Environmental Development Permit Application

May 3, 2022

Jim Bailey
Director, Planning & Development Services
District of West Vancouver
750 – 17th St.
West Vancouver, B.C.
V7V 3T3

Re: Daffodil Lane Development Subdivision (36 Homes) – Updated Environmental Impact Assessment Report (Rev. 02)

INTRODUCTION

This letter report updates the previously approved development schemes, submitted October 2021, June 2021, August 2017, November 15, 2022, and the original Environmental Assessment report of February 2008. Revisions since the November 15, 2022 report include recalculation of the habitat balance based on DWV DRC comments and revision of the planting plan to remove coniferous species based on DWV DRC comments, which is reflected in the Habitat Offsetting Plan values and attached Figure 1 and Figure 3.

Eagle Harbour Ventures Ltd. (EHV) is proposing a 36-home subdivision in the lower Eagle Harbour area of West Vancouver, bounded on the southwest by Daffodil Drive and on the northeast by the Rail tracks. The lower Eagle Harbour area of West Vancouver is situated between Marine Drive and Highway 1, approximately 3 km southeast of Horseshoe Bay. The site is mostly vegetated and contains two access roads, a half gravel/paved road from Daffodil Drive and a second paved road off Westport Road that accesses a home off of the subject property to the north. The site is moderately sloped upward to the northeast towards the rail right-of-way.

Two main environmental features were identified on site: a 320m^2 vegetated wetland located on the east side of the private gravel drive approximately 30 m north of its intersection with Daffodil Drive, and a non-fish bearing seasonal tributary to Eagle Creek that extends north and then east, following the private gravel drive that originates at the toe of the CN rail ballast.

The development is located in the Coastal Western Hemlock Very Dry Maritime (CWHxm1), boarded by Coastal Western Hemlock Dry Maritime, biogeoclimatic subzone. The wetland is located at the toe of the slope and contained upslope of the gravel road embankment and belongs to the Ws54, “Western red cedar-Western Hemlock-Skunk cabbage” site association described by MacKenzie and Moran (2004) and other transitional or upland ecosystems. The canopy consists of *Thuja plicata*, *Tsuga heterophylla* and *Pseudotsuga menziesii*. The wetland

area contains dense amount quantities of *Lysichiton americanus* with *Rubus spectabilis* the dominant surrounding species. Ivy species and Himalayan blackberry were also observed around the periphery of the wetland.

During the June 2021 site visit a thorough investigation of the wetland was conducted to locate amphibians, hatchlings, or egg masses. The surface water level ranged from 0 to 20 cm in most areas and appeared stagnant. There is no surface connection to Eagle Creek or the adjacent tributary, and therefore the likelihood of fish presence is negligible. The surrounding forest habitat and extensive *Lysichiton americanus* cover indicate the potential for the wetland to support western chorus frog (*Pseudacris triseriata*). Although northern red-legged frog (*Rana aurora aurora*) has been observed within 2 km of the wetland they prefer to spawn in water with depths ranging from 30 to 500 cm as they are very sensitive to thermal extremes. The presence of northern red-legged frog and chorus frog cannot be completely dismissed but no amphibian, hatchlings or egg mass remnants were identified during the site visit. It should be noted that frog species of eggs would have likely hatched prior to June.

The unnamed watercourse that flows from the CN rail ballast at the upper east end of the site, continues downslope to the western edge of the property, then flows south adjacent to the gravel driveway. The watercourse continues south through a 300mm culvert under Daffodil Drive, emerges along the east side of the property under a dense laurel hedge and crosses Daffodil Drive to the southeast. The channel is open for 2 meters before entering a 450mm culvert that flows southwest to Eagle Creek. The existing channel is small (0.2 – 0.4m wide), maintains seasonal flow and fines dominate the substrate. Riparian conditions consist of primarily invasive species, with sparse native trees/shrubs throughout its length along the driveway. Fish access into the channel is unlikely due to the laminar flow and low flow conditions through the 450mm culvert from Eagle Creek.

A species at risk assessment was conducted as part of the initial environmental assessment, and no species were identified utilizing the habitats on the project site.

HABITAT OFFSETTING PLAN

A habitat offsetting and restoration plan is presented to offset instream, riparian and wetland impacts associated with the construction of the subdivision's home locations, access road and proposed watercourse crossings.

