Lilium columbianum*
Common dandelion	*Taraxacum officinale* *	Timothy	*Phleum pratense*
Dagger-leaved rush	*Juncus ensifolius*	Twinflower	
Great burdock	*Arctium lappa* *	Vanilla leaf	*Achlys triphylla*
Herb-robert	*Geranium robertianum* *	Wall lettuce	*Lactuca muralis*
Large-leaved avens	*Geum macrophyllum*	Western buttercup	*Ranunculus occidentalis*
Orchard grass	*Dactylis glomerata* *	Western coralroot	*Corallorhiza maculata ssp. mertensiana*
Oxeye daisy	*Leucanthemum vulgara* *	Western dock	*Rumex occidentalis*
Pacific bleeding heart	*Dicentra formosa*	Western trillium	*Trillium ovatum*
Pacific sanicle	*Sanicula crassicaulis*	White fawn lily	*Erythronium oregonum*
Pineapple weed	*Matricaria discoidea*	Yarrow	*Achillea millefolium*
Pink fawn lily	*Erythronium revolutum*	Yellow monkey-flower	*Mimulus guttatus*
Queen's cup	*Clintonia uniflora*	Reed canary-grass	*Phalaris arundinacea* *
Red columbine	*Aquilegia formosa*	Ribwort	*Plantago lanceolata* *

* Denotes introduced species

Table 2. Animal species on 141 Westwood Road

Species	Scientific Name
Mammals	
Black-tailed deer	*Odocoileus hemionus columbianus*
European rabbit	*Oryctolagus coniculus* *
Eastern grey squirrel	*Sciurus carolinensis* *
Birds	
Brown creeper	*Certhia familiaris*
Northwestern crow	*Corvus caurinus*
Pacific slope flycatcher	*Empidonax difficilis*
Dark-eyed junco	*Junco hyemalis*
Chestnut-backed chickadee	*Parus rufescens*
California quail	*Callipepla californica* *
European Starling	*Sturnus vulgaris* *
American robin	*Turdus migratorius*
Spottted towhee	*Pipilo erythropthalmus*
Rufous hummingbird	*Selaphorus rufus*
Red-breasted nuthatch	*Sitta canadensis*
Red-breasted sapsucker	*Sphyrapicus ruber*

* Denotes introduced species

Discussion

The revised PLL provides building envelopes and driveways, allowing more accurate assessment of the proposed development's impacts on Garry oak trees on the property and tailoring of measures to preserve Garry oak ecosystems on the property. It is likely that the majority of the areas containing common camas will be lost due to development. As common camas originates from a bulb-like corm, potentially the common camas areas could be salvaged by scraping the top-soils from the areas identified on Figure 1 using a front-end loader or back-hoe. This top-soil could then be spread within the parklands. However, there is no guarantee that this salvage would be successful, and while the deadly poisonous meadow death-camas (*Zygadenus venenosus*) was not documented on the property it often grows in association with common camas. The area of yellow monkey-flower identified on Figure 1 is associated with a seasonally wetted area. As the hydrology and surface run-off patterns will undoubtedly change as a result of development of the property, there is little reasonable potential for the successful salvage or preservation of this plant community unless similar habitat is re-created elsewhere on the property. The area containing the majority of fawn lilies on the property will be preserved within the proposed parklands.

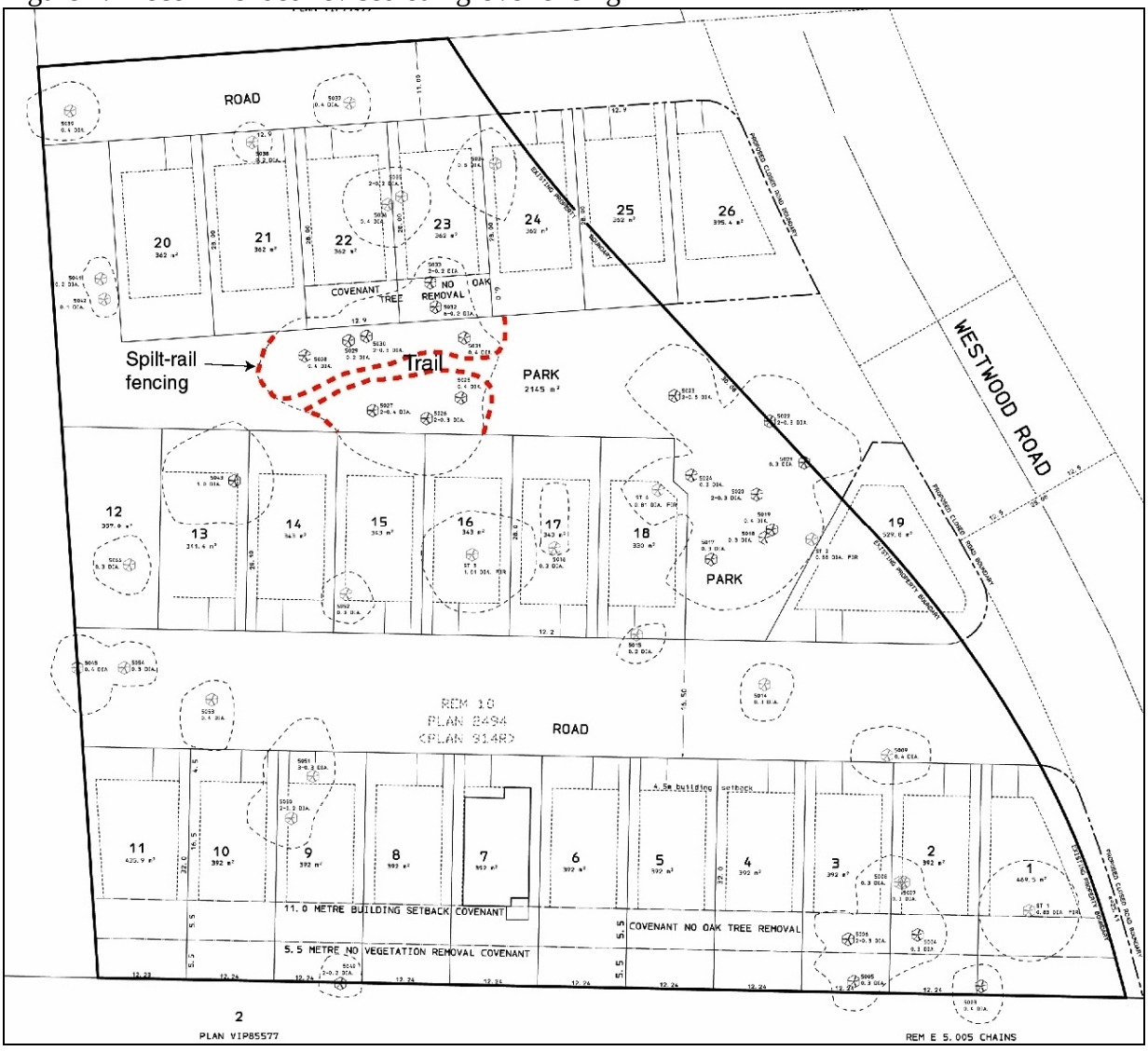
There is currently no legislation in Canada that protects endangered plant and animal species or ecological communities on private lands. The Federal *Species at Risk Act* protects species listed on Schedule 1 of the *Act* only on lands under Federal jurisdiction. The province does not provide specific legislation for the protection of endangered species or ecosystems in B.C., except as provided under the provincial *Wildlife Act*, and the *Forest and Range Practices Act*. Currently, the only meaningful protection for endangered species and ecosystems in urban / sub-urban areas of B.C. that we are aware of are the protection provided by Local Government bylaws.

The revised PLL provides an increased area for parklands and preservation of Garry oak trees in the central part of the property over the previous PLL. Prior to land development activities the

boundaries of the proposed parklands will be fenced in order to ensure that development of the property does not damage areas intended for preservation. Additionally temporary protective fencing will be installed around the drip line of the Garry oak trees overhanging on to lots 15, 16, 18, 22 and 23. The Garry oak trees within the "no oak tree removal" covenant areas in the rear of Lots 2, 3; and 24 will be encircled with temporary hi-vis fencing. The trees within the building envelopes or front and side yard setbacks on Lots 2, 9,12, 13, 15, 16 , 17, 18, 22, 23, 24 and 25 cannot be retained.

In order to protect not only the Garry oak trees, but the Garry oak seedlings and shrub and herb layers (i.e. wildflowers) associated with the Garry oaks low split-rail fencing will be installed around the drip-line of the outermost Garry oak trees within the oak groves in the parklands. The revised PLL shows a surveyed dashed line around the drip-lines depicting the fencing. Fencing of the central Garry oak grove in the parklands results in two sections of the park being isolated, therefore we have revised the fencing location to allow a trail access through the parklands from east to west (Figure 2).

Figure 2. Recommended revised oak grove fencing



The development will result in the removal of many of the mature Douglas-fir trees on the property which currently dominate the forest canopy. The increased sunlight resulting from removal of these trees will likely produce a significant growth response from the Garry oaks and suppressed sub-canopy vegetation.

The City of Nanaimo has indicated that, as much of the proposed park area is disturbed, following 3rd reading and prior to adoption of the rezoning application a restoration plan will be required for the impacted park areas. The restoration plan should include details regarding the relocation of native materials (i.e. common camas) to the park area as suggested within this report. As part of the restoration plan the Biologist will need to clearly identify the most highly impacted site within the parkland where soil can be deposited with the least impact to existing native vegetation. The biologist must also explain what will be done to prepare the soil to minimize invasive species spread onsite. As the restoration requirements were not known at the time of my original site assessment, further field assessment will be required to fulfill the restoration plan requirements.

The City of Nanaimo has indicated that replanting of Significant Trees will be required. The City's Tree Protection Bylaw currently requires that where an applicant proposes to remove one or more significant trees, the person shall replant the parcel of land with trees of the same species or equivalent. I recommend that replacement tree planting occur within the areas identified within the restoration plan for the park area and / or the proposed no vegetation removal covenant area.

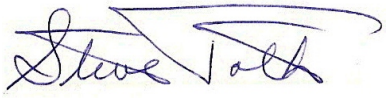
There are a significant number of introduced exotic plant species on the property including two that I have only recently documented in the Nanaimo area (i.e. common comfrey, bugle-weed). While it would likely be impossible to permanently eradicate all of the invasive plant species on the property, attempts should be made during development of the property to eliminate as many of the invasive plants as possible, without causing undue harm to native species within areas intended for preservation.

I recommend that as part of a long term Vegetation Management Plan for control of invasive plant species on the property that each year a contractor be hired or work party organized to conduct invasive species removal within the parklands and vegetation covenant areas. In order to foster a sense of stewardship neighborhood residents could be invited to partake in vegetation management and habitat restoration activities. The City of Nanaimo's Invasive Plants Booklet (http://www.nanaimo.ca/assets/Departments/Parks~Rec~Culture/Publications~and~Forms/invasive_plants.pdf) provides excellent information on the invasive plant species present in the Nanaimo area and techniques for treatment.

The intent of the proposed subdivision layout was to preserve and protect to the two most significant Garry oak grove areas on the property within parkland dedication and to protect the undisturbed portion of the property along the southerly boundary by restrictive covenant. It is my opinion that the proposed development plan has achieved these goals.

Please contact us if you require any additional information.

Sincerely,
Steve Toth, AScT, R.P.Bio.



Toth and Associates Environmental Services

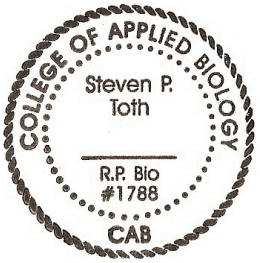
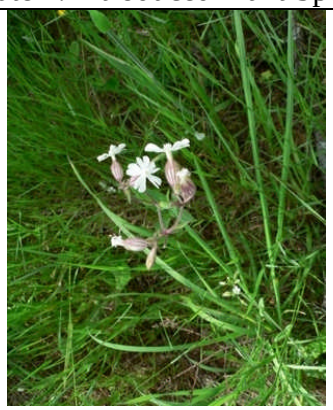


Plate 1. Introduced Plant Species


Bladder Campion


Bugle-weed


Common Foxglove


Common Comfrey


Cut-leaved Geranium

Plate 2. Native Plant Species


Common Camas


Scouler's Popcornflower


Tiger Lily


Yellow Monkey-flower


Sea Blush