

Howarth Park Stewardship Plan



Landowner: City of Everett
Parks and Recreation
802 E. Mukilteo Blvd.
Everett, WA 98203

Property: Howarth Park
Location 1127 Olympic Blvd.
Everett, WA 98203
Section 25, Township 29N, Range 4E
Snohomish County, Washington

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Introduction

Howarth Park, like many forested parks in our region, faces problems and pressures that negatively affect sustainability and long-term health including increases in human impacts (such as recreational use and dumping of residential yard waste), an invasive-dominated understory that inhibits native species from regenerating, and a declining tree canopy. To ameliorate these problems, Howarth Park requires active management to remove invasive species, restore plant diversity and maintain the structure and function of a healthy forest.

A sustainable forest can serve the community in many ways. Forest growth will build soil, improve air and water quality, retain stormwater, and help mitigate greenhouse gas emissions. Maintaining access through Howarth Park will continue to offer recreational benefits such as hiking, bird watching and the restorative benefits of nature.

To address these issues, the City of Everett and Forterra have joined forces to create the Green Everett Partnership. The Partnership has developed a 20 Year Forest Management Plan to restore Everett's urban forest and create an urban forest management program that includes a volunteer forest steward program. The purpose of this stewardship plan is to assist the volunteer Forest Stewards of the Green Everett Partnership in the ongoing restoration and management of Howarth Park's forested areas.

Short-term objectives (during the first five years):

- Create an inventory of current conditions in the forested areas of the park.
- Create restoration site plans for each Habitat Management Unit (HMU).
- Provide a framework for engaging the neighborhood and building support for forest restoration at Howarth Park.
- Improve and maintain functional stream channel of Pigeon Creek 2 and the associated riparian area.
- Remove invasive species.
- Promote forest health and habitat functions by planting native conifers and understory species throughout Howarth Park.

Long-term objectives (during the next 20 Years):

- Cultivate a resilient urban forest that is resistant to invasive plant species and able to sustain habitat for diverse native vegetation, fish, and wildlife.
- Promote biodiversity and forest health
- Provide guidance regarding restoration activities for the volunteer Forest Stewards of Howarth Park.
- Promote an informed and engaged community of neighbors and park goers who value and care for the park's natural resources.

Property Description

Howarth Park is a 28-acre park owned and managed by the City of Everett Parks Department. The park is located along the shoreline and bluff above Possession Sound. Located in central Everett, Howarth Park is adjacent to residential neighborhoods (Harborview, View Ridge, and Seahurst), a small area of privately owned forestland, and saltwater beachfront. Howarth is the only Everett park that provides access to the Sound.

Park features include mixed upland forest, forested wetlands, and saltwater beaches as well as the Lewis and Clark Native Garden, tennis courts, playground and an off-leash dog area. The Great Northern Railroad line runs adjacent to the shoreline between the beach and forested portion of the park.

Howarth spans three tiers from shoreline to the top of the bluff. The lowest tier includes lower Howarth with access to the trail along Pigeon Creek #2, a forested wetland, and parking lots. The second tier or middle Howarth includes the grassy overlook and forested gulch. The third tier, also referred to as upper Howarth, encompasses the landscaped areas overlooking Possession Sound.

The upland forest is dominated by deciduous native trees such as bigleaf maple and red alder. Some native conifers including Douglas-fir and western redcedar are also present. The two main challenges at this site include an understory inundated by non-native invasive species and steep slopes that have a history of and are at future risk of land slides.

The primary water features at Howarth include Pigeon Creek #2, which runs through the park to Possession Sound as well as the associated riparian area and forested wetland on the northeast corner of the park.

Property Access

The primary road through the site is Olympic Blvd which provides access to both the upper and lower parking lots. The primary entrance into the park is at the East gate which is where the tennis courts and bathrooms are located. This road is maintained by the City of Everett. There are walking trails throughout the forested park including a pedestrian overpass over the railway providing beach access to park goers. Board walk trails through the forested wetland are in good condition, but should be monitored for future maintenance. Stairs leading into the forested gulch on the south side of the park will also need to be monitored for future maintenance and repair. The trail through the forested gulch has been temporarily closed due to a slide which damaged a pedestrian bridge through the site. A trails map does not currently exist for the park. This could be a project for one of the forest stewards or other community volunteer to assist park goers in accessing the site.

Site Assessment

Methods

Baseline ecological data was collected at Howarth Park as part of the Green Everett Partnership's 20 year forest management plan. This baseline data is the foundation on which Howarth Park's stewardship plan is developed.

The data collection protocol called the Forest Landscape Assessment Tool (FLAT) was used to characterize and prioritize management of Everett's forested parks. FLAT is a rapid assessment tool that captures canopy characteristics, primary and secondary understory species, invasive species, and a number of overstory forest health indicators. A rapid assessment is one where average conditions are documented while walking through the park rather than setting up monitoring plots.

Prior to field data collection, forest stands within Howarth Park were identified using a digital ortho-photo. Each stand was first categorized based on its landscape features into one of five categories: forested, natural, open water, hardscaped, or landscaped. These initial categories were then verified in the field to ensure accuracy. These categorized stands are referred to as Habitat Management Units (HMUs). All HMUs were assigned unique numbers (e.g. HOWA-1). Hardscaped, landscaped and open water areas, since they are not suitable for restoration activities, are not included in this stewardship plan.

Habitat management units provide discreet areas for forest stewards to use when creating restoration site plans and monitoring progress. Howarth Park has 10 HMUs. HMUs 1 through 10 consist of forested parkland. HMU 7 is a small area of open water that is part of Port Gardner Bay, HMU 8 is a hardscaped parking lot and HMU's 9 and 10 are landscaped.

Two of the variables collected through the FLAT forest assessment were tree canopy and invasive species cover, measured as High, Medium, and Low. These two parameters were then subjected to Tree-iage Analysis, an approach used to assess habitat conditions and prioritize restoration efforts in urban forests. Tree-iage analysis was used to create a high-level overview of conditions found within each HMU. For more information on Tree-iage analysis, see the Green Everett Partnership 20 Year Forest Management Plan found at www.greeneverett.org. Refer to the map and legend of Figure 1 to review the tree-iage categories for Howarth Park.