Presently the unnamed watercourse is non-fish bearing and has a functional riparian directly below the rail tracks and sparse riparian area dominated by invasive species, on the right bank along the gravel access road. The remainder of the stream flows within a grassed riparian or is squeezed between roads and property lines/fences, and is heavily impacted by invasive species.

The objective of the offsetting plan is to provide a greater overall wetted area, increased productivity through the introduction of cobble/gravel substrate, potential overwintering habitat

during periods of higher flows, an enhanced riparian zone with the removal of invasives and planting of the old gravel access road, and to achieve fish accessibility into the tributary by improving culvert crossings under Daffodil Drive from Eagle Creek (Design by Creus Engineering).

SEI recalculated the habitat balance based on comments provided by the DWV DRC. The proposed development has the following habitat balance associated with it:

Table 1. Habitat Balance - Daffodil Lane Development

Habitat Losses	Area (m^2)	Habitat Gains	Area (m^2)
Riparian Habitat	**1,123 (recalculated from 810 in REV01)**	Restoration of existing gravel road	510
Wetland Habitat	177	Instream complexing & restoration	92
Instream Habitat	31	Wetland expansion	186
		Fish accessible culvert upgrades (potential fish accessible area)	210
		Riparian improvements and invasive species removal	1,369
Losses	**1,331 (from 1018 in REV01)**	Gains	2,367
		Net Habitat Gain	**1,036 (from 1,349 in REV01)**

The above habitat balance plan shows a net habitat gain of **1,034 m^2**, achieving a no net loss of fish habitat with the proposed 36 home development and offsetting plan.

CONSTRUCTION ENVIRONMENTAL MITIGATION MEASURES

Tree Protection

As per DWV Tree Bylaw No. 4892, 2016, tree protection fencing, and signage must be installed as specified below and maintained to prevent damage to trees or their root systems during construction activities. Fencing should be constructed around all protected trees in the Subject Property, and if practicable located beyond their Critical Root Zones (CRZs). CRZs, or Protection

Zones, as per Schedule A – Tree Protection Specifications of DWV's Tree Bylaw, indicates a minimum fence distance from the tree of six times DBH. Any ground disturbing work must take place outside of the CRZ of protected trees.

General Environmental Mitigation Measures

At a minimum the following general environmental mitigation measures shall be implemented during demolition and construction:

- street cleaning will be conducted if any sediment is tracked out on to paved surfaces;
- imported material and topsoil will be free of contamination and invasive plant matter;
- a spill kit will be kept on site throughout the duration of the works;
- machinery will be inspected daily to identify any leaks and wearing parts before they fail;
- leaking equipment or wearing parts will be repaired/replaced before continuing service;
- refuelling of equipment will occur as far away from catch basins and watercourses, as practical;
- during structural construction, the management of concrete and cementitious materials is critical to ensure it does not enter the watercourse or municipal stormwater system. All concrete works will be covered once poured for a minimum of 48 hrs;
- BC Water quality standards must be met for discharge to municipal storm system or adjacent surface water connections;
- equipment or wearing parts will be repaired/replaced before continuing service; and
- Site material stockpiling should be covered with plastic or other suitable erosion control methods.

CONCLUSIONS

Upon review of habitat impacts associated with proposed redevelopment of the Daffodil Lane development lands, West Vancouver, BC, it is the opinion of SEI that with construction mitigation implemented as recommended, the proposed development meets municipal bylaw requirements under the District of West Vancouver environmental development bylaws. The offsetting plan as proposed with approval under the *Water Sustainability Act* and a request for review (RFR) through the *Federal Fisheries Act* will adequately offset the proposed impacts associated with the development scheme. Please contact the undersigned if you require any additional information or clarification of the above.

ENDORSEMENT

Sartori Environmental Inc.

Revision Authored by:

The undersigned certifies the work described herein fulfills standards acceptable of a Professional Biologist.

[Digital Copy, Original Signed]
James Carmichael, R.P.Bio.

