

Vegetation Management Plan

North Blue Heron Reserve

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EFFECTIVE DATE: _____

Written By:		Date:	
Approved by:		Date:	

1. Goals and Objectives

This document is designed to address the following objectives:

1. comply with the Shoreline Municipal Code
2. address issues of concern regarding environmental impact
3. establish procedures and guidelines for long term management of the North Blue Heron Reserves

The care and management of the Reserves have been under scrutiny and review for several decades without a satisfactory solution to address the multiple issues the community must consider. North Blue Heron Reserve is referred to as reserve H on the original Innis Arden maps and is approximately 10 acres in area with Blue Heron Creek running through to the Puget Sound. Blue Heron Creek is fed by a spring on private property that located on the north side of west Running Water Reserve.

The primary goals for managing the North Blue Heron Reserves are:

- To provide a natural multi-storied wooded eco-system that enhances native habitat for wildlife with a diversity of sources for food, water and cover
- To acknowledge the value and importance of maintaining view sheds of Puget Sound by planting more genetically appropriate native species that will not require topping or frequent pruning to maintain height limitations
- To provide visual and/or trail access through the North Blue Heron Reserve and between reserves within the community for the enjoyment of Innis Arden residents
- To maintain and improve the ecological balance and stability of the reserves with care and consideration given to soil stability, water quality, native plant diversity, and wildlife habitat
- To remove invasive weed species, i.e. Himalayan Blackberry, English Holly, English Laurel, and English Ivy.
- To initiate actions that are in compliance with this reserve policy, the Innis Arden Reserves Policy, and in compliance with local, state, and federal law.

2. Survey Information

Mapping of Significant Trees

North Blue Heron Reserve is a section of Blue Heron Reserve identified as the area defined by Map 8 of 11 prepared by G4 Surveyors in 2003. It runs from 47° 45' 49.5" North to 47° 45' 53.4" north longitude by 122° 22' 27.8" West to 122° 22' 31.5" West latitude. This map provides a detailed list of significant tree and a number tag of these trees.

Many of the trees in the Reserve are volunteers that have established themselves naturally from seed and/or are “bird planted”. Trees serve many functions within the Reserve. Trees are important for slope stability. The trees also serve as a buffer against water run off from our urban environment, particularly during major storms. The trees adsorb water and the roots stabilize the soil as water makes its way through the reserves in the intermittent streams created by storm drains that dump directly into the reserves and installed long ago by King County.

Topping Practices

Topping is not generally recommended for any tree in the reserves.

3. Management of Vegetation

Himalayan Blackberries

Himalayan Blackberries will be eradicated by both physical removal along with foliar application of the systemic herbicide Rodeo or Round Up.

English Laurel

There are still a significant number of English Laurels in the North Blue Heron Reserve. There are too many to list individually. English Laurel is frequently “bird planted” and generate readily from seeds. It is recommended that all of these be removed as they will compete for light and water with other plantings.

English Ivy

English Ivy are also present in North Blue Heron Reserve but not with the frequency observed in some of the other reserves. Douglas Firs Number 24 and 25 and Western Red Cedar Number 34 had English Ivy growing up to approximately 25 feet. The roots supplying this growth were approximately 2 to 3 inches in diameter. Approximately 6 inches sections were cut out from each supply root in the summer of 2008. The ivy foliage was dead 4 months later. English Ivy should be removed from the base of all trees to discourage any growth up the tree.

English Holly

English Holly will be removed.

Annual Maintenance

Volunteer trees and shrubs appear every year whether through natural occurrence or bird planting. Such trees can include Alders, Western Red Cedars, Douglas Fir, Big Leaf Maple and other tree that can become view blocking with time. All areas not in the critical slope zone need to be examined for new growth. These trees can be removed by pulling or using a small extractor.

Removing English Holly, English Laurel, and English Ivy should occur annually and be a part of on-going maintenance practices. An annual Maintenance Check list that is the responsibility of the Reserves Chair of the Innis Arden Club Board will be created.