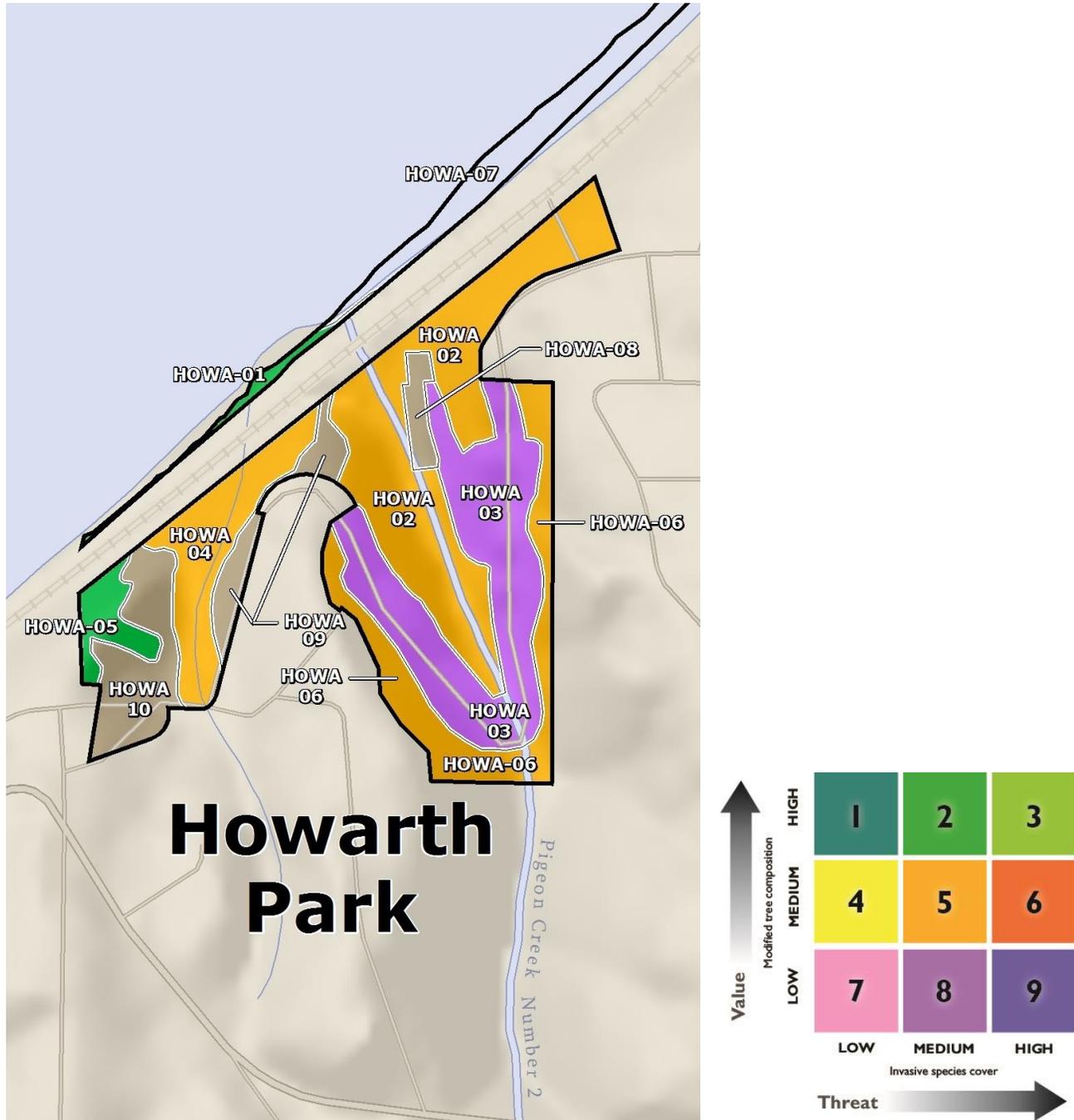
Social Inventory

Howarth Park includes hiking and walking trails, tennis courts, the Lewis and Clark Native Garden, an off-leash dog area and a railroad overpass to access the beach. There are landscaped areas of the park used for picnicking and enjoying the beautiful views of Possession Sound. Howarth Park offers Everett residents the opportunity to connect with the natural world in a highly urbanized environment. While visiting the park, residents enjoy walking and hiking, bird watching, the calming and restorative elements of the forest and stream, and having picnics.

Forest Inventory

This plan encompasses 6 HMUs of urban forested parkland. The map and legend below provide an overview of forest conditions based on tree-age analysis followed by more detailed descriptions of vegetation conditions for each forested HMU.

Figure 1. Howarth Park tree-age map and tree-age matrix key



HOWA-01 (0.50 acres)

This HMU is accessed via the railway pedestrian overpass and includes a small sparsely wooded natural area running along the shoreline. The dominant overstory trees include black cottonwood, grand fir and bigleaf maple with an average age class of 3 (50-99 years) and dbh between 11-20". Crown closure is between 10-39%. Regenerative trees include red alder and western red cedar. The understory in this HMU is dominated by non-invasive grasses and scotch broom. Invasive ranges from 5-50% across the HMU and is comprised of Scotch broom, Himalayan blackberry and morning glory. The soils on this site are particularly sandy and tree growth is limited.

HOWA-02 (9.49 acres)

This forested wetland and riparian zone runs down the middle of the park adjacent to Olympic Blvd. and curves to the north adjacent to the shoreline shifting to upland forest vegetation. A stream outlet runs through this site – Pigeon Creek #2. The dominant overstory trees include red alder (avg dbh 6-10"), bigleaf maple (avg dbh 11-20") and to a lesser extent Douglas-fir (avg dbh 11-20"). Crown closure is between 40 - 69%. However, there is dieback of the crown of "over-mature" red alder. Also, the conifer crown in this HMU is less than 40% living, also known as having low vigor. These low vigor trees are potentially unstable and could be considered hazard trees which will need to be assessed further. Regenerative trees include bigleaf maple and red alder. The understory in parts of this HMU is dominated by salmonberry and sword fern.

Along the stream, in the area adjacent to the lower parking lot, the primary species found include willow, red osier dogwood, and red alder. There is significant cover of creeping buttercup in this area. This HMU is inundated with invasive species. Dominant invasives include Himalayan blackberry and reed canary grass, but also include morning glory, English ivy, and English holly.

HOWA-03 (8.19 acres)

This HMU is classified as natural area, but represents the area along Olympic Blvd that was cleared by the City due to slope failure and tree health issues. Nearly 600 trees were removed. In March 2012, 2,000 conifers were planted to mitigate the loss of canopy from the slide. Although there is no current canopy cover, the understory plant community is relatively intact and is dominated by salmonberry and sword fern. The invasive plant cover runs between 5 and 50% and is comprised of Himalayan blackberry, reed canary grass and morning glory. Regenerative trees present include bigleaf maple and western redcedar. With the loss of the tree canopy, this site will be more susceptible to an increase in invasive plant encroachment and erosion.

HOWA-04 (3.51 acres)

This HMU encompasses a unique forested gulch with a trail leading from the park's landscaped area down stairs leading to a trail along a small creek. Portions of this trail, including a pedestrian bridge, sustained extensive damage due to a slide that occurred in winter 2012. Plans are under review for how to proceed with trail restoration. Crown closure is greater than 70% and consists mostly of bigleaf maple (avg dbh 6-10"), red alder (dbh 6-10") and, to a lesser extent, Douglas-fir (avg dbh 11-20"). The overstory age ranges from 50-99 yrs. Regenerative trees include bigleaf maple and red alder. The understory is dominated by salmonberry and sword fern. Invasive cover between 5 and 50% and comprised of Himalayan blackberry, reed canary grass, morning glory, English ivy, and English holly. The average slope across the site is 31 degrees and would benefit from interplanting along the slopes above the streambed to help control erosion.

HOWA-05 (1.15 acres)

This high quality canopy is located on the southwest corner of the park adjacent to the shoreline. Crown closure is greater than 70% and consists mostly of mature Douglas-fir (avg dbh 21"+), bigleaf maple (avg dbh 21"+), and red alder (avg dgh 6-10"). The age of this stand is between 50-99 years. Regenerative trees include bigleaf maple and red alder. The understory is dominated by salmonberry and salal. Invasive cover is between 5 and 50% and comprised of English ivy, Himalayan blackberry, English holly, English laurel, and reed canary grass. There is a small patch of young red alder and brush that could indicate past disturbance such as a landslide.

HOWA-06 (4.19 acres)

This forested area is located just above the newly cleared site along the road in HMU 3. Crown closure is between 40 - 69% and consists mostly of bigleaf maple (avg dbh 6-10"), red alder (avg dbh 6-10") and some Douglas-fir (avg dbh 11-20"). Age of stand is between 50-99 years. Regenerative trees include bigleaf maple and red alder. The understory in this HMU is dominated by salmonberry and sword fern. There is some crown dieback occurring on some of the "over-mature" red alders. The conifer crown in this HMU is less than 40% living, also known as having low vigor. Invasive cover is between 5-50% and comprised of Himalayan blackberry, reed canary grass, morning glory, English ivy, and English holly.

Table 1: Native Plants of Howarth Park

Common Name	Scientific Name
Bigleaf maple	<i>Acer macrophyllum</i>
Black cottonwood	<i>Populus balsamifera</i>
Bleeding heart	<i>Dicentra formosa</i>
Douglas-fir	<i>Pseudotsuga menziesii</i>
False lily-of-the valley	<i>Maianthemum dilatatum</i>
Grand fir	<i>Abies grandis</i>
Horsetail	<i>Equisetum sp.</i>
Indian plum	<i>Oemleria cerasiformis</i>
Maidenhair fern	<i>Adiantum pedatum</i>
Oceanspray	<i>Holodiscus discolor</i>
Piggy-back plant	<i>Tolmiea mensiesii</i>
Red alder	<i>Alnus rubra</i>
Red osier dogwood	<i>Cornus sericea</i>
Salal	<i>Gaultheria shallon</i>
Salmonberry	<i>Rubus spectabilis</i>
Skunk cabbage	<i>Lysichiton americanum</i>
Sword fern	<i>Polystichum munitum</i>
Thimbleberry	<i>Rubus parvifloris</i>
Western hemlock	<i>Tsuga heterophylla</i>
Western redcedar	<i>Thuja plicata</i>
Willow sp.	<i>Salix sp.</i>

Invasive Species and Forest Health

The primary forest health issue at Howarth Park is the abundance of invasive species across all HMUs. Invasive species cover ranges between 5 and 50% across the park. The most prevalent species documented is Himalayan blackberry and was documented in all six forested HMUs in the park. The second most prevalent species, reed canary grass, was documented in 5 of the 6 HMUs. Refer to Table 2 for a list of the most prevalent invasive species documented in the park.