Project Biologist

(3) Attachments:

Figure 1. Daffodil Drive – Habitat Impact Plan – REV02 (Sartori; May 3, 2023)

Figure 2. Daffodil Drive – Habitat Gains and Offsetting Plan – REV01 (Sartori; November 15, 2022)

Figure 3. Daffodil Drive – Channel Detail and Planting Plan – REV02 (Sartori; May 3, 2023)

SCALE 1:750

5 metre Setback

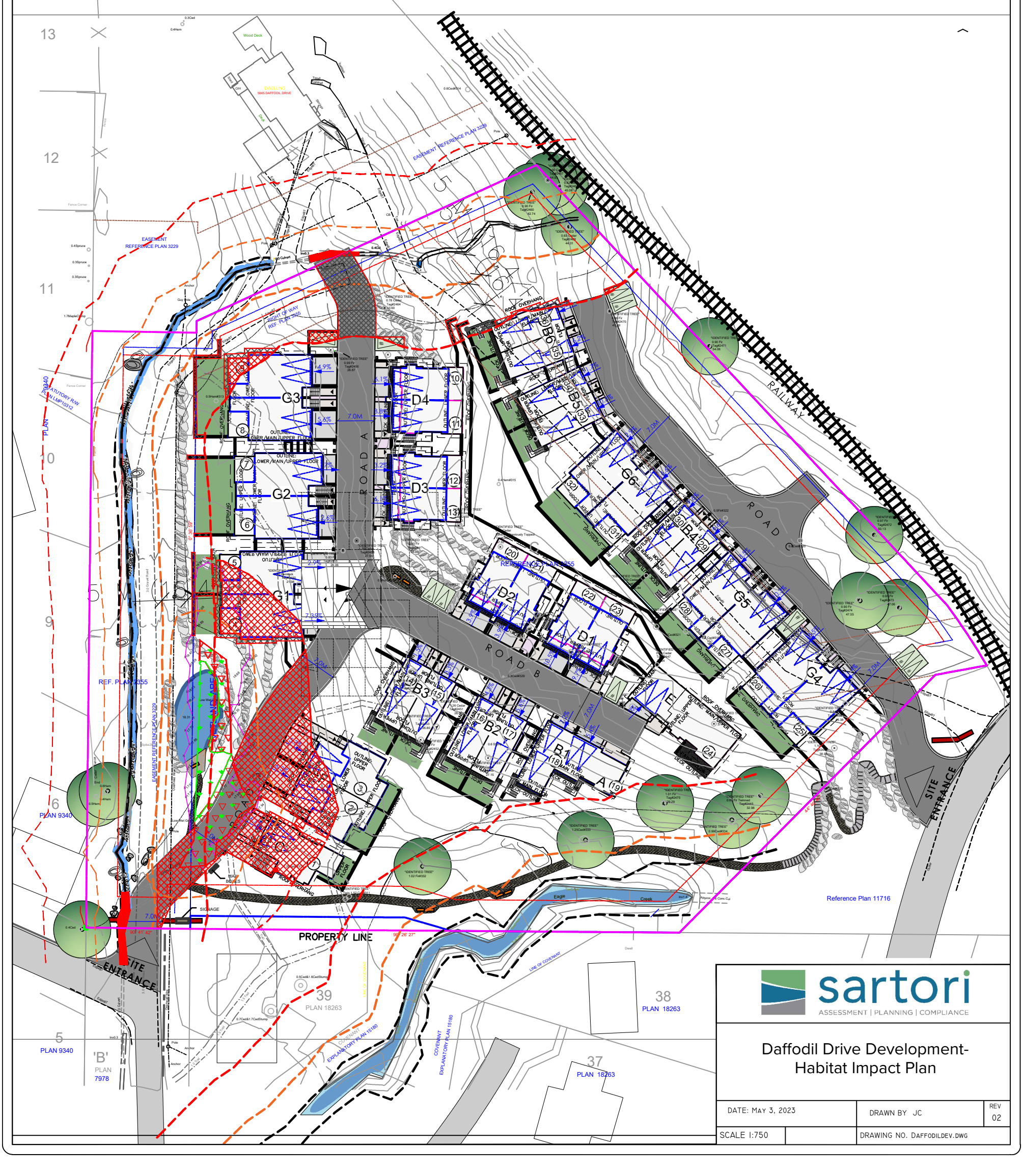
15 metre Setback

Riparian Habitat Impacts
(Wetland and Unnamed Watercourse)

Wetland Habitat Impacts

Instream Habitat Impacts
(Unnamed Watercourse)

	Habitat Impacts
Riparian -	1,123 m^2
Wetland -	177 m^2
Instream -	31 m^2
	1,331 m^2



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Daffodil Drive Development- Habitat Impact Plan

