

KingsView at Maple Bay Vegetation Management Plan Strategy

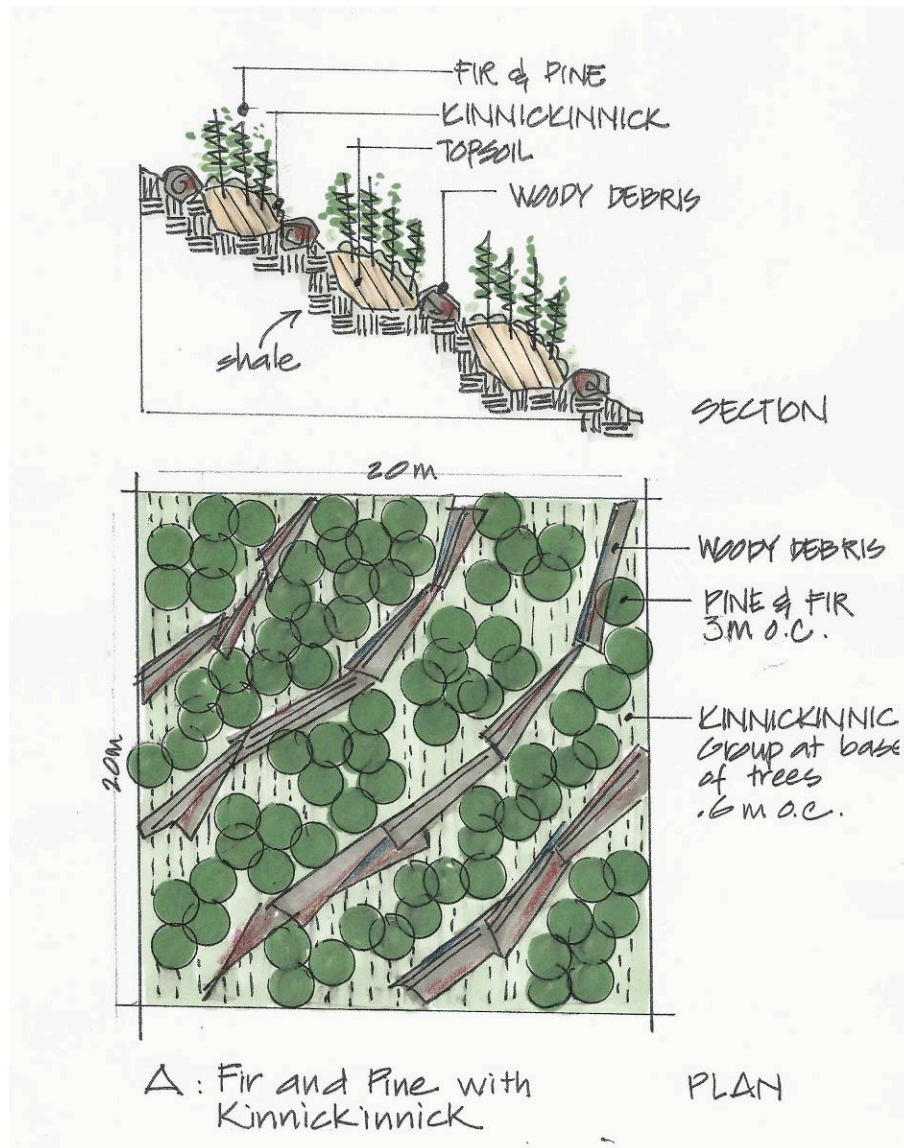


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TERMINOLOGY & DEFINITIONS

Term	Project Context
Established	A planted area is considered successful when the majority of the plants have survived (established) after year 1; typically a 2 year maintenance period with success measured at the end of that time. Percent of survival will vary based on level of effort of planting. Definitions to be determined and approved by MNC as part of the detailed VMP for each phase of the development.
Free to Grow	The stand is healthy and its further growth to maturity will not be affected by competition from other plants or trees.
Long-term	>10-30 years
Plant Assemblage - Module	Based on site conditions, a series of appropriate plant assemblages (a group of plant species) has been proposed. A variety of modules is proposed in order to provide species suitable to different growing conditions such as dry versus wet sites; as well as for promoting views (e.g., shrubs instead of trees where visual quality high).
Remediated	Areas that have either reached a free to grow condition (in the case of re-forested areas), or where vegetation has become established. These areas would be considered suitable to the Municipality for transfer.
Remediation	The process of returning the site to a visually pleasing condition for use by the general public and future residents. The focus is on removal of Scotch broom and establishment of non-invasive, preferably native vegetation.
Re-vegetation	The process of planting vegetation where it is not growing at this time, or adding to areas where the current vegetation is not thriving.
Short-term	<5 years

1. INTRODUCTION

The following Vegetation Management Plan Strategy (VMPS) is based on the site topography, existing conditions, natural features, connectivity, and proposed land use designation within the Comprehensive Development Plan (CDP). The VMPS is integrated with environmental, storm water management, and of greatest relevance, the Parks and Open Space Strategy (the focus of vegetation remediation priorities).

The following strategy has been designed in order to guide the significant site remediation efforts required for the property; in the immediate future (1 to 3-year plan on approval of the application), the short-term (5-year plan), and for long term, on-going site remediation (20+ years).