Table 2. Invasive Species

Common Name	Scientific Name	WA State Weed Class
Cherry laurel	<i>Prunus laurocerasus</i>	not listed
Creeping buttercup	<i>Ranunculus repens</i>	not listed
English holly	<i>Ilex aquifolium</i>	not listed
English ivy	<i>Hedera helix</i>	Class C
Evergreen blackberry	<i>Rubus laciniatus</i>	Class C
Hedge bindweed	<i>Convolvulus sepium</i>	Class C
Herb Robert	<i>Geranium robertanum</i>	Class B
Himalayan blackberry	<i>Rubus armeniacus</i>	Class C
Knotweed species	<i>Polygonum sp.</i>	Class B *
Reed canary grass	<i>Phalaris arundinacea</i>	Class C
Scotch broom	<i>Cytisus scoparius</i>	Class B

* Control required in Snohomish County

Additional indicators of forest health decline collected as part of the FLAT assessment include low vigor (decline in conifer and hardwood live crown), mechanical tree failure, and presence of root or butt rot, mistletoe, or bare soil due to recent disturbance such as erosion.

In HMUs 2 and 6, conifer crowns have receded below 40% live crown. This may indicate overcrowding, which is a concern because overcrowding compromises tree vigor, resilience, and stability. This will be monitored over time, though management options here are limited because thinning is not practical in a park setting. In HMU 6, the red alders also have significant breakage and dieback due to old age. Red alder is a short-lived early-successional species that generally lives to between 60-80 years old, with older trees subject to extensive breakage and falling over.

Soils

The soils at Howarth Park consist primarily of Alderwood-Everett gravelly sandy loam soils with 25 to 70 percent slopes (26.5 acres), Alderwood gravelly sandy loam with 15 to 25 percent slopes (4.7 acres) and Alderwood-Urban land complex, 2 to 8 percent slopes (.3 acre). The Alderwood soils are found in landscaped or hardscaped portions of the park (HMUs 7, 8 and 9). The Alderwood-Everett soils are found in the forested stands of the park where restoration and management activities will be focused. Parent material for this soil is basal till. These soils have moderately fine texture to moderately coarse texture and are moderately well draining with a moderate infiltration rate when thoroughly wet.

According to the NRCS Web Soil Survey, the erosion potential for Alderwood-Everett soils is low. However, there is evidence of slope failure and erosion on slopes throughout the park. In the spring of 2012, conifer and alder trees were removed along Olympic View Drive to the lower parking lot due to slope failure (HMU 3). In winter of 2012 slope failure occurred in HMU 4 along the north facing slope of the forested gulch. In early spring 2013, part of the slope in HMU 2 above the BNSF railway failed.

Water Quality, Riparian Areas and Wetlands

Howarth Park are part of the Port Gardner Bay Watershed. Pigeon Creek #2 flows through the park and drains into the bay. The creek is then directed through a pipe flowing beneath the railway before reaching the bay. The creek meanders and changes course throughout the season. During heavy rain events, the creek will overflow its banks. The riparian vegetation along the creek is composed primarily of willow species, red osier dogwood and red alder. There is a forested wetland comprised of red alder, black cottonwood and sparse western redcedar adjacent to the lower parking lot and the boundary of the forested parkland (HMU 2).

Wildlife Habitat

Howarth Park’s natural areas provide four types of wildlife habitat including upland conifer/deciduous forest, riparian zone, forested wetland and beach front. The forested areas of the park provide hiding, forage and nesting opportunities for a variety of birds and small mammals. There are a few snags and tall stumps with evidence of use by cavity nesters, particularly within the forested gulch (HMU 4) although there is not a great deal of coarse woody debris (CWD) throughout the park. The following table outlines bird species documented at Howarth Park by the Pilchuck Audubon Society and includes shorebirds sited along the beach front adjacent to the forested portions of the park.

Table 3: Bird species

American Crow	House Sparrow
American Robin	Northern Flicker
Bald Eagle	Northwestern Crow
Barred Owl	Pigeon Guillemot
Barrow's Goldeneye	Pine Siskin
Bewick's Wren	Red-necked Grebe
Black-capped Chickadee	Ring-billed Gull
Bushtit	Rock Dove
Chestnut-backed Chickadee	Ruby-crowned Kinglet
Common Loon	Song Sparrow
Common Merganser	Spotted Towhee
Dark-eyed Junco	Steller's Jay
Double-crested Cormorant	Varied Thrush
European Starling	Western Grebe
Glaucous-winged Gull	White-crowned Sparrow
Golden-crowned Kinglet	Winter Wren
House Finch	Yellow-rumped warbler

Based on the species composition and structure of Howarth's mixed conifer/deciduous forest and riparian area adjacent to Pigeon Creek 2, wildlife species which have a high likelihood of utilizing the habitat types outlined in this plan include Pacific Tree Frog, Northwest salamander, little brown bat, deer mouse, raccoon, Townsend chipmunk, creeping vole, mole species, mountain beaver, and Douglas squirrel. Given the highly urbanized environment surrounding the parks perimeter, we highly expect to see common non-native mammals such as house mouse, Eastern gray squirrel, and opossum. These species are considered invasive and compete for resources with native urban wildlife.

Pigeon Creek 2 is considered a fish bearing stream, but fish species present have not yet been confirmed nor has there been a full assessment of amphibians or other aquatic species.

Stewardship

The forested areas of Howarth Park offer a valuable cultural and natural resource to the city of Everett. The primary management concerns at Howarth Park include invasive species, lack of long-lived conifer species in the overstory and soil erosion and slumps occurring on steep slopes. The vision of this stewardship plan is to improve the health and long term sustainability of the forest in addition to maintaining safety and aesthetics for the public. This will be completed by volunteer forest stewards, Everett Parks and Recreation staff and if needed, additional skilled field crews.

Four-phase Restoration Approach

In each HMU, forest stewards will employ a four-phase approach to site stewardship as outlined in the Green Everett Forest Steward Field Guide:

- 1-Invasive removal
- 2-Planting with native trees, shrubs and groundcovers and secondary invasive removal
- 3-Continued invasive removal, watering (where necessary and feasible) and mulching
- 4-Monitoring and Maintenance

Restoration and Enhancement Recommendations

This section includes information on restoration activities for the six habitat management units at Howarth Park. An overview of recommended management actions by season and year is also included at the end of this section.

As noted above, forest stewards will be conducting restoration using the four-phase approach that includes invasive removal, planting, continued maintenance and monitoring. Planting with native species is recommended following removal of invasive plants in each HMU. To increase forest health, forest stewards should increase structural diversity within the shrub layer of the forest and plant conifer trees to regenerate the canopy. Planting should be conducted from late fall to early spring during the rainy season to ensure sufficient soil moisture which will allow plants to establish.

Ongoing maintenance will be a key factor in the success of restoration at Howarth Park. This involves ongoing removal and control of invasive species for several years. Regular mulching of native plants is important to plant establishment and weed management. Mulches help retain soil moisture and can help prevent surface soil erosion. The materials recommended by Partnership staff are a combination of wood chip mulch and burlap.

Forest stewards, in collaboration with Green Everett Partnership program staff will be responsible for creating site specific restoration plans that include the number and species of plants to be installed and outline of additional management strategies for invasive control, mulching, slope stabilization etc.

Recommendations Overview Per HMU

HOWA-01

Restoration activity in this HMU will focus on hand pulling and mechanical removal of invasive plant species which includes Scotch broom Himalayan blackberry and bindweed followed by native plant installation.

HOWA-02

The north facing slope adjacent to the stairs is quite steep and will require Himalayan blackberry removal and appropriate plantings to deter soil erosion. In Winter of 2013, a slide occurred in the NE corner of HOWA-2 along the railway corridor. This NE corner will not be the focus of forest steward activities as BNSF may be involved in mitigation work to protect the railway. The north facing slope adjacent to Pigeon Creek is too steep for Forest Stewards to work on, but is in dire need of tree planting and other planting to aid in slope stabilization. The steeper grades greater than 40% will be planted by skilled field crews. Shallower slopes can be planted by volunteers.