DATE: MAY 3, 2023	DRAWN BY JC	REV 02
SCALE 1:750		DRAWING NO. DAFFODILDEV.DWG

5 metre Setback

15 metre Setback

Decommission existing road and revegetate

Wetland expansion

Instream complexing and restoration

Riparian improvements

Habitat Gains

Restoration of existing road -	510 m^2
Instream complexing & restoration -	92 m^2
Wetland expansion -	186 m^2
Riparian improvements & invasive removal -	1369 m^2
Fish accessible culvert upgrades (potential fish accessible area) -	210 m^2
	2,367 m^2

Install Culvert

Inline Rearing Ponds

Improved Substrate Installation

Replace with a 450 mm Fish Accessible Culvert and Extend Under Proposed Road

Replace with a 450 mm Fish Accessible Culvert

Replace with a 600 mm Fish Accessible Culvert

ROAD A

ROAD B

ROAD C

RAILWAY

SITE ENTRANCE

DAFFODIL LN

Reference Plan 11716

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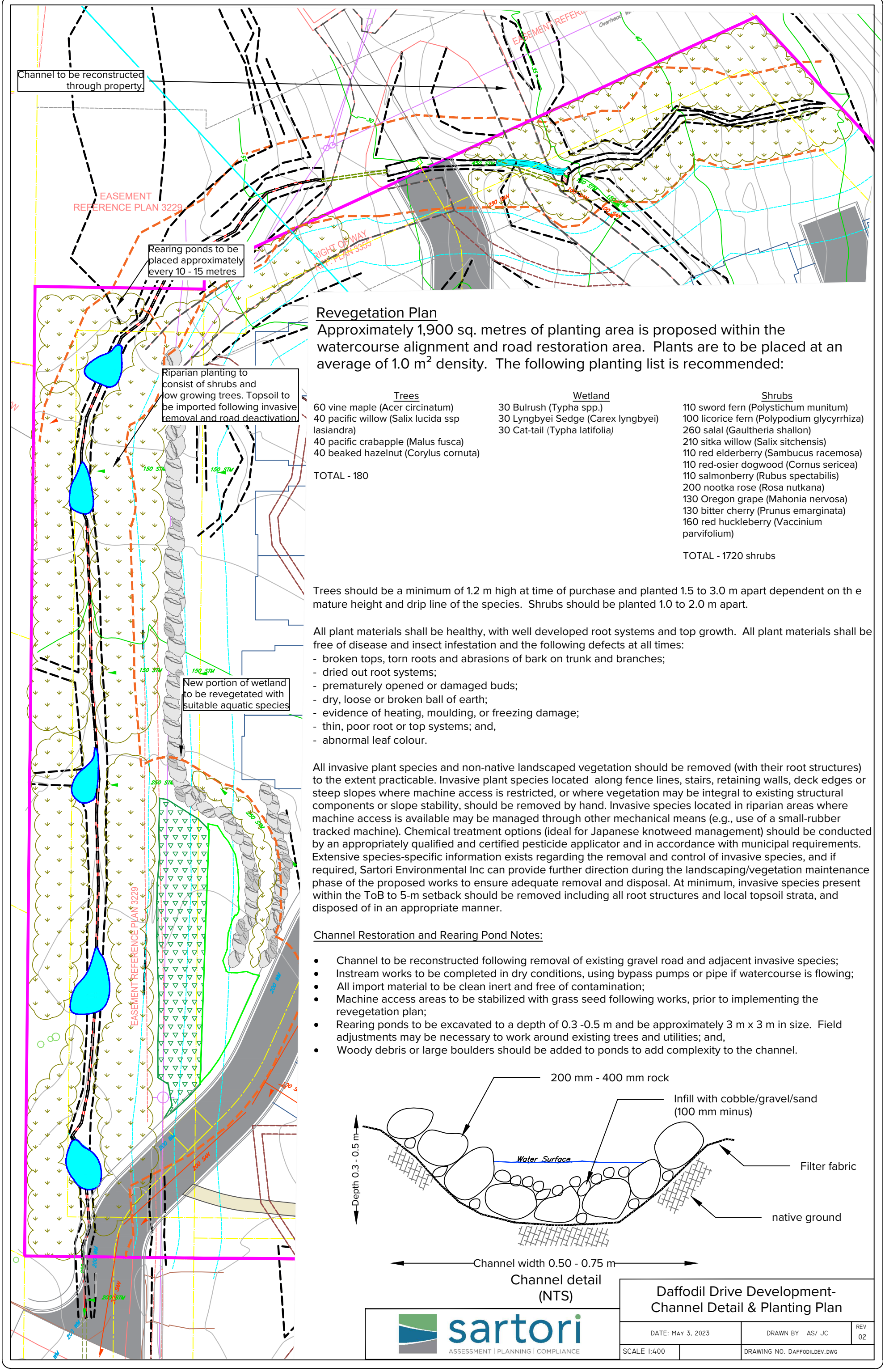
Daffodil Drive Development- Habitat Gains & Offsetting Plan