This VMPS will ensure that the site remains in a reasonably managed state for the duration of its development timeframe. The intention is for the MNC to accept the lands (area) shown as proposed parks and open space dedication (refer to the Parks and Open Space Strategy of the CDP). Therefore, the CDP commits to site remediation so that the lands will be in suitable condition at the time of transfer to the MNC.

These lands will continue to be owned and managed by the proponent until such time that they are dedicated with individual phases. This approach serves two key purposes:

- a) It will help to address invasive species management and reduce wildfire risk on the majority of the site; and
- b) Re-establishes vegetation and creates lands, which, upon dedication to the Municipality in years ahead, will contain a well-established and maturing forest and vegetation cover.

1.1. GOALS

The overall goal of the VMPS is to remediate the open space areas of the KingsView at Maple Bay development. Key objectives identified include:

- a) The long term control and management of Scotch broom from KingsView.
- b) Remediate and reforest the proposed parks and open space site (the areas anticipated to be provided to the Municipality).
- c) The reduction of the fire hazard (to address the Scotch broom infestation of the site with a focus on the fire interface with Municipality forest lands).
- d) Maximize the control and reduction of nutrient run-off, and soil erosion from the site.

1.2. STRATEGY

The main strategy to achieve the above goals and objectives includes:

- Completion of detailed, phase-level management plans (to be approved by the MNC prior to the start of construction of any phase of the project).
- Prior to construction of stormwater controls, including detention ponds and any raingarden ditching, a sediment and nutrient control plan specific to the site will be prepared for approval by MNC.
- Excavation of the two detention ponds proposed for the north half of the property will be prepared concurrently, incorporating the erosion control strategies identified above.
- Building scheme covenants will be placed on the subdivided lands, informing home contractors and future owners of the importance of erosion control and nutrient overload.
- Prior to marketing the lots, an information/education piece will be prepared for potential homebuyers that describes the local ecosystem, and the importance of Quamichan Lake. It will also include best practices measures relating to planting, stormwater run-off, and on-site infiltration techniques.

Due to the site variation in aspect, topography, drainage and current conditions, remediation plans tailored to each planned phase of the development will take place. These plans will be submitted to the MNC for approval at the permitting stage of each phase development application. Each remediation and revegetation management plan will outline appropriate strategies with input from registered professionals.

2. CURRENT CONDITIONS

As identified on the site conditions plan, broom covers the majority of the site along with some remnant forest cover of second growth Douglas fir and Garry oak woodlands.

In amongst the broom, there are also (see vegetation map and appended photos):

- Small patches of regenerating native vegetation, mostly Douglas fir.
- Isolated native plants, such as Douglas fir, Black Capped Raspberry.
- Bare shale and very steep slopes that indicate continued eroding and preventing any vegetation from establishment.
- Level areas with a sparse cover of grass.
- Existing water channels, gullies and ponds with some associated wetland native revegetation, such as willow, bull rushes, and hardhack.

2.1. MAPPING CURRENT CONDITIONS

One of the essential baseline components for establishing goals and monitoring the success of the ISVMS is mapping the existing conditions. The map of current environmental conditions provides a means to quantify how much of the area is remediated over time. This exercise was completed in June of 2014, as depicted in Figure 1 and photos below, and indicates the following:

- a) The current extent of Scotch broom on the site.
- b) The location of existing native vegetation, specifically Garry oak woodlands and stands of fir and arbutus.
- c) Areas of regenerating fir and other native species.
- d) Soil conditions.
- e) Existing water courses, ponds, and channels.
- f) Adjacent forests.

It is useful to note possible reasons for the small patches of revegetation:

- Proximity to seed sources. The areas of revegetation are close to existing forests.
- The plants are establishing on areas of looser soil.
- On north and west facing, but not eroding, slopes. This would enable the plants to retain more moisture, and be less exposed to the sun during the hot dry summers.
- In the gullies on the southwest corner.

- Small areas where water is collecting.
 - Willow, bullrush, hardhack.
- Species that are regenerating.
 - Douglas fir.
 - Black Capped Raspberry.
 - Ocean spray.

In addition to mapping of site conditions, a site analysis of soil samples was completed to provide additional baseline data. Results from the soil chemistry analysis were considered in developing the strategies/methods most suitable for the site remediation to ensure the highest level of success over the shortest period of time.



Photo 1: Natural fir regeneration (KingsView North)



Photo 2: Black Capped Raspberry regenerating (KingsView South)



Photo 3: Typical landscape of exposed shale and broom



Photo 4: Sparse grass cover (natural regeneration)



Photo 5: Existing water course south of roundabout



Photo 6: Scotch broom throughout the property

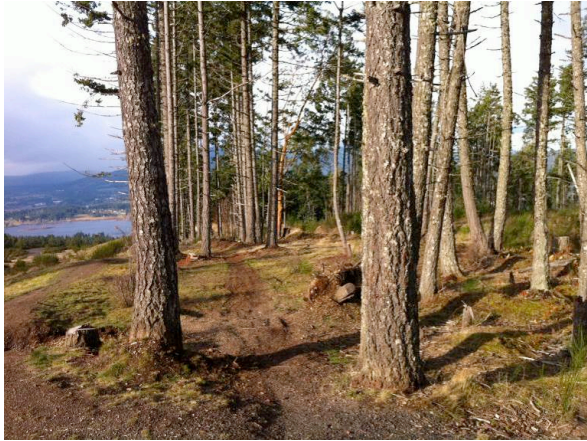


Photo 7: Douglas fir forest (KingsView South)