Mulch will be used to suppress regrowth of invasives in upland areas. Conifers including spruce and western redcedar are to be planted in the flat area near the parking lot. Live stakes of red osier dogwood and willow are recommended in wet areas inundated with creeping buttercup to help outcompete and shade out the buttercup. Live staking guidelines can be found in the best practices outlined by Sound Native Plants in the Appendix.

HOWA-03

The site underwent geotechnical evaluation and replanting by the City of Everett. In late winter 2012, 2,000 western redcedars and Sitka spruce were planted in this area. There is a section of roadside corridor from the parking lot entrance up hill to the upper parking lot that has light ivy and blackberry. In areas where slope is less than 40%, invasive removal could be conducted by forest stewards.

HOWA-04

Stewardship activities have already begun in this HMU. In January 2013, blackberry and ivy removal was conducted along the forest edges adjacent to the road and the landscaped lookout. In March 2013, 313

plants were installed under cedar trees by the overlook as well as along the forest edge adjacent to Olympic Blvd.

The *Rosa rugosa* patch adjacent to the lawn/ lookout area will be managed by Everett Parks and Recreation. Parks staff have been manually removing blackberry and treating mature knotweed with foliar herbicide. This corner is maintained as a view corridor so there are no immediate plans for tree planting at the top of the slope by the lawn. Trees could be planted, however, downslope to aid in slope stabilization of this bluff.

HOWA-04 also includes a forested gulch that is dominated by short lived deciduous trees and a mosaic of native understory ferns, shrubs, and herbs. As noted earlier, the north facing slope of the gulch experienced a slide in winter of 2012 causing a wooden pedestrian bridge to fail. Everett Parks and Recreation have closed the trail through the gulch to park visitors and plan to remove the debris from the failed bridge. City staff will need to schedule a geotechnical evaluation to evaluate slope stability and conduct trail restoration before the trail officially re-opens. Forest stewards and WCC crewmembers will still be able to access the western portion of this trail to remove blackberry, ivy patches, and plant trees as needed. In order to aid in slope stabilization, it will be important to plant shade tolerant conifers such as western redcedar or western hemlock. Sitka spruce is also appropriate for wet areas. Enhancing the understory with species such as willow (right next to creek), cascara, dull Oregon grape, sword fern, salal is also needed to outcompete invasives.

HOWA-05 (1.15 acres)

There is a large section of ivy in this HMU at the far west side of the Park property near the bathrooms that needs to be removed. This will be done by hand creating “survival rings” on trees. This will be an appropriate activity for forest stewards and large work parties. The remainder of the HMU is landscaped but contains mature conifers without forest understory. The primary focus in this HMU will be protecting mature Douglas-fir from invasive encroachment.

In fall 2013 the bathroom in this area will be remodeled. Parks and Recreation plans to remove a number of western redcedars adjacent to the bathroom that pose a hazard tree risk as part of the bathroom renovation.

HOWA-06 (4.19 acres)

Restoration will focus on invasive plant removal, slope stabilization and mulching. Conifer canopy should be enhanced with western redcedar (in shaded areas) and Douglas-fir (in sunnier areas). Understory can be enhanced with understory trees and shrubs such as vine maple, snowberry, salal, sword fern and dull Oregon grape.

Invasive Plant Management

Invasive plant removal will be a primary focus of stewardship activities on this site. Aggressive, nonnative shrubs and vines cover the ground, blocking sunlight from and competing for nutrients with the native species. Himalayan and evergreen blackberry bushes spread along the ground in large thickets grows densely, choking out native plants and destroying native habitat for wildlife species. Invasive species pose a threat to the future plant composition of the forest by suppressing native understory herbs, shrubs and trees.

The following information describes common methods for removing the most prevalent invasive species in Howarth Park:

Himalayan blackberry

Himalayan blackberry (*Rubus armeniacus*) is a vigorous evergreen shrub armed with sharp thorns and prickles on the stem. The plant thrives in open, disturbed areas but also invades forested areas on wet and dry sites. This plant forms dense thickets that exclude other species and can also climb and smother trees. Control of Himalayan blackberry will require monitoring and maintenance over a number of years. Removal methods include manual removal, mechanical methods such as mowing, cutting and dabbing stubs with herbicide or a combination of these treatments. Volunteer forest stewards will primarily use manual removal methods which includes cutting blackberry canes with loppers and pruners one foot above the ground. Depending on the size of the plants, the root balls should be grubbed out using a hand tiller, shovel, Pulaski or pick mattock. Canes can be piled on top of cardboard and left to decompose. Root balls should be removed to avoid re-rooting. Mechanical methods such as mowing or brush cutting can also be effective and would be conducted by Everett parks staff. Herbicide treatment has also been effective in controlling large infestations especially when combined with mechanical control. Chemical applications would only be conducted by Parks staff or licensed field crews. A glyphosate herbicide is recommended – Roundup for upland areas and Rodeo for areas within 100' of aquatic areas, such as along Pigeon Creek 2. For more information on Himalayan blackberry and management practices go to: <http://www.invasive.org/gist/moredocs/rubarm01.pdf>

Reed Canary Grass

Reed canary grass (*Phalaris arundinacea*) is a perennial, cool-season, rhizomatous plant in the grass family. It spreads via creeping rhizomes that form a thick sod layer, which can suppress all other plants growth. It grows to about 2 meters tall and has flat leaf blades measuring up to 0.5 m long by 2 cm wide. It commonly occurs in low elevation wetlands, wet ditches, along roadsides. Reed canary grass prefers seasonally or continually wet habitats and does not survive in dry uplands. However, it can tolerate prolonged periods of drought. Controlling reed canary grass will take a multi-year adaptive management approach that includes removal of plants and rhizomes, exhaustion of existing seed bank, and replanting with native species. Continued monitoring and follow-up treatments will be required.

Small patches of reed canary grass can successfully be removed by digging out and removing the entire root mass which is most successful when the soil is moist. All rhizomes and roots should be removed as small rhizome fragments can re-sprout. For this reason, on-site composting is not appropriate for this plant.

Reed canary grass can be successfully controlled by the proper use of herbicide. Small clumps of reed canary grass can be controlled with one application, but large infestations will likely require several applications over several years to be effective. Since this plant grows in wet areas, only aquatic approved herbicides are allowed in many situations. However, herbicide applications would be conducted by Everett Park's staff or qualified field crew.

Restoring the area with native species is an important strategy to outcompete reed canary grass. Its seeds have specific light requirements for germination and the plants are intolerant of year round shade. Therefore re-establishing the native understory and overstory can be an effective tool. Native evergreen species planted in the forested wetland area at Howarth such as *Pseudotsuga menziesii* or *Picea sitchensis* can successfully shade-out reed canary grass. Also developing a health understory using live stakes of shrubs like willow and dogwood has shown to be a successful tool in outcompeting this weed. For more detail on control methods for reed canary grass go to:
<http://www.invasive.org/gist/moredocs/phaaru01.pdf>

English Ivy

English ivy (*Hedera helix*) is not as prevalent as Himalayan blackberry, but slowly taking hold in four of the HMUs. It is one of the most invasive plants in the Pacific Northwest. This plant is an evergreen vine that forms dense mats in the forest understory and climbs up trees. Vines prevent light from reaching the leaves and add weight to the canopy, causing the tree to weaken and fail during storms. According to the FLAT assessment, English ivy is found in 4 or the 6 HMUs.

The most effective method for controlling English ivy is manual removal. This can easily be done by forest stewards and community volunteers as well as Parks staff. Manual removal involves installing "survival rings" around trees by cutting or prying vines off the tree at shoulder height. This will essentially kill any remaining vines left above that point on the tree. Lower vines should be cleared along with roots to within a five foot radius of each tree.

For large continuous swaths of ivy on the ground, an "ivy log" can be created by clipping the edges of a five to ten-foot-wide section and rolling it into a log. All root connections should be severed and the log should be placed on top of the compost pile to decompose or moved off site.