When the English Laurel or English Holly trees are cut, the stump should be painted immediately with either Rodeo or Round Up. This will make sure that new sprouts will not come out from the root system. Rodeo is the preferred herbicide since it is very water soluble and is recommended by the EPA in lowland areas.

4 View Restoration Standards and Procedures

4.1 Pruning and Removal.

Pruning

Pruning may be needed to remove density within the crown, reduce wind resistance, increase the health and condition of the trees, and provide “view corridors” and “windowing” through canopies to improve views. When pruning needs to be performed, ANSI 300 standard will be followed. This standard is recognized by the Nation Arbor Association and the International Society of Arboriculture.

All woody debris 8 inches or less in diameter should be hauled and chipped. Wood chips will be left at designated locations on each end of the reserve to be used as mulch following replanting.

Wood greater than 8 inches in diameter can be cut in length no great than 3 feet and left in contact with the soil for degradation, forest restoration, and ecosystem management value ; otherwise it should be removed by hand to the trail without using heavy machinery that can compact the forest soil. Leave large branches and trunks running parallel to the contour with the slope except in steep slope areas. In the event that the amount of woody debris exceeds the Reserve Threshold, wood can be cut in 18 inch length and left on site for residential firewood use or will be hauled away.

Tree Removal

The criteria for tree removal are as follows:

- A. Remove potentially hazardous trees
- B. Remove excessively decayed or diseased trees
- C. Remove trees in poor health, condition, and structure due to previous topping practices
- D. Optimize view sheds and replace trees with more appropriate species
- E. Increase light to the forest floor for the establishment of more preferred trees and species

Request for tree removal can occur at any time when a tree meets criteria A, B, or C above. Certified Arborist or an Urban Forest Management professional need to be consulted to establish ground for removing trees by criteria E.

Because timing can be in issue for criteria A, B, C, and D, a replanting plan can be done subsequently. It can be presented separately or as part of the annual reserves planting program to take advantage of cooler and wetter fall, winter, and spring seasons.

Tree Retention

The Shoreline Municipal Code 20.50.350B2 states at least 20% of significant trees on a given site shall be retained. The long term health and stability of North Blue Heron reserve is of primary importance to the residents of Innis Arden. Therefore, any tree removal needs to account for the health and stability of the reserve in addition to meeting the minimum requirements of the SMC.

Approach

Phasing pruning and removals over time negatively impacts the site in multiple ways. It causes repeated site disturbances and compaction from foot traffic, the felling of branches and trunks, and the use of pruning and removal equipment. In addition, subsequent pruning and removal phases increase the damage and loss to existing understory vegetation as well as the loss of newly planted trees, shrubs, and ground covers. Finally, excessive impact on steep slopes increases the potential for erosion, reducing slope stability. The roots of existing trees remain in the soil long after trees are removed maintaining soil stability until new vegetation is established. If trees are removed, it can be done all at once. But planting could be done over time, as could/should coppicing if allowed, since the impact is much lower.

Soils

The soil in the North Blue Heron Reserve is classified as Indianola sandy loam. According to the report Slope Stability And Water Problems Associated With Soil And Vegetation Of Innis Arden, Soils Lab by Adams and Harris the soil in North Blue Heron Reserve is “is all well-drained sandy loam with excellent infiltration potential.” See the survey maps and documents available on the Innis Arden website Reserves section for more information.

4.2 Restoration Planting

Restoration Procedures. The goal is to restore the disturbed areas of North Blue Heron Reserve and enhance plant communities native to the region. This VMP includes the six steps outlined in the publication *Basic Restoration and Enhancement Guidelines* distributed by King county Department of Development and Environmental Services.

Design. The design should consider the upland habitat that currently exists in the Reserves. The plant selection should consider native plants with additional importance placed on light conditions, soil, and adaptability. The plant schedule includes a chart indicating the range of habitat for each species.