Photo 8: Shale – predominant parent material

2.2. LIMITING SITE CONDITIONS

There are a number of conditions at the site that are limiting the natural regeneration of native plants on:

- Compaction on the level areas.
- Steep slopes that indicate continued erosion.
- Poor soil structure and fertility.
 - Soil tests show that, in general, the substrate on the site consists of 55-80% particles greater than 2 mm, very low organic matter, nitrogen, potassium and phosphorous.
 - Soil tests of the stripped topsoil consist of 54% particles greater than 2mm with low nitrogen and organic matter.
- Dark substrate. The dark colour of the shale is likely causing extremes in soil temperature that may limit revegetation.
- Limited microclimate conditions. Most of the existing topography is very smooth and lacks varied terrain. Where the terrain is slightly more uneven, moisture can collect in pockets, there is less compaction and some revegetation is taking place.
- Competition from broom. The low fertility and good exposure is an ideal environment for broom. It secretes phytotoxic substances, which prevent other species from colonizing.
- Increased distance from the existing plants and, therefore, seed sources.
- Grazing by rabbits and deer.

3. REMEDIATION METHODS

The focus of the VMPS is to clear out as many of the invasive plants as possible, and allow for replanting activities to work towards remediation of parks and open spaces on the property. This section lays out remediation options that are site specific.

3.1. SITE PREPARATION

- **Grading:** The land grading will consist of modification of the smooth slopes to form “rough and loose” landforms (Polstar, 2013). These landforms have aesthetic value, prevent runoff and retain water, allow formation of microhabitats, and mimic natural landforms.
- **Amend soil:** Soil amendments will be tailored to each site and plant community, and will include fines, organic matter, and fertilizer. Remediate soil according to specific site and plant requirements.
- **Place woody debris:** This provides microhabitats, as well as aids in nutrient cycling.
- **Spread salvaged leaf litter (if available):** This will introduce mycorrhizal fungi into new soil ecosystems.
- **Select plants:** Plants will be selected based on local nitrogen fixing ability and suitability as pioneer species.

3.2. BROOM MANAGEMENT IN PARK TYPE 1

- Minimize soil disturbance. (Broom throws seed up to five metres, waiting for the soil to be disturbed to sprout).
- Remove plants in late spring when the flowers are out, usually May. (The plant is directing its energy into flower and seed production, and is unlikely to have the energy necessary to regenerate).
 - a) Small seedlings (less than a pencil width): Pull by hand when the soil is moist. Note that hand-pulling may encourage broom growth due to the unavoidable soil disturbance, so if the plant does not come out easily, see next method.
 - b) Larger plants: Cut the plant off just below soil level.
- Prevent the plants from going to seed. (In one season, a mature plant can produce up to 3,500 seed pods, each with 5-12 seeds. These seeds sit in the soil, waiting for the opportunity to sprout).
- Remove all cut/pulled broom from the site. (Burning on site is not effective as burning stimulates the broom seed already in the soil from past growing seasons to germinate. Cuttings should be contained in tarps or garbage bags to prevent seed drop along the exit path, and taken to a composting facility with the ability to grind the debris).
- Repeat every growing season for 3 to 5 years. (The seed bank sprouts and also cut plants try to regenerate).

3.3. REMOVAL & CONTROL OF OTHER INVASIVE PLANT SPECIES

In addition to Scotch broom, other invasive plant species have been identified as occurring at the site. A list of other invasive plant species, and how to remove and dispose of them will be provided in the detailed VMP for each planned phase of the development for approval by the MNC.

3.4. REDUCTION OF FIRE HAZARD

Current and future fire reduction measures are of a high priority at the site. In consultation with MNC, a commitment to annual broom control along the fire interface on the southern property boundary adjacent to MNC forestry lands, is and will continue to be maintained.



Photo 9: Firebreak along the southern property boundary, adjacent to Municipality forest lands.

3.5. REVEGETATION: PLANTING

Detailed planting prescriptions (treatments) should take into account the uses of the park areas, and their view potential. The following table outlines a series of suitable vegetation assemblages, their dominant vegetation type, and associated landform and ecological conditions (i.e., where they would be ideally suited within the landscape and conditions of the site). Native species are preferred, but some non-invasive, non-native, drought tolerant species may also be considered.

Depictions of vegetation remediation treatment types "A" to "E" are provided following Table 1. These illustrations provide a cross-section and aerial perspective, along with the predominant species and associated planting densities of each treatment type. None are provided for the existing natural areas, namely the Garry oak woodland, as no treatment other than some broom removal is planned for that area. Traditional parks (Park Type 3) are described in the Parks & Open Space Design Strategy.

Site specific planting plans will be provided with each phase of development.