On-site composting of English ivy is accepted as long as the ivy is up off to ground to prevent stems from re-root. Chemical control of English ivy is typically ineffective due to the waxy nature of its leaves. The waxy coating prevents the plant from easily absorbing herbicides causing the chemical to run off and affect neighboring vegetation. More detail on control methods can be found at:

<http://www.invasive.org/gist/moredocs/hedhel02.pdf>

English holly

English holly (*Ilex aquifolium*) is an evergreen tree that can reach up to 50 feet and are often seen as understory trees. This tree can form thickets in the forest understory and can grow in low-light conditions making it a fierce competitor with native understory trees and shrubs as well as regenerative native conifer trees. The most effective method of control is to remove the entire root when the tree is still small. On larger trees, it is impossible to adequately remove the entire root system. Simply cutting

down the tree is not effective because English holly “suckers” and spreads when cut. Therefore a “cut-stump” treatment is recommended where an herbicide such as Roundup is directly applied to the cut portion of the trunk immediately after cutting. Cut-stump treatments will be administered by Everett Park’s staff or licensed field crew.

Knotweed species

Knotweeds (*Polygonum sp.*) are perennial bamboo-like plants from Asia that grow in dense rhizomatous mats with plants reaching between 3 to 16 feet tall. Species commonly found in Snohomish County include Bohemian, Giant, Himalayan, and Japanese knotweed. Rhizomes can spread at least 23 feet and possibly as far as 65 feet from the parent plant and penetrate up to 7 feet in depth. Knotweeds spread and easily establish from plant fragments. For this reason, mowing is not a successful control strategy and is strongly discouraged. It is most commonly found along creeks, rivers, wetlands, and ditches but can also be found in upland areas. Despite the thick rhizomatous mat, knotweed provides poor erosion control.

Successful eradication will require an integrated approach of manual removal and herbicide over several years. For the small infestations found along Pigeon Creek #2, aquatic approved herbicide through stem injection is recommended. Stems with a diameter greater than ¾” can be successfully treated by stem injection in late summer. A foliar spray can be used on the leaves of smaller stems. If the ground is moist, small isolated plants can be removed manually. All herbicide treatments will be conducted by a licensed field crew or Everett Parks staff.

Knotweed areas should be actively monitored for at least five years in a 25 foot area around original infestation. New sprouts can be treated with a foliar spray, with care taken to minimize damage to adjacent healthy native plants. Knotweed crowns and rhizomes should always be collected and disposed of off-site in the trash or transfer station. Knotweed removal should be followed by planting with desired native species.

Knotweeds are classified as Class B undesigned and not required for control in Washington State, however, control is required within Snohomish County. Control of knotweed in riparian areas must be coordinated with Green Everett Partnership staff. Permits may be required for control of infestations along Pigeon Creek 2. For a detailed overview of knotweed identification and control strategies see references noted in Appendix A.

Native Plant Selection

For information on developing a plant palette and site plan for restoration sites at Howarth Park, there are a number of useful resources available. The Washington Native Plant Society website has plant lists that can be referenced by light requirements and soil conditions:

<http://www.wnps.org/landscaping/herbarium/index.html>. In addition, Sound Native Plants, a native plant nursery based in Olympia, WA has a “calculator” to assist in determining plant quantities and spacing for plant installation:

www.soundnativeplants.com/sites/default/files/uploads/pdf/calculating_plant_quantities.pdf

This information can also be found in the Green Everett Partnership’s Forest Steward Field Guide. See Appendix B of this plan for a quick reference native plant chart.

Another approach to guide the plant selection process is the use of *Target Forest Types*. An important aspect of urban forest restoration is the identification of a reference plant community (a.k.a. target forest type) that serves as a guide for planning projects as well as a benchmark for evaluating projects in the future. Target forest types are based on a range of agreed-upon attributes that is desired for a site, but could also be based on measurements from a real forest in which to emulate (www.greenseattle.org/files/forest-steward-resources-2/habitat-resources)

This framework can be used as a guide for plant selection for Green Everett Partnership forest restoration projects. Measured over time, the attributes of a particular forest type will also serve to evaluate the project. As an example, a restoration goal might be to move toward a Douglas fir / salal / sword fern forest community. Then, the plant palette of our restoration site should closely model the plant community of an old growth Douglas-fir / salal / sword fern forest.

These target forest types are consistent with a statewide effort to characterize the plant associations that naturally occur in forest ecosystems in the Puget Trough ecoregion. The “associations” are named by dominant plant species (the dashes in the names separate trees, shrubs and herbs in the same canopy layer; slashes in the names separate species in different canopy layers). For more information on Target Forest Types go to: www1.dnr.wa.gov/nhp/refdesk/communities/index.html

Soils and Bluff Management

The primary considerations for the soils at Howarth Park include compaction and erosion control. The Alderwood-Everett soils found at Howarth have low resistance to compaction which suggests that low-impact equipment should be used for restoration activities. Logging activities are not planned for this property, but care should be taken when using equipment for restoration. Hand planting is recommended for these sites.

Slope stability and soil erosion is a significant management concern at Howarth Park. In 2012 Howarth Park had slope failures along railway corridor of HMU2, along Olympic Blvd in HMU 3 and within the forested gulch of HMU 4 that resulted in road and trail closures. The slide in HMU 2 partly falls on BNSF property, so Everett Parks and Recreation will be involved in addressing this slide to the property boundary. HMU 3 has been replanted by a forestry contractor hired by The City of Everett (see stewardship breakdown by HMU, page 12). HMU 4 requires further evaluation as a pedestrian foot-bridge was damaged in the slide. Forest stewards and community volunteer activities will need to consult with Green Everett Partnership before proceeding with any restoration activities within the slide areas.

When creating restoration site plans, it will be important for forest stewards to consider the natural processes of the bluff environment particularly the role of vegetation, drainage patterns and soil type in slope stability.

Vegetation plays an important role in minimizing erosion. Plant foliage and leaf litter intercept and slow rain fall impact which can loosen soil and move it downslope. Forest litter also acts as a sponge, holding water and slowly releasing it into the soil. Plants themselves draw water up through roots, stems and trunks. And roots of trees, shrubs, and herbs form binding webs through the top soil layers reducing risk of shallow landslides. Vegetation alone does not protect against deep seated mass soil movement caused by groundwater, but is effective in protecting against surface erosion. For more information on bluff management and slope stabilization refer to Appendix C.

Because of the evidence of soil erosion due to surface water flows, native understory plants should be installed along steep slopes even in areas where invasive plant cover is low. Additional strategies for erosion control may be employed, particularly in areas where there is a lot of bare soil after invasive plant removal. One strategy is to utilize wattles or fascines. Wattles, also called live fascines, are cylindrical bundles of live branches that are tied with twine and installed on slopes for stabilization and to introduce new plant material. Wattles reduce water velocity, trap sediment, and hold soil in place. Wattles can include similar plant material that we might use for live staking such as dogwood and willow. Both live stakes and wattles will sprout and grow, forming a living stabilization system.

View Corridors

Howarth Park has four designated view corridors that were originally cleared for view in 1984 and 1985. See the Howarth Park map in Appendix G for an overview of view corridors. Two of the corridors are in the east side of HMU 2 adjacent to residential areas along Olympic Blvd. Another is found in middle Howarth within HMU 9. The fourth area is in Upper Howarth in HMU 10.

The forestry crew of Everett Parks and Recreation is responsible for maintaining these views. The Everett Tree Policy, adopted by city council in 1993, prohibits removal of public trees for private view except in designated view corridors. The goals of Everett's view corridor policy are to preserve scenic views in parks, keep view corridor areas fully vegetated with lower growing trees, shrubs, and herbaceous plants, preserve root systems to avoid erosion, and plant appropriate native species.

Restoration activities conducted in view corridors by Forest Stewards must be approved by Everett Parks and Recreation to ensure adherence to Everett's view corridor management practices.