Use of Vegetation to increase Slope Stability. Current studies indicate the importance of approaching vegetation management on slopes within natural, open space lands from a long-term and holistic perspective. Slope stability studies recommend the value of maintaining multi-layered vegetation for the greatest success in stabilizing slopes. Tree roots help to stabilize soil while pumping excess water from saturated soil conditions. Mid-story shrub layers and ground covers produce fibrous root mats that help to keep topsoil on the slope while also helping to break the impact from rain, minimizing raindrop erosion on exposed soils.

Mitigation requirements for Restoration. The total area for restoration is determined by evaluating the two primary factors that compromise the long term ecological health and condition of the Reserve. The first factor is to determine the extent of invasive weeds, primarily Himalayan Blackberry, growing in the Reserve. The second factor influencing the total square footage for restoration is areas where tree are to be removed. The total area in need of restoration and enhancement is determined by combining the total square footage results from these factors.

Total plant quantities should be determined by using the Mitigation Design work sheet recommended in the King County DDES Restoration Guideline (see

reference below). While these are the suggested plants others may be substituted with written request and approval by the Innis Arden board.

Stewardship Planting. We anticipate future requests for removing trees in North Blue Heron Reserve for the various reasons listed above. Thus, we will initiate planting to be done in non-disturbed areas as not only stewardship but advanced mitigation.

This planting will done to integrate a habitat more friendly to wildlife, providing both food and shelter, along with providing quiet recreational trails for residents in this urban forest setting. The King County DDES Restoration and Enhancement Guidelines emphasizing the trees listed in the table 3 below where view may be a consideration will be followed for recommendations on the number of trees, shrubs, and groundcover planted. While these are the suggested plants others may be substituted with written request and approval by an arborist. In addition we can also select shrubs and groundcover enhancing wildlife habitat using Russell Link's Landscaping for Wildlife as a guide.

This stewardship planting needs to be documented prior to implementation providing both a table of selected plants and the area of placement in North Blue Heron Reserve. This planting plan will require board approval both for management and financial control. The approved planting plan along with a subsequent report of how the planting plan was actually implemented will be added to this management plan as a supplement. The supplement should have at least one follow up report approximately one to three years later to evaluate the success of the supplement. Complete documentation of the supplement and its follow up report is important for future use as mitigation for future trees that may be removed for various reasons. A supplement to this plan does not need to address all open areas in the reserve at one time. Furthermore, it does not preclude additional supplements be added as we learn better management practices for the reserves to integrate wildlife habitat and resident recreational use.

Plant selection. The plant species selection was based on: a. King County DDES, Restoration and Enhancement Guidelines, publication 12/98 and publications from the Washington Department of Ecology (see appendix). The criteria considered in selecting plants for restoration was to:

- Provide species diversity to re-establish a healthy, native eco-system
- Attract wildlife while providing cover, food sources, and nesting sites

- Select species that are genetically shorter in height allowing for the maintenance of view corridors where possible
- Identify species readily available in the nursery trade
- Reduce maintenance demands.
- Maintain slope stability

See Table 1 for proposed trees, shrubs, and ground cover. These are proposed; they are not required. Changes can be made by written request and approval by the Innis Arden board.

Potential sources of native plants are listed in Appendix 1. Purchase is not restricted to these sources.

Table 1

Qty	Botanical name / common name	Size	Hght/Sprd	Space		
Trees					Upland	Slope
	<i>Acer circinatum</i> – Vine Maple	5 Gal	4'H/3'S	9' OC	X	
	<i>Amelanchiera Alnifolia</i> – Serviceberry	5 Gal	3'H/3'S	9' OC	X	X
	<i>Corylus cornuta</i> – Hazelnut (assume 50% survival)	5 Gal	4'H/3'S	9' OC	X	X
	<i>Rhamnus purshiana</i> – Cascara Tree	5 Gal	4'H/3'S	9' OC	X	X
	<i>Pinus contorta</i> – Shore Pine	5 Gal	4'H/3'S	9' OC	X	
	<i>Taxus brevifolia</i> – Pacific Yew	5 Gal	4'H/3'S	9' OC	X	
	<i>Crataegus douglasii</i> – Black Hawthorne	5 Gal	4'H/3'S	9' OC	X	
	<i>Thuja Plicata "excelsior"</i> – Dwarf Western Red Cedar	5 Gal	4'H/3'S	9' OC	X	