Table 1: Proposed Vegetation Assemblages for Use on the KingsView Development for Site Remediation

Vegetation Assemblages		Dominant Plant Species	Suggested Plants to Add (nitrogen fixing)	Site Conditions	Long-term Management
A	Douglas Fir & Pine with Kinnickinnick	<ul style="list-style-type: none"> Douglas fir Kinnickinnick 	<ul style="list-style-type: none"> Lupine 	<ul style="list-style-type: none"> Steep (>30%), warm slopes 	<ul style="list-style-type: none"> Self sustaining indigenous plantings Manage for invasives
B	Douglas Fir, Pine & Arbutus with shrubs	<ul style="list-style-type: none"> Douglas fir, Grand fir Arbutus Tall & dull Oregon grape, Ocean spray, Salal, Red huckleberry, Sword fern 	<ul style="list-style-type: none"> Lupine Red alder 	<ul style="list-style-type: none"> Designated sites for re-forestation. This is the dominant type of vegetation assemblage that is naturally taking place at the site. 	<ul style="list-style-type: none"> Self sustaining indigenous plantings Manage for invasives
C	Shrubs only in view corridors	<ul style="list-style-type: none"> Tall Oregon grape Ocean spray Black capped raspberry Salal 		<ul style="list-style-type: none"> Various depending on moisture level & shrub species used. Apply to areas where viewscape & low fire hazard is the priority. 	<ul style="list-style-type: none"> Self sustaining indigenous plantings Manage for invasives
D	Garry oak woodland & meadows	<ul style="list-style-type: none"> Garry oak Meadow seed mix Tall Oregon grape Ocean spray Baldhip rose 	<ul style="list-style-type: none"> Lupine 	<ul style="list-style-type: none"> Well drained sites on shallow soils. Open areas for play & view enjoyment. Some small patches of meadow are present between and amongst the Garry oak. Add more or less trees, depending on views and activity levels of open space. 	<ul style="list-style-type: none"> Self sustaining indigenous plantings Manage for invasives
E	Stormwater channels & ponds	<ul style="list-style-type: none"> Willow Red alder Bullrush Rushes and sedges 	<ul style="list-style-type: none"> Douglas fir Bigleaf maple Lupine Pacific crab apple 	<ul style="list-style-type: none"> Wet & seepage sites. 	<ul style="list-style-type: none"> Self sustaining indigenous plantings Manage for invasives
F	Existing woodlands	<ul style="list-style-type: none"> Existing Garry oak, Douglas fir, Arbutus woodlands 	<ul style="list-style-type: none"> None - some broom removal required 	<ul style="list-style-type: none"> One area representing this vegetation type (ecosystem) is present at the North end of the property. 	<ul style="list-style-type: none"> Self sustaining indigenous plantings Manage for invasives
G	North Park	<ul style="list-style-type: none"> Open areas & scattered drought resistant native trees 	<ul style="list-style-type: none"> Native drought resistant grass seed 	<ul style="list-style-type: none"> Level to near level areas of Park Type 3 North. 	<ul style="list-style-type: none"> Self sustaining indigenous plantings Manage for invasives

Figure 2: Proposed Vegetation Remediation Plan Assemblages (modules) (Types A & B)