Table 4 provides a summary of Pacific Northwest native plants appropriate for slopes in view corridors. Adapted from Everett Parks and Recreation forestry department:

Table 4. Native Plants for Slopes in View Corridors

Latin Name	Common Name	Recommended planting area 'down slope'	Type
<i>Acer circinatum</i>	Vine maple	0 – 90'	Multi-branched
<i>Amelanchier alnifolia</i>	Western serviceberry	0 – 90'	Multi-branched
<i>Cornus stolonifera</i>	Red-osier dogwood	0 – 90'	Multi-branched
<i>Corylus cornuta</i>	Beaked hazel	0 – 90'	Multi-branched
<i>Gaultheria shallon</i>	Salal	0 – 90'	Understory
<i>Mahonia nervosa</i>	Low Oregon grape	0 – 90'	Understory
<i>Polystichum munitum</i>	Sword fern	0 – 90'	Understory
<i>Rhamnus purshiana</i>	Cascara	0 – 90'	Multi-branched
<i>Pinus contorta contorta</i>	Shore pine	30 – 90'	Single leader
<i>Taxus brevifolia</i>	Pacific yew	30 – 90'	Single leader
<i>Thuja plicata</i>	Western redcedar	30 – 90'	Single leader
<i>Tsuga heterophylla</i>	Western hemlock	30 – 90'	Single leader
<i>Tsuga mertensiana</i>	Mountain hemlock	30 – 90'	Single leader
<i>Pseudotsuga menziesii</i>	Douglas Fir	60 – 90'	Single leader

See Appendix C for additional resources on native plants appropriate for slopes and view corridors.

Riparian Areas

Pigeon Creek #2 is one of 15 drainage basins managed by the City of Everett Public Works department and will be evaluated as part of Everett’s Stormwater Comprehensive Plan. This plan will evaluate nearby vegetation, stream bed sediment, channel bank condition, number and health of fish, barriers to fish passage and water temperature. The property is within the Riparian Management Zone (RMZ) buffer for a Type F (fish habitat) stream. However, timber harvest activities will not be done on this property, as it is a city park, so harvest buffers will not be an issue. Restoration activities within the RMZ will be done in consultation with appropriate agencies, if needed.

The primary focus for forest stewards along the riparian corridor and forested wetland area will be invasive species removal and planting with native species. Live staking with red osier dogwood and willow along the creek can be used in areas that have been inundated with creeping buttercup and reed canary grass. This will shade out and ultimately out-compete the invasive species. Green Everett Partnership staff will consult with Parks and Public Works staff regarding appropriate Partnership (and forest steward) activities as the Comprehensive Plan process moves forward.

Wildlife Habitat

A common problem facing urban forests, including Howarth Park, is the issue of fragmentation. This is when contiguous forest and natural areas are divided, in this case by residential development. This decreases valuable habitat in the internal areas of the forest and increases the “edge effects” along the exterior of the forest. This increases the exposure to impacts from human activity. Given this challenge,

it will be important to protect and enhance the habitats and resources available to wildlife at Howarth Park.

Due to past landscape practices and the need to remove hazard trees for public safety, there are not many snags left within the park. There are a few, which show activity by cavity nesters. There are a number of old stumps, but not a significant amount of large coarse woody debris. As invasive species are cleared and the native understory is restored, CWD should also be included and installed as part of restoration plantings.

Howarth contains a number of trees with high wildlife value. This refers to native hardwood trees and shrubs that produce soft or hard mast (fruit or nuts) that is favored by many bird and mammal species. Examples include bigleaf maple, willow, and red-osier dogwood. However, the number and diversity of species could be enhanced throughout the park. Potential species include vine maple, red huckleberry, evergreen huckleberry and beaked hazelnut. Due to the variety of conditions throughout the park (shade, steep slopes, wet conditions), native plants will be chosen that best perform under those habitat conditions.

Protection of Special Resources

An analysis completed by the Washington Department of Natural Resources (DNR) in November 2012 using the Forest Practices Application Review System (FPARS) has determined that no special resources are known to exist on the site. The site is located approximately 1,300 feet from a bald eagle nest buffer, but it does not fall within the buffer itself. Additional information on bald eagle buffers can be found at <http://www.fws.gov/pacific/eagle/timber.html>.

Crime Prevention through Environmental Design (CPTED)

CPTED is a crime prevention concept used to evaluate and improve the physical security of a landscape or structure. CPTED aims to deter crime and other undesirable behaviors by reducing or eliminating opportunities found in built or landscaped environments by controlling access, providing opportunities to “see and be seen,” demonstrating ownership of the property, and encouraging maintenance of the area.

CPTED, as applied to forested parks and trails, is aimed at maximizing visibility along pedestrian pathways and trails. CPTED principles should be applied when doing plant selection and maintaining existing vegetation along trails. Park users should have good visibility of immediate and approaching surroundings along pedestrian pathways. This can sometimes be as simple as pruning the lower branches of large trees and planting low growing understory plants along trails such as sword fern and dull Oregon grape.

Maintaining visibility off trail throughout a forested park is not feasible, however, forest stewards should keep these principles in mind when doing restoration activities along trails or near public gathering or picnic areas. Any questions regarding CPTED principles can be directed to the urban forester at Everett Parks and Recreation or a Green Everett Partnership staff member. See Appendix D for an overview of CPTED Principles for trails and suggestions for further reading.

Monitoring

Monitoring is the important step in restoration that provides ongoing information on the condition and actions needed to ensure long-term success. Monitoring can be done via visual inspections, photo documentation and scientific monitoring.

One basic method of monitoring is to simply walk through the site and do a visual inspection. Factors to assess include plant mortality, presence of invasive plants or other negative impacts to the site. Periodic monitoring assists in developing site plans and management actions. This should be done at least twice per year, once during the growing season.

Photo documentation can be done along with visual inspections to assist in record keeping and tracking progress of the site. Photo points should be established so that the photograph of the site is taken from the same place. This allows for more accurate comparison of site conditions year to year. Both visual inspection and photo points provide qualitative data that can easily be done by volunteers and forest stewards.

Scientific monitoring is a quantitative methodology that requires setting up permanent plots and a more rigorous data collection approach. The Green Cities program has developed standardized monitoring protocols for baseline and long-term data collections that can be conducted by trained volunteers, staff, or contractors. Permanent plots allow volunteers to evaluate site conditions in greater depth and even evaluate the effectiveness of management strategies. Data collected could include plant survivorship, tree density, vegetative cover of native versus non-native species, presence of coarse woody debris and soil conditions. For more information on the Green Cities Forest Monitoring protocols contact the Green Everett Partnership program staff at greeneverett@forterra.org.

Volunteers and Public Engagement

The Partnership has developed a 20 year forest management plan to restore and protect the urban forested parkland in Everett and create a volunteer forest stewardship program charged with conducting restoration activities. In addition to being trained in restoration practices, Forest Stewards will also have the opportunity to attend specialized trainings in volunteer management, monitoring, native plant identification and more.

Volunteer forest stewards will be trained to remove invasive plants, replant native trees and understory plants to improve the ecological health of the forest. And with the assistance of Partnership staff, Forest Stewards will educate and engage the public in caring for this valuable natural and public resource. Residents and neighbors will be invited to participate in restoration work parties. We also hope to engage school groups, corporations and community groups such as the Boy Scouts, to participate in restoration work parties at Howarth Park.

In addition to engaging the public in on-site restoration, we also plan to engage private property owners who live adjacent to Howarth Park. There is evidence that some neighbors have been dumping their yard waste (grass clippings, weeds etc.) along the edges of the park into the forested gulch area along

the slope. This contributes to the threat of invasive species in the park and can actually cause harm to the understory plants and threaten slope stabilization. There is also evidence of tree topping to provide views in certain areas of the park, which also poses health issues, weakens trees and adds to slope instability. Positive engagement will be of key importance. Education will focus on how they can use best management practices on their own landscapes while maintaining the ecological integrity of their neighborhood forest. As slope stabilization and bluff management will be of great importance to forest health at Howarth Park, this can also be a focus of private landowner outreach.

Engaging neighbors and Everett residents will be done in a variety of ways including through social media outlets (neighborhood blogs, websites), Everett Parks department and Forterra newsletters and publications, flyers at popular community venues and in-person outreach at community events.

By educating and engaging the community that utilizes Howarth Park and cultivating an ethic of environmental stewardship for the park, the long-term health of the forest will be improved as well as the long-term viability for recreation.