Shrubs					Upland	Slope
	<i>Gaultheria shallon</i> - Salal	1 Gal	Fully rooted	6' OC	X	
	<i>Oemleria crasiformis</i> – Indian Plum	1 Gal	Fully rooted	6' OC	X	
	<i>Polystichum mitum</i> – Sword Fern	1 Gal	Fully rooted	6' OC	X	X

	Rosa nutkana – nootka rose	1 Gal	Fully rooted	6' OC	X	
	Salix Scouleriana – Scouler's willow	1 Gal	Fully rooted	6' OC		
	Symphoricarpos albus – Snow berry	1 Gal	Fully rooted	6' OC	X	X
	Vaccinium ovatum – Evergreen Huckleberry	1 Gal	Fully rooted	6' OC	X	X
	Vaccinium parvifolium – Red Huckleberry	1 Gal	Fully rooted	6' OC	X	X

Ground Cover					Upland	Slope
	Arctostaphylos uva- kinnikinnick	4 inch	Fully rooted	4' OC	X	X
	Gallium odoratum – sweet woodruff	4 inch	Fully rooted	4' OC	X	X
	Mahonia repens	4 inch	Fully rooted	4' OC	X	X
	Polypodium scouleri	4 inch	Fully rooted	4' OC	X	
	Vancouveria hexandra - vancouveria	4 inch	Fully rooted	4' OC	X	

Planting Details. Planting details for trees, shrubs, and groundcovers are graphically represented on Figure 1. In addition, planting templates for the interplanting of species are shown on the planting detail sheet.

Final placement is subject to field inspection prior to planting so any modifications can be made to accommodate specific site conditions. Nursery Sources for plants are suggested, but not restricted to, those included in the appendix.

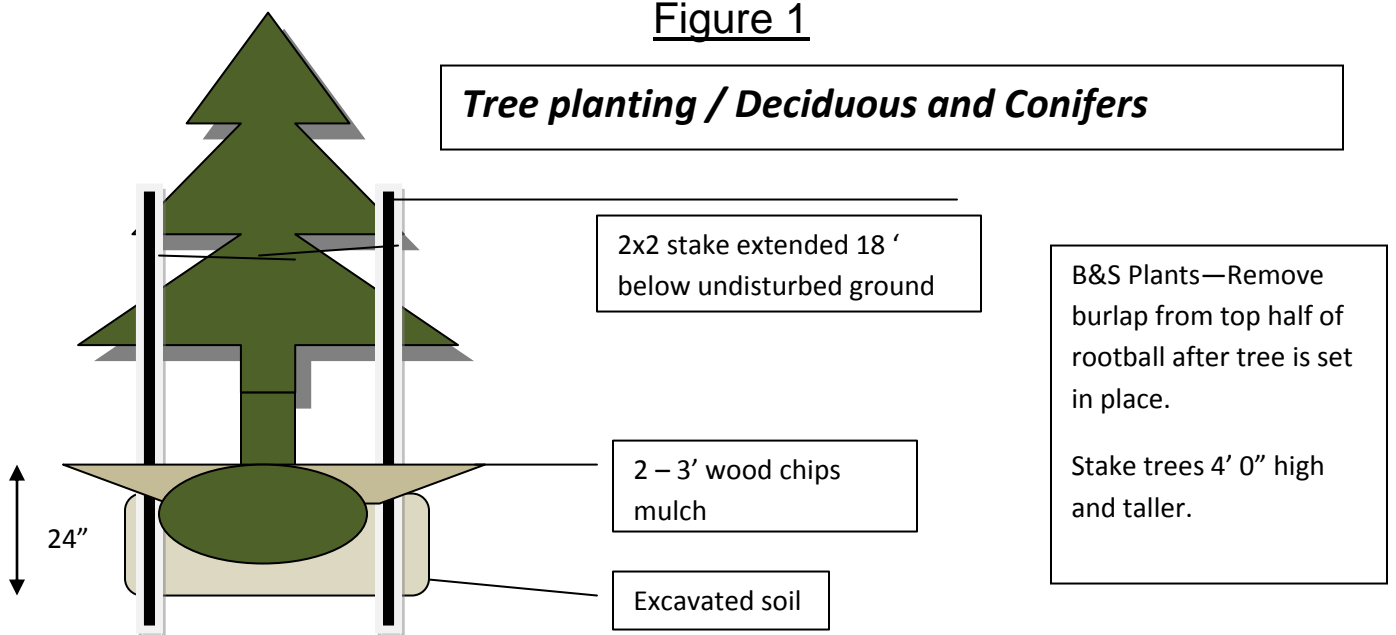
Fertilizer and Mycorrhizal Application. Both Mycorrhizal fungi and fertilizer will be applied at time of planting. The Mycorrhizal fungus form symbiotic relationships with the plant roots increasing their ability to take in nutrients and water from the soil, and the plants provide food for the fungus. The Mycorrhizal tablets can be obtained from:

Mycorrhizal Applications, Inc.
 PO Box 1811
 Grants Pass, Oregon 97528
 541-476-3985
info@mycorrhizae.com attn: Mike Amaranthus

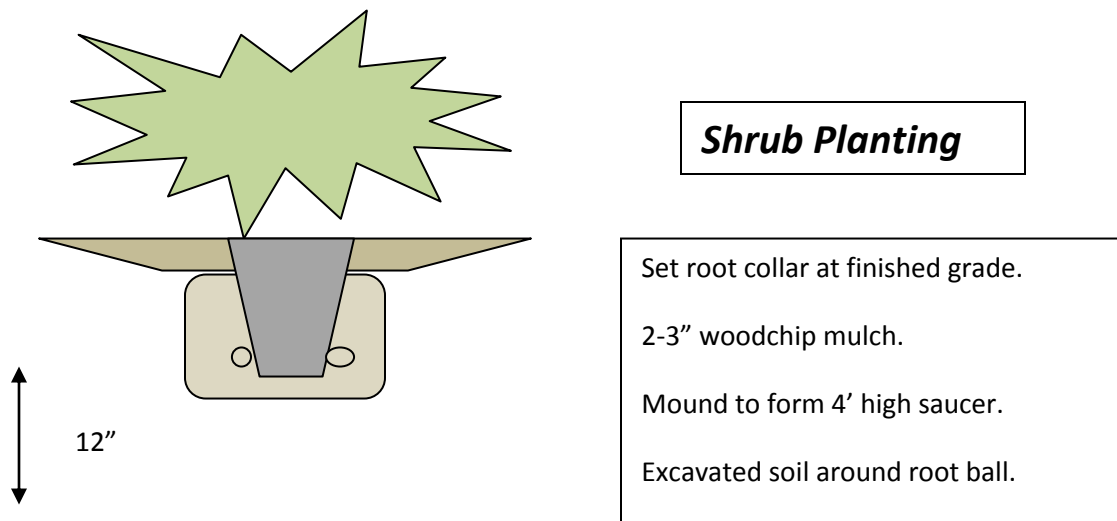
Planting fertilizer should be applied in a compressed tablet form such as 20-10-10 (nitrogen/phosphorus/potassium) such as Agriformith micro-nutrients added, or an equal. Application rates should comply with the manufacturer's recommendations. Bone meal should be added to all planting pits prior to tree or shrub placement.

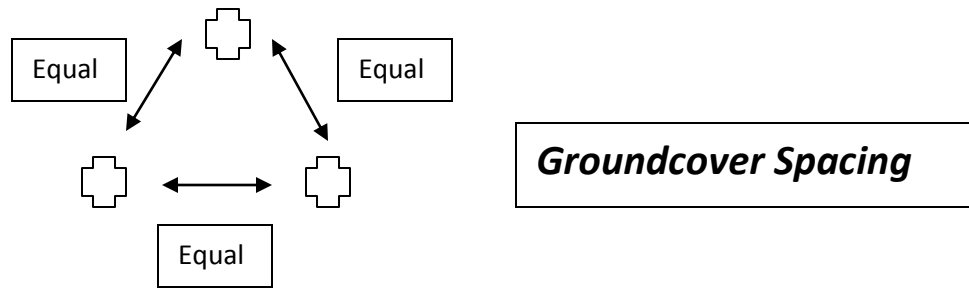
Figure 1

Tree planting / Deciduous and Conifers



Shrub Planting





Mulching. All restoration areas are to be mulched with 2 inches of wood chips, stockpiled from tree removal and pruning operations, following planting as indicated on the planting details. Prevent any direct contact of mulch with the trunks or stems of plants.

Other Mitigation. Two wren sized birdhouses, and one robin platform will also be placed in the reserve.

4.3 Maintenance and Monitoring Procedures

Performance Standards for Requested Cutting. Based on counsel from King County DDES restoration guidelines, the following performance standards are recommended:

1. Vegetation will have 80% survival after 3 years
2. Tree and shrub cover will be greater than 10% after one year, greater than 30% after two years, and greater than 50% after three years.
3. Non-native invasive plants will not make up more than 10% of cover in any growing season.
4. If bi-annual inspections or monitoring reports indicate a decline in performance standards, corrective actions will be taken to comply with these performance standards.

Performance Standard for Stewardship Planting

1. We will plant two to three times more stock when using bare-root and smaller.
2. We will accept lower survival (30 to 50%) but targeting a higher number of surviving plants per unit or area suggested by the King County Guidelines.
3. Non-native invasive plants will not make up more than 10% of cover in any growing season.

4. If bi-annual inspections or monitoring reports indicate a decline in performance standards, corrective actions will be taken to comply with these performance standards.

Maintenance Requirements – 3 years

1. Maintenance shall begin upon the completion of all the planting and final acceptance has been determined by the Reserve Manager
2. Maintenance and monitoring shall continue for 3 years with bi-annual reports completed by the Reserves Committee
3. Maintenance responsibilities include: weeding, cultivating, removing stakes and guying from established trees, removing dead debris, and maintaining plants in upright condition.

Contingencies

1. If maintenance standards are not met, the Innis Arden Reserve Chairperson agrees to hire an outside consultant to investigate and make recommendations to correct problems, if necessary.
2. Replanting losses will be assumed by the Innis Arden Club since they will be responsible for the maintenance during the 3 year maintenance and monitoring period.
3. Annual monitoring with a summary report of maintenance standards and plant health and condition evaluation will be completed by the Innis Arden Reserve Chairperson for the three years subsequent to replanting. If die off is more than expected (generally 30%), more trees, shrubs, or groundcover may be required.

4.4 Scope of Work for Arborist/Landscape Contractor

Quality Assurance

1. All plantings will comply with the sequence and all information specified in this vegetation management plan.
2. The Reserves Committee will assume responsibility for checking the marking of trees prior to removal and subsequent plantings.

Materials

1. Woody debris resulting from the tree pruning and removal will be chipped and left on site. Wood chips will be stockpiled at designed locations on site to use as mulch after replanting. Wood larger than 6 to 8 inches in diameter will be left on site in contact with the soil or cut 18 inches to fireplace length. Quantity and locations of wood left on site will be determined in collaboration with the City of Shoreline Planning Department and the project arborist.
2. Obtain all plants, fertilizers, and guying materials required to complete the work.

