

## TECHNICAL MEMORANDUM

**DATE:** June 30, 2016

**TO:** Cris Mathews, LHG - Department of Ecology Bellingham Field Office

**FROM:** David Dinkuhn, P.E., Parametrix  
Lindsey Miller, Project Manager, King County Parks and Recreation Division

**SUBJECT:** Interim Action Work Plan (Agreed Order 8439)

**CC:** Connie Blumen, Natural Lands Program Manager, King County Parks and Recreation Division  
Ray Timm, LHG, M.S., Department of Ecology Bellevue Office  
File

**PROJECT NUMBER:** 233-1521-175 (Parametrix)

**PROJECT NAME:** Maury Island Open Space Property Remedial Investigation/Feasibility Study and Draft Cleanup Action Plan

This technical memorandum has been prepared by Parametrix on behalf of King County Parks and Recreation Division (County) and presents a work plan for an Interim Action (IA) to be completed at the Maury Island Open Space Property (also often referred to as the Maury Island Natural Area). A portion of this property was formally operated as a sand and gravel mine by CalPortland and the undeveloped one mile shoreline is the longest undeveloped stretch of Puget Sound shoreline in King County. The County acquired this property in 2010 and it is currently open to the public for passive-recreation, which may include walking, jogging, hiking, mountain biking, and equestrian use. Motorized use is prohibited.

The IA will be performed with Department of Ecology (Ecology) oversight under the site's existing Agreed Order (Number 8439; dated January 31, 2013). The proposed IA approach is based on negotiations conducted with Ecology following the County's submittal of a preliminary draft Feasibility Study (FS) report for the site in July of 2015 (CDM Smith 2015). The purpose of performing the IA separately from other cleanup work at the site is to allow the County to receive reimbursement for eligible cleanup costs under a purchase and sale agreement with the site's previous owner, CalPortland. In order to be reimbursed for these costs, the work must be completed by December 31, 2016. The IA proposed in this work plan includes approximately three to four acres of re-vegetation in decision units 3c and 3e shown with gray shading on Drawing C1. The exact acreage will be determined during preparation of the construction contract.

Following these activities, a brief IA Report will be prepared that will summarize the work and contain record drawings of actual work performed.

### **SITE BACKGROUND**

The Maury Island Open Space property is located on the southeast side of Maury Island in unincorporated King County, Washington (Drawing G1). The FS was performed to satisfy a portion of the requirements of the Agreed Order, which requires the County to complete a remedial investigation (RI), FS, and draft cleanup action plan (DCAP) for the site.

The site is approximately 266-acres in size and is located on the southeast side of Maury Island situated on a sea bluff above Puget Sound. CalPortland operated a sand and gravel mine within the central portion of the site, most of which is steeply sloped and all of which is now sparsely vegetated, primarily with Scot's broom and Pacific

madrone. The remainder of the site consists of over-100 year old forests, younger forests, blackberry patches, and sea bluffs covered in blackberries, poison oak and Pacific madrone. Recreational users have created a series of trails through the forests and utilize these, as well as former graded dirt roads, for non-motorized uses including walking, jogging, hiking, mountain biking, and equestrians use. Maury Island lies within the plume fallout area from the former ASARCO Tacoma Smelter. The copper ores used by the ASARCO smelter contained high concentrations of arsenic and other metals. Over the years of operation, metals released from the Tacoma Smelter's smokestack, particularly arsenic and lead, were carried by wind, ultimately settling over a 1,000 square-mile area. As a result of this, surface soils within much of the Tacoma Smelter Plume (TSP) fallout area contain arsenic and lead concentrations that are many times greater than natural background concentrations. The soils on Maury Island are among those most significantly impacted within the TSP and this site lies within an area most greatly impacted by the TSP on Maury Island.

In June 2014 a Remedial Investigation (RI) (CDM Smith 2014a) was completed for the site. RI results showed that metal concentrations in forest duff and surface soil throughout the site, with the exception of recently mined areas and the beach, consistently exceed Model Toxics Control Act (MTCA) cleanup Levels. Research of the site's land use history identified one additional source of contamination – an area that had previously been utilized as a private skeet shooting range. The RI confirmed that former skeet shooting activities resulted in an area of relatively greater lead concentrations than found throughout the rest of the site. In addition, an area of surface soil impacted by polycyclic aromatic hydrocarbons (PAH) from skeet shards is also present.

In May 2014, Net Environmental Benefit Analysis (NEBA) (CDM Smith 2014b) was completed for the site. The NEBA concluded that the bluffs and much of the upland areas are eligible for the application of NEBA because they contain "especially valuable habitat." Therefore, a cleanup alternative involving removal of soil in these areas would result in greater environmental harm than an alternative of leaving the contaminated topsoil in place. Decision units within the site that did not qualify for the NEBA included three upland areas that are densely vegetated with blackberry bushes. These decision units include the former skeet range and units 3c and 3e (Drawing C1). Ecology concurred with the NEBA determination. Therefore, based on the NEBA, remedial alternatives developed for the site take into account the protection of the environment for those Units that qualify for the NEBA, regardless of the arsenic and lead concentrations.

### **FS Remedial Alternatives**

The Draft FS (July 2015) developed and assessed four remedial alternatives for the site. Each of the remedial alternatives relies substantially on institutional controls, including but not limited to: signage, hygiene stations, ongoing maintenance, and a land use covenant. Additional elements of each alternative evaluated are as follows:

**Alternative 1** – Closure of redundant trail spurs. Capping the entire network of forest trails per the US Forest Service guidelines. Excavating soils on the graded road/trail that exceeds 40 milligrams per kilogram (mg/kg) and regrading the road. Excavating contaminated surface soils in all areas that do not pass the NEBA. All excavated soils to be disposed of off-island in a Resource Conservation and Recovery Act (RCRA) Subtitle D landfill.

**Alternative 2** – Alternative 2 is the same as Alternative 1, except that soils will be contained below grade in two separate areas (which did not pass the NEBA), one of which will be capped by a visitor parking lot to be constructed in the portion of the former skeet range area that does not pass the NEBA.

**Alternative 3** - Closure of redundant trail spurs. Capping the entire network of forest trails per US Forest Service guidelines. Conducting soil mixing for soils on the graded road/trail that exceed 20 milligrams per kilogram (mg/kg) and regrade the road. In the portion of the former skeet range area that does not pass the NEBA, the

organic layer would be stripped off and disposed of at an off-island landfill and capped with gravel for use as an equestrian parking lot. Soils in the other two areas that do not pass the NEBA (3c and 3e) will remain because both of these areas are heavily vegetated with blackberry bushes and virtually impassible by humans.

**Alternative 4** – Alternative 4 is the same as Alternative 3, except that capping of the trails will be limited to a main thoroughfare.

### **FS Conclusions and Recommendations**

Alternative 4 was selected by King County as the preferred alternative in the Draft FS; however Ecology did not concur. King County's justification for recommending Alternative 4 over others was based on the disproportionate cost of capping the site's entire trail system. In addition, having one capped main thoroughfare was identified as having several benefits over systematically capping every trail, such as:

- It encourages trail users to utilize a specific trail system.
- It is appealing to users with young children (the most sensitive population) for its ease of use.
- King County personnel can focus their maintenance efforts more effectively because there is less area to maintain.

Additional justification for selection of Alternative 4 over other alternatives was based on the disproportionate cost of the cleanup of decision units 3c and 3e relative to the benefits achieved. These areas are presently densely covered in blackberry bushes such that the potential for human exposure is low. King County felt that remedial action in these areas, in effect, provides minimal human health benefit; however, Ecology commented that any cleanup proposal that did not address decision units 3c and 3e would not meet MTCA cleanup standards.

Based on Ecology's comments and requests for revisions to the Preliminary Draft FS, King County developed this IA Work Plan which begins the phased cleanup of Decision Units 3c and 3e. The FS is in preliminary draft status at the time of this writing and therefore the final cleanup action to address the trails, skeet range property, and other areas at this site is currently still the subject of negotiations between the County and Ecology.