Management Timetable & Overview

Howarth Park Management Timeline			
Year	Season	HMU	Activity
2013	<i>Create annual work plan - walk through sites and assess maintenance needs</i>		
	Winter	4	Ivy removal by top of stairs/grassy overlook and spot removal of invasives along trail through gulch. Blackberry removal along forest edges/ mulching.
	Early Spring	4	Planting along forest edges and under trees where ivy was removed.
	Summer	5	Ivy removal from conifers adjacent to bathroom.
		4 and 5	Continue invasive removal throughout HMUs and mulch where appropriate for weed suppression. Note access issues through forested gulch in HMU 4.
		4	English holly cut stem treatment – field crews.
		4	Everett Parks Crew to mow remaining blackberry along forest/lawn edge followed by root grubbing and cleanup by volunteers.
	Autumn	4 and 5	Continue invasive removal in HOWA 4 and 5.
		4	Create planting plan for slope through forested gulch and remaining forest/lawn edge planting sites.
2014	<i>Create annual work plan - walk through sites and assess maintenance needs</i>		
	Winter	4	Plant trees and understory plants through gulch to assist in slope stabilization.
	Spring	4	Mulch and maintenance around new plantings.
	Summer	4	Maintenance and continued invasive removal along trail system.
		2	Begin invasive removal near lower parking lot in riparian area. Green Everett Partnership staff will determine appropriate activities for volunteers versus skilled field crews pertaining to knotweed and reed canary grass management.
	Autumn	2	Replant reed canary grass and knotweed removal areas with native shrubs and trees to outcompete invasive plants. Consider dense planting of willow or dogwood using live stakes.
2015	<i>Create annual work plan - walk through sites and assess maintenance needs</i>		
	Winter	2	Plant spruce and cedar in forested wetland adjacent to lower parking lot.
			Mulch new plantings.

2015 Continued

	Spring/ Summer	2,4, 5	Continued maintenance and monitoring of cleared and planted areas.
		2-riparian area	Monitor for invasive plant resprouts; check on plant installation.
	Autumn	2-riparian area	Install live stakes of red osier dogwood and willow sp. in riparian zone and adjacent to boardwalk.
2016	<i>Create annual work plan - walk through sites and assess maintenance needs</i>		
	Winter/ Spring	2-North section	Invasive plant removal
	Summer	2 -riparian area, 4,5	Maintain plantings, replace mulch where needed, invasive removal
2017	<i>Create annual work plan - walk through sites and assess maintenance needs</i>		
	Winter		Maintenance and Monitoring of restored areas
	Spring/ Summer	2, 3	Possible project: Interpretive trail map and signage for Pigeon Creek and middle Howarth gulch trail.
	Autumn		Additional plant installation and maintenance throughout HMUs
2018-2022	<i>Assess work to date and update plan for next five years</i>		
	Winter/ Spring	6	Invasive plant removal, mulch where appropriate and install slope stabilization measures
	Autumn	6	Plant western redcedar, Douglas-fir and understory species.
	Year Round	1	Invasive plant removal
		4	Explore possibility of creating information kiosk by parking lot at middle Howarth.
	Year Round	all sites	Walk through/ maintenance of cleared areas
2023-2027	<i>Assess work to date and update plan for next five years</i>		
	Year round	3	Assist in maintenance and vegetation efforts as appropriate.
2028-2032	<i>Assess work to date and continue with maintenance of acres in restoration.</i>		

Appendices

Appendix A: Invasive Species Information and Resources

Snohomish County Noxious Weed Board

[www1.co.snohomish.wa.us/Departments/Public Works/Divisions/Road Maint/Noxious Weeds/](http://www1.co.snohomish.wa.us/Departments/Public%20Works/Divisions/Road%20Maint/Noxious%20Weeds/)

English holly: your.kingcounty.gov/dnrp/library/water-and-land/weeds/Brochures/English-Holly-Fact-Sheet.pdf

English Ivy: www.invasive.org/gist/moredocs/hedhel02.pdf

Himalayan blackberry: www.invasive.org/gist/moredocs/rubarm01.pdf

Knotweed: www.invasive.org/gist/moredocs/pol spp01.pdf;

<http://your.kingcounty.gov/dnrp/library/water-and-land/weeds/BMPs/Knotweed-Control.pdf>

Reed canary grass: www.invasive.org/gist/moredocs/phaaru01.pdf

Appendix B: Native Plant Information and Resources

Washington Native Plant Society: <http://www.wnps.org/>

Washington Forest Stewardship: <http://snohomish.wsu.edu/forestry/resources.htm>

King County Native Plant Guide: <http://green.kingcounty.gov/gonative/>

Plant Nurseries

Sound Native Plants: <http://soundnativeplants.com>

Snohomish County Conservation District: <http://snohomishcd.org/>

Banksavers (Arlington, WA): <http://bank-savers.com/>

Storm Lake Growers (Snohomish, WA): www.slgrowers.com

Native Plant Chart (attached - adapted from the GEP *Forest Steward Field Guide*)

Appendix C: Slope Stabilization and View Corridors

BLUFF MANAGEMENT

<http://www.ecy.wa.gov/programs/sea/pubs/93-30/index.html>

SHORELINE MANAGEMENT AND STABILIZATION USING VEGETATION

The following links to materials developed for the Coastal Training Program by Elliott Menashe of Greenbelt Consulting. There is a wealth of information at this website.

<http://www.greenbeltconsulting.com/ctp/toc.html>

LIVE STAKES & CUTTINGS INFORMATION SHEET:

http://www.soundnativeplants.com/sites/default/files/uploads/PDF/Live_stakes.pdf

FASCINE INFORMATION SHEET

http://www.soundnativeplants.com/sites/default/files/uploads/PDF/Fascine_installation.pdf

PLANT SELECTION RESOURCE FOR COASTAL FORESTED SLOPES

<http://www.greenbeltconsulting.com/articles/plantindicator.html>

Appendix D: CPTED Principles for Trails

**Summary of CPTED principles incorporated by Everett Parks and Recreation into their landscape management.*

To provide visual permeability; that is, maximum visibility of the immediate and approaching surroundings for users of a space, by creating an unimpeded view across relevant aspects of space, particularly public pedestrian pathways.

- To encourage natural surveillance, along with scheduled surveillance, due to improved visibility and increased use of space
- To provide deterrence, as it gives the impression that offenders and their activities can be observed
- To reduce the vulnerability of users, as it provides the ability to predict what is ahead and makes them visible to others who could come to their assistance if needed

To avoid entrapment spots, particularly adjacent to pedestrian routes, and eliminate or minimize the safety issues arising from the entrapment spots.

- To remove hiding places for potential offenders that makes users of a space vulnerable to attack.
- To reduce the presence of un-surveyed places in the design of public spaces so that users can see a safe route and have easy access to escape or help.
- Provide good sightlines

CPTED - FURTHER READING:

Safe Trails Forum: Better park design can prevent crime:

<http://www.americantrails.org/resources/safety/designcrime.html>

http://cpted-security.com/atlas/index2.php?option=com_docman&task=doc_view&gid=43&Itemid=63

http://www.ci.everett.wa.us/Get_PDF.aspx?pdfID=2366

<http://www.cpted.net/>

Appendix E: List of primary parks department and nonprofit staff

Green Everett Partnership

www.greeneverett.org

Everett Parks and Recreation

802 E. Mukilteo Blvd.

Everett, WA 98203

T: 425-257-8300 Ex. 2

F: 425-257-8325

Paul Kaftanski, *Director*

John Petersen, *Assistant Director, Project Planning and Maintenance*

Geoff Larsen, *Supervisor 2, Horticulture and Forestry*

Jeff Price, *Business Program Manager*

Forterra

901 5th Avenue, Suite 2200

Seattle, WA 98164

Joanna Nelson de Flores, *Green Cities Project Manager*

T: 206-905-6913

Kimberly Frappier, *Urban Forestry Project Associate*

T: 206-905-6919

Appendix F: Images



Tree removal along Olympic Blvd.