Execution

1. All trees to be removed will be clearly marked with numbered metal tags and bright orange tape prior to removal.
2. All costs incurred for a cutting request in the reserves will be borne by those residents requesting the cutting. Only a professional tree cutting firm or tree planting firm, fully licensed, insured, and bonded can perform the job. When possible stumps will be ground to provide better planting habitat.
3. Plants will be field located according to the Planting Plan. No planting will occur until we go out and look at where potted plants are placed.
4. Chip all woody debris 8 inches and smaller and stockpile on site.
5. All new plants will be planted according to the planting details shown on the the Planting Plan. Depending upon the timing of the removal of the trees the plantings may be delayed so that the maximum wet cycle of rain can sustain the trees and shrubs.
6. Restoration areas will be mulched with 2-3 inches of woodchips upon completion of planting. Wood chips will not be in contact with the base of stems or trunks.
7. Any substitutions in size or species must be approved in writing by the Innis Arden Reserves Chair so that it can be clearly documented and taken to the Innis Arden board for approval.
8. The area will be cleaned up and all debris, such as pots, cord, etc., removed from the site upon completion.
9. All work will comply with the Washington State Safety Laws.

5.0 References:

A.B. Adams and Rob Harrison, Slope Stability And Water Problems Associated With Soil And Vegetation Of Innis Arden, Soils Lab, School of Forestry, University of Washington, 2001

Day, Kathleen: Grouse Reserve Vegetation Management Plan, 2002

King County DDES, Restoration and Enhancement Guidelines, June 2007 or most current revision.

Kruckeberg, Arthur R.: Gardening with Native Plants in the Pacific Northwest, 2000

Russell Link, Landscaping for Wildlife in the Pacific Northwest, Washington Department of Fish and Wildlife, 1999

Wagar, Alan J. and Bliss, Lawrence C., Vegetation Management Plan for Sensitive Areas in Innis Arden, 1997

6.0 Revision History

<u>Rev.</u>	<u>Description of Change</u>	<u>Date</u>
0	Original Document	Mar 2010

Appendix 1

Native Plant source for the Pacific Northwest

A complete list of nurseries is available at: [http:// splash.metrokc.gov/wlr/pi/pnursry.htm](http://splash.metrokc.gov/wlr/pi/pnursry.htm).

Nurseries that specialize in seeds are marked SEEDS

<p>Davenport Seed Corporation [SEEDS] PO Box 187 Davenport, WA 99122-0187 800-828-8873</p>	<p>Judd Creek Wetland and Native Plant Nursery 20929 111th Ave SW Vashon, WA 98070 206-463-2812</p>
<p>Cold Creek Nursery 18602 NE 165th Street Woodinville, WA 98072 425-788-0201</p>	<p>Sound Native Plants PO Box 10155 Olympia, WA98502 360-352-4122</p>
<p>Frosty Hollow Ecological Restoration [SEEDS] PO Box 53 Langley, WA 98260 360-579-2332</p>	<p>Storm Lake Growers 21809 89th SE Snohomish, WA 98290 360-794-4842</p>
<p>Heathwood Cottage Nursery 18540 26th Avenue NE Lake Forest Park, WA 98072 206-363-3189</p>	<p>Wabash Farms Native Plants Ornamental and Reclamation 19390 SE 400th Enumclaw, WA 98022 360-825-7051</p>
<p>Botanica P.O. Box 19544 Seattle, WA 98109 206-634-1370</p>	<p>Firetrail Nursery 3107 140th Street NW Marysville, WA 98271 360-652-9021</p>
<p>MSK Nursery 20066 15th Avenue NW Seattle, WA 98177 206-546-1281</p>	

Fourth Corner Nursery (Used by Prof Kern Ewing for many of his restoration projects. Miller Library at Center for Urban Horticulture also has catalogs for various nurseries handling native species.