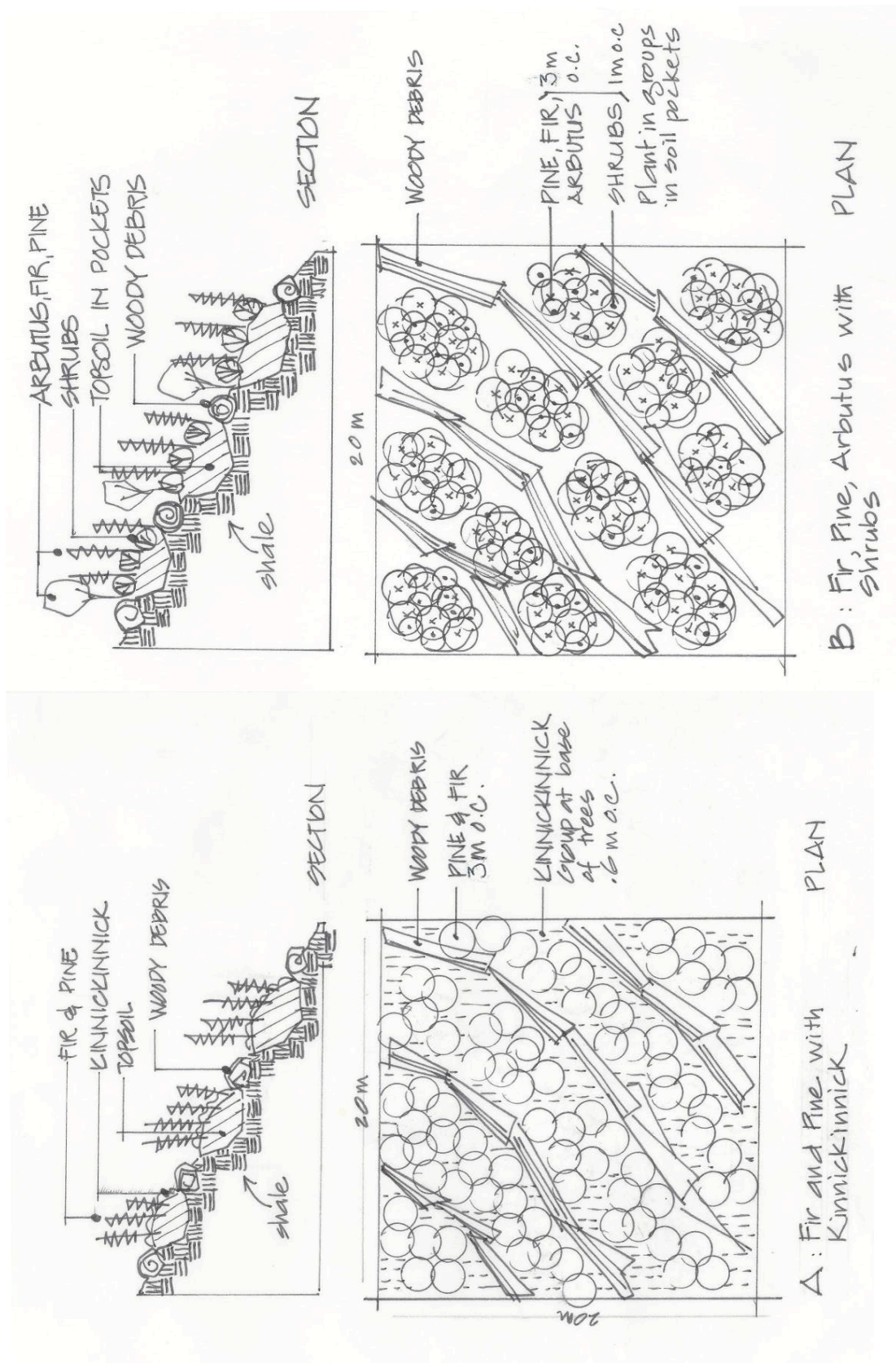


Figure 3: Proposed Vegetation Remediation Plan Assemblages (modules) (Types C & D)

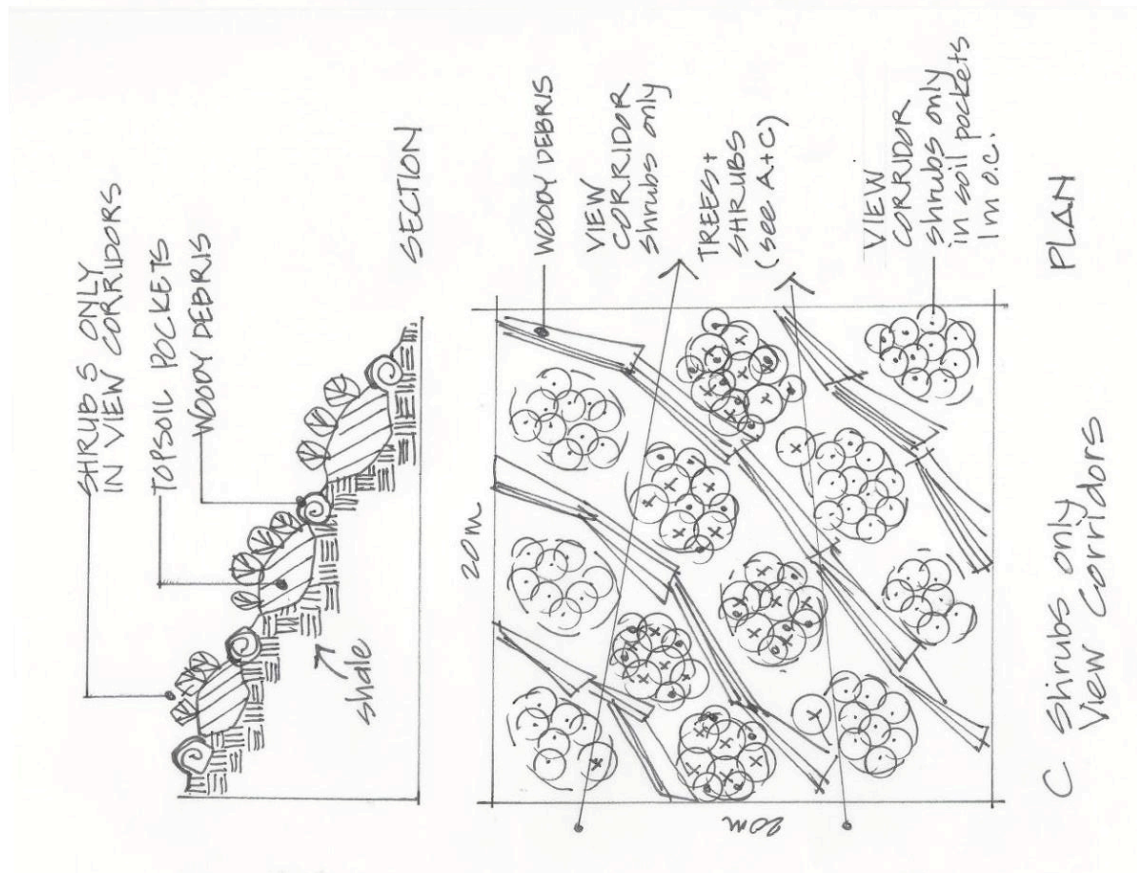
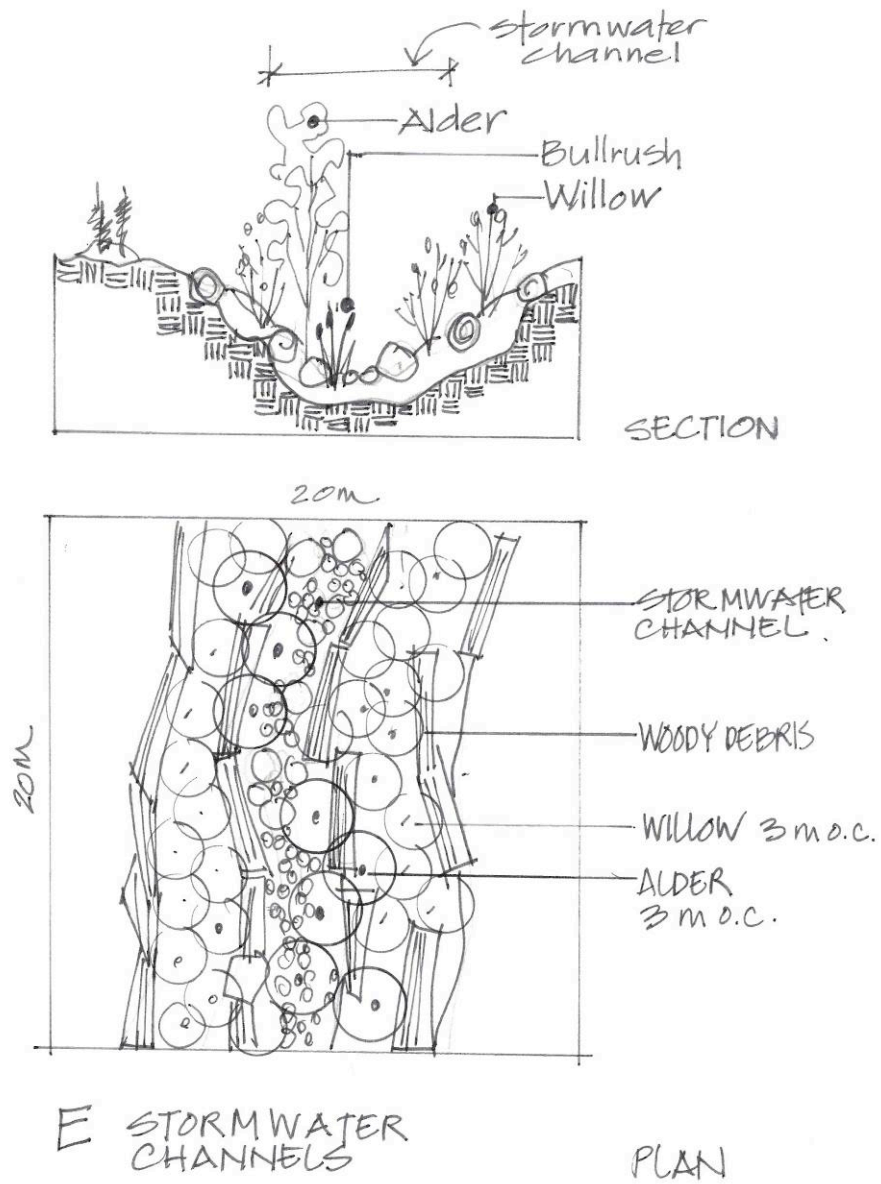


Figure 4: Proposed Vegetation Remediation Assemblages (Modules) (Type E)



A detailed list of the possible plants appropriate for each scenario will include plants selected from the Master Plant list to be provided within Phase-specific management plans (Table 2). The Master Plant list is not definitive, additional species may be considered. It is proposed that the re-vegetation of the site should give priority to native plants. Please refer to Madrone Environmental Services biophysical assessment letter on the ecological benefits of using native plant and grass species.

Table 2: Master Plant List for Remediation at KingsView Development

Botanical Name	Common Name	Habitat Requirements
EVERGREEN TREES		
<i>Abies grandis</i>	Grand Fir	Dry/Sun
<i>Arbutus menziesii</i>	Arbutus	Dry/Sun
<i>Pseudotsuga menziesii</i>	Douglas Fir	Dry/Sun
<i>Taxus brevifolia</i>	Western Yew	Dry/shade
<i>Thuja plicata</i>	Western Red Cedar	moist
<i>Tsuga heterophylla</i>	Western Hemlock	moist
DECIDUOUS TREES		
<i>Acer glabrum</i>	Douglas Maple	moist
<i>Acer macrophyllum</i>	Big-leaf Maple	moist
<i>Alnus rubra</i>	Red Alder	Moist - pioneer
<i>Cornus nuttallii</i>	Pacific Dogwood	Moist/Shade
<i>Corylus cornuta</i>	Beaked Hazelnut	Dry/Sun
<i>Crataegus douglasii</i>	Douglas Hawthorn	Moist
<i>Malus fusca</i>	Pacific Crabapple	Moist
<i>Prunus emarginata</i>	Bitter Cherry	Moist
<i>Quercus garryana</i>	Garry Oak	Dry
<i>Salix lucida</i>	Pacific Willow	Wet
EVERGREEN SHRUBS		
<i>Gaultheria shallon</i>	Salal	Dry/Shade
<i>Mahonia aquifolium</i>	Tall Oregon Grape	Dry/Sun
<i>Mahonia nervosa</i>	Dull Oregon Grape	Dry/Shade
<i>Vaccinium ovatum</i>	Evergreen Huckleberry	Dry/Shade

Botanical Name	Common Name	Habitat Requirements
DECIDUOUS SHRUBS		
Amelanchier alnifolia	Saskatoon	Dry/Sun
Cornus sericea	Red Osier Dogwood	Wet/Sun/Shade
Holodiscus discolor	Ocean Spray	Dry/Sun
Oemleria cerasiformis	Indian Plum	Dry/moist/sun/shade
Philadelphus lewisii 'Gordianus'	Mock Orange (Coastal)	Dry/Sun
Ribes divaricatum	Coastal Black Gooseberry	Moist/dry
Ribes sanguineum	Red Flowering Currant	Dry/Sun
Rosa gymnocarpa	Baldhip Rose	Dry/shade
Rosa nutkana	Nootka Rose	Dry sun
Rosa pisocarpa	Clustered Wild Rose	Dry/Sun/Shade
Rubus leucodermis	Black-cap Raspberry	Dry/Sun - pioneer
Rubus parviflorus	Thimbleberry	Moist
Salix hookeriana	Hookers Willow	Moist
Sambucus cerulea	Blue Elderberry	Moist
Sambucus racemosa	Red Elderberry	Moist
Spirea douglasii	Hardhack	Moist
Symphoricarpos albus	Snowberry	Dry/Sun
Vaccinium parvifolium	Red Huckleberry	Dry/dappled shade
Viburnum edule	Highbush cranberry	Moist
GROUND COVER		
Arctostaphylos uva-ursi	Kinnikinnick	Dry/Sun
Asarum caudatum	Wild Ginger	Moist/Shade
Frageria vesca	Wild Strawberry	Moist/Sun
Linnaea borealis	Twinflower	Dry/Shade
Oxalis oregana	Oxalis	Moist shade
VINES		
Lonicera ciliosa	Western Trumpet Honeysuckle	Dry/Shade
Lonicera hispidula	Hairy Honeysuckle	Dry/Sun
FERNS		
Dryopteris expansa	Spiny Wood Fern	Dry/Shade
Polypodium glycyrrhiza	Licorice Fern	Moist/Shade
Polystichum munitum	Sword Fern	Dry/shade/dappled shade

Botanical Name	Common Name	Habitat Requirements
PLANTS FOR STORMWATER BIOSWALES		
Aquilegia formosa	Red columbine	Moist
Carex obnupta	Slough Sedge	Moist
Carex rostrata	Beaked Sedge	Moist
Iris missouriensis	Western Blue Flag Iris	Moist
Juncus effusus	Common Rush	Moist
Scirpus microcarpus	Small-flowered Bulrush	Moist
PERENNIALS		
Achillea millefolium	Yarrow	Dry/Sun
Achyls triphylla	Vanilla Leaf	Dry/Shade
Allium acuminatum	Hooker's Onion	Dry/Sun
Allium cernuum	Nodding Onion	Dry/Sun
Anaphalis margaritacea	Pearly Everlasting	Dry/Sun
Antennaria microphylla	Small-leaved Pussytoes	Dry/Sun
Aquilegia formosa	Red Columbine	Moist/Shade
Armeria maritima	Thrift	Dry/Sun
Aster douglasii	Douglas' Aster	Dry/Sun
Brodiaea hyacinthina	Fool's Onion	Dry/Sun
Camassia leichtlinii	Great Camas	Spring moisture/sun
Camassia quamash	Common Camas	Spring moisture/sun
Dicentra formosa	Bleeding Heart	Spring moisture/sun/shade
Dodecatheon hendersonii	Broad-leaved Shooting Star	Spring moisture/sun
Erigeron speciosus	Showy Fleabane	Dry/Sun
Eriophyllum lanatum	Woolly sunflower	Dry/Sun
Erythronium oreganum	White Fawn Lily	Spring moisture/dappled shade
Heuchera micrantha	Alumroot	Dry/Sun
Potentilla anserina	Silverweed	Moist/Sun
Sedum lanceolatum	Lance-leaved Stonecrop	Dry/Sun
Sedum oreganum	Oregon Stonecrop	Dry/Sun
Sedum spathulifolium	Broad-leaved Stonecrop	Dry/Sun
Trillium ovatum	Western Trillium	Dry/Shade
Viola adunca	Early Blue Violet	Dry/Shade

3.6. STANDARD PRACTICES

As part of the revegetation/remediation strategy, apply standard horticultural practices (BCSLA Landscape Standards, 2012) best forestry practices:

- Plant in the fall to allow plants to establish themselves as much as possible prior to summer drought.
- Protect all plants from browsing by deer.
- Use large woody debris and boulders to create microhabitats to capture moisture and create shade.
- Plant in groups to mimic natural growing patterns with a mix of trees, shrubs and groundcovers.
- Interpretive signage to be located in prominent places to outline re-vegetation procedures.

4. PHASING & TIMING

One of the essential components of a vegetation management plan is the phasing and timing of the efforts and targets. A phased approach with detailed VMPs tailored to each phase (phase-specific) will maximize the likelihood of success. Overall principles for site remediation should be consistent through all phases.

4.1. PARKS & OPEN SPACE

The focus of site remediation (revegetation) efforts will be on the sections of the property that are proposed for parks.

We propose to use an Adaptive Management process, in combination with a priority treatment classification system, to the VMPs that will consist of a series of plant prescriptions (treatment types) suitable for different site conditions. The treatment types will be set up in the initial stages of the development, and will then be monitored to gauge their success in achieving the goal of “free to grow” (for trees) or “successfully established” (for shrubs and herbaceous vegetation). The successful treatments will be used as models for the rest of the site. These planting prescriptions will be created in harmony with the park plan, and will be showcased with interpretive signs.

It is anticipated that the section of the property located north of Kingsview Road will contain the first few phases of the project. A detailed VMP has been initiated for that area, and will serve as the template on which other VMPs for future phases are based and measured. All VMPs will be submitted to the MNC for approval as part of the subdivision application.

It is proposed that once 50% completion has been reached for the last phase north of KingsView, initiation of Priority 1 areas south of KingsView will be triggered. For example, broom removal within areas adjacent to Park Types 2 and 3.

4.2. REMAINING AREA (DEVELOPMENT)

For the remaining area to be developed, the focus will be on vegetation management; the removal and control of invasive plant species, namely Scotch broom.

There is a continued commitment for ongoing maintenance of the property south of Kingsview Road that is adjacent to MNC Forest Lands. Maintenance will consist of removing the broom annually, or until such time that the area is developed in order to manage invasive species, reduce wildfire risk, and minimize public trespass.

Extensive broom removal will also take place on a phase-specific basis as part of the site preparations for development as well as remediation.

4.3. PRIORITY VEGETATION MANAGEMENT AREAS

To help guide the timing and phasing of the VMP, a classification system reflective of the level of priority has been developed, and ties in with the Parks and Open Spaces Strategy (Table 2). Each Park Type has been assigned a priority on a scale of 1 to 4, with 1 indicating areas of highest priority (also reflective of level of effort) and "4" indicating lowest priority (little to no remediation is planned for these sites). A reasonable timeframe has also been assigned to each treatment priority.

Table 3: Vegetation Remediation & Broom Control Priorities by Park Type for Phases North & South of KingsView

Park Type	Vegetation Remediation Treatment	Broom Control	Phasing & Timing	Comments
North of KingsView				
Park Type 3	Priority 1 (high)	Priority 1 (high)	Triggered by PLA of Phase 1; Short-term (1-3 years)	Key focal feature and amenity of the CDP. Initiation of remediation is highest priority for Park Type A
Park Type 2	Priority 2 (moderate)	Priority 2 (moderate)	Varies - some component of Park Type B will be present within most development phases	Focal points; areas of interest; highly visible
Park Type 1	Priority 2 (moderate)	Priority 2 (moderate)	Varies - some component of Park Type C will be present within most development phases	Highly visible green space between and amongst development
Development Sites	Priority 4 (very low) due to planned development	Priority 3 (low)	As needed and determined by associated fire hazard	No vegetation remediation is planned due to future development
South of KingsView				
Park Type 3	Priority 1 (high)	Priority 1 (high)	Initiated by 50% of the final phase North of KingsView	Key focal feature and amenity of the CDP.
Park Type 2	Priority 2 (moderate)	Priority 2 (moderate)	Future phases - long-term horizon of >15 years	Focal points; areas of interest; highly visible
Park Type 1	Priority 2 (moderate)	Priority 2 (moderate)	Future phases - long-term horizon of >15 years	Highly visible green space between and amongst development
Park Type D	No applicable Park Type D identified south of KingsView at this time			
Fire Interface	Priority 3 (moderate)	Priority 1 (high)	Annual broom control efforts will be maintained along the fire interface	Vegetation remediation associated with future development phases

NOTE: Please refer to the Parks & Open Space Strategy for corresponding figures depicting Park Types.

5. MONITORING

In order to determine whether-or-not the VMPS is successful, monitoring will be required for the short-term and long-term goals. Monitoring will focus on two aspects of the strategy:

- Removal and control of invasive species (namely Scotch broom), and
- Successful establishment of non-invasive vegetation (with the effort focused on remediation of parks and open spaces reaching "establishment" and "free to grow" conditions for transfer of lands to the Municipality).

An acceptable survival rate (measure of successful vegetation remediation efforts) may vary by phase, dependent on how much is planted in a given area and which plant assemblage is applied. A higher survival rate (>90%), two years following initial planting, would be expected for a smaller area that is planted with predominately shrubs. For plant assemblages focused on growing future forests, a lower survival of 60-70% may be acceptable (e.g., if 1,000 fir tree plugs were planted within a Park Type 3 area).

As part of the monitoring, an adaptive management approach will be applied to determine which plant assemblages have the highest success during vegetation remediation efforts applied during Phases 1 and 2 of the development. This feedback process is anticipated to take 3-5 years, and will help to determine the best methods for future phases.

These details will be provided within the VMPS produced for each phase of the development, and will be submitted to MNC for approval as part of the development permit application.

6. REFERENCES

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