Pigeon Creek 2 through HOWA-02



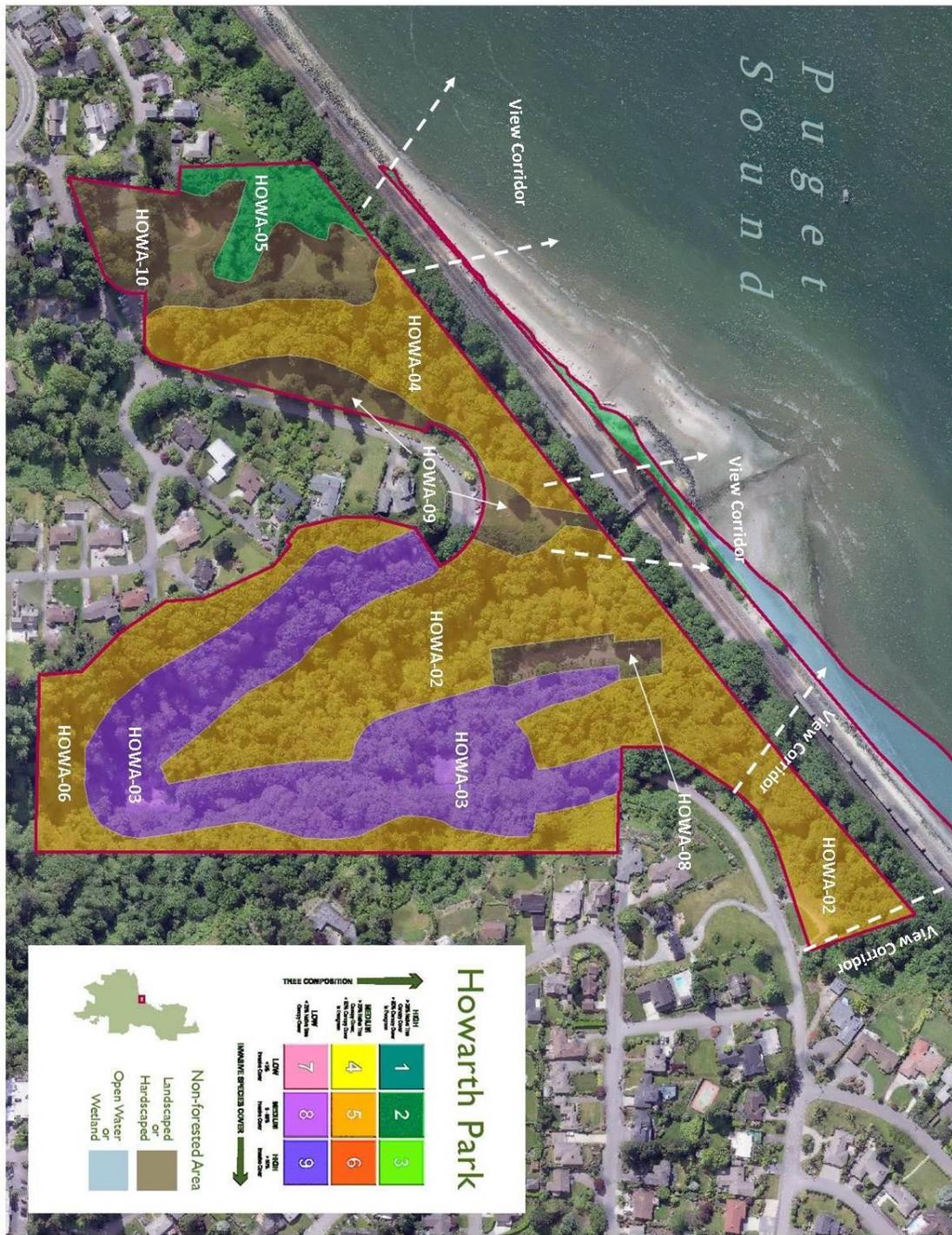
Path through forested gulch in HOWA-04



HOWA-04 Bridge failed in Winter '12 - landslide

Appendix G: Maps

Site Map (including HMUs and View Corridors)



MAP LEGEND

Area of Interest (AOI)	 Area of Interest (AOI)	 Very Stony Spot
Soils	 Soil Map Units	 Wet Spot
Special Point Features	 Blowout	 Other
 Borrow Pit	 Clay Spot	Special Line Features
 Closed Depression	 Gravel Pit	 Gully
 Gravelly Spot	 Landfill	 Short Steep Slope
 Lava Flow	 Marsh or swamp	 Other
 Mine or Quarry	 Miscellaneous Water	Political Features
 Perennial Water	 Rock Outcrop	 Cities
 Saline Spot	 Sandy Spot	Water Features
 Severely Eroded Spot	 Sinkhole	 Streams and Canals
 Slide or Slip	 Sodic Spot	Transportation
 Spoil Area	 Stony Spot	 Rails
		 Interstate Highways
		 US Routes
		 Major Roads
		 Local Roads

MAP INFORMATION

Map Scale: 1:4,120 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Snohomish County Area, Washington
 Survey Area Data: Version 7, Jun 29, 2012

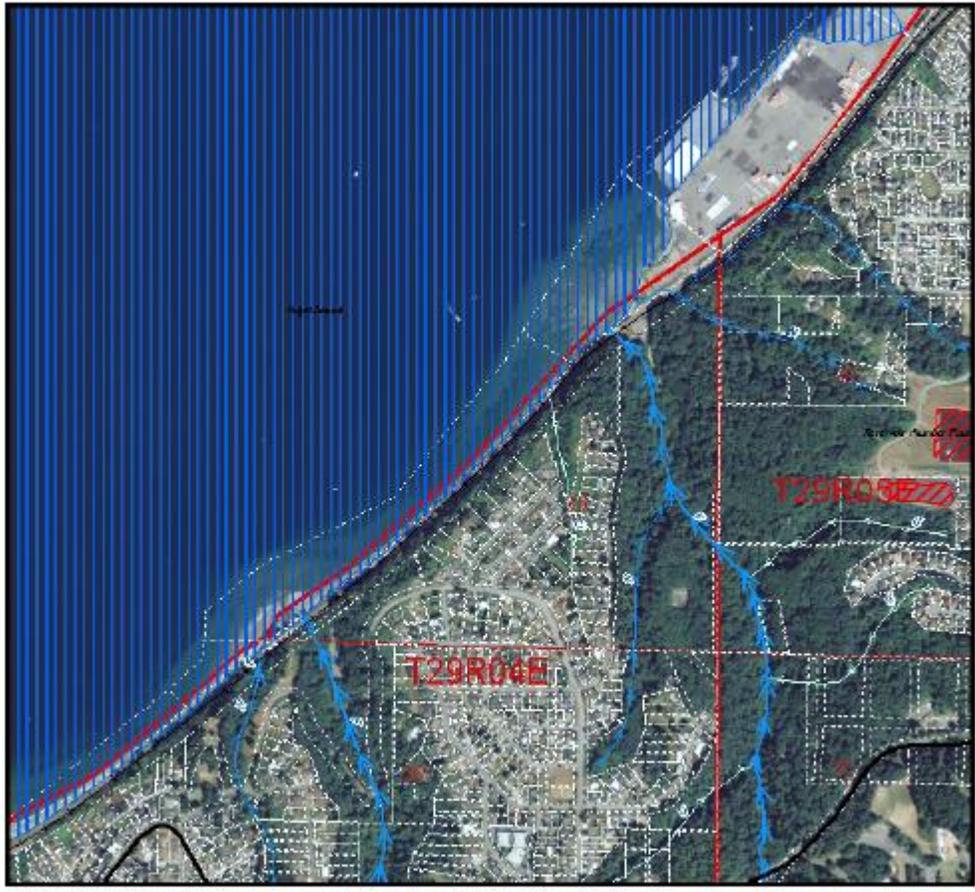
Date(s) aerial images were photographed: 7/24/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Howarth Park Soil Map)

Snohomish County Area, Washington (WA661)			
Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
3	Alderwood gravelly sandy loam, 15 to 25 percent slopes	4.7	14.9%
4	Alderwood-Everett gravelly sandy loams, 25 to 70 percent slopes	26.5	84.2%
5	Alderwood-Urban land complex, 2 to 8 percent slopes	0.3	0.9%
Totals for Area of Interest		31.4	100.0%

Water Bodies Map



Digital Orthophoto

2009 Washington Orthophoto (3-ft Color) [NAIP]		Water Bodies	
RGB			
■	Red: Band_1		Type F
■	Green: Band_2		Type N
■	Blue: Band_3		Type S
Roads			
	Paved		U, unknown
	Unpaved		X, non-typed per WAC 222-1B
	Unknown	Streams, Ponds & Wetlands	
County Tax Parcels: 2007			F (Fish)
			N (Non-fish)
			S (Shoreline)
			Unknown or Unmodeled