DATE: November 15, 2022	DRAWN BY AS/ AM/ JC	REV 02
SCALE 1:750		DRAWING NO. DAFFODILDEV.DWG



Revegetation Plan

Approximately 1,900 sq. metres of planting area is proposed within the watercourse alignment and road restoration area. Plants are to be placed at an average of 1.0 m^2 density. The following planting list is recommended:

Trees
60 vine maple (Acer circinatum)
40 pacific willow (Salix lucida ssp lasiandra)
40 pacific crabapple (Malus fusca)
40 beaked hazelnut (Corylus cornuta)

TOTAL - 180

Wetland
30 Bulrush (Typha spp.)
30 Lyngbyei Sedge (Carex lyngbyei)
30 Cat-tail (Typha latifolia)

Shrubs
110 sword fern (Polystichum munitum)
100 licorice fern (Polypodium glycyrrhiza)
260 salal (Gaultheria shallon)
210 sitka willow (Salix sitchensis)
110 red elderberry (Sambucus racemosa)
110 red-osier dogwood (Cornus sericea)
110 salmonberry (Rubus spectabilis)
200 nootka rose (Rosa nutkana)
130 Oregon grape (Mahonia nervosa)
130 bitter cherry (Prunus emarginata)
160 red huckleberry (Vaccinium parvifolium)

TOTAL - 1720 shrubs

Trees should be a minimum of 1.2 m high at time of purchase and planted 1.5 to 3.0 m apart dependent on th e mature height and drip line of the species. Shrubs should be planted 1.0 to 2.0 m apart.

All plant materials shall be healthy, with well developed root systems and top growth. All plant materials shall be free of disease and insect infestation and the following defects at all times:
- broken tops, torn roots and abrasions of bark on trunk and branches;
- dried out root systems;
- prematurely opened or damaged buds;
- dry, loose or broken ball of earth;
- evidence of heating, moulding, or freezing damage;
- thin, poor root or top systems; and,
- abnormal leaf colour.

All invasive plant species and non-native landscaped vegetation should be removed (with their root structures) to the extent practicable. Invasive plant species located along fence lines, stairs, retaining walls, deck edges or steep slopes where machine access is restricted, or where vegetation may be integral to existing structural components or slope stability, should be removed by hand. Invasive species located in riparian areas where machine access is available may be managed through other mechanical means (e.g., use of a small-rubber tracked machine). Chemical treatment options (ideal for Japanese knotweed management) should be conducted by an appropriately qualified and certified pesticide applicator and in accordance with municipal requirements. Extensive species-specific information exists regarding the removal and control of invasive species, and if required, Sartori Environmental Inc can provide further direction during the landscaping/vegetation maintenance phase of the proposed works to ensure adequate removal and disposal. At minimum, invasive species present within the ToB to 5-m setback should be removed including all root structures and local topsoil strata, and disposed of in an appropriate manner.

Channel Restoration and Rearing Pond Notes:

- Channel to be reconstructed following removal of existing gravel road and adjacent invasive species;
- Instream works to be completed in dry conditions, using bypass pumps or pipe if watercourse is flowing;
- All import material to be clean inert and free of contamination;
- Machine access areas to be stabilized with grass seed following works, prior to implementing the revegetation plan;
- Rearing ponds to be excavated to a depth of 0.3 -0.5 m and be approximately 3 m x 3 m in size. Field adjustments may be necessary to work around existing trees and utilities; and,
- Woody debris or large boulders should be added to ponds to add complexity to the channel.

Channel detail
(NTS)

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Daffodil Drive Development- Channel Detail & Planting Plan

DATE: May 3, 2023	DRAWN BY AS/ JC	REV 02
SCALE 1:400		DRAWING NO. DAFFODILDEV.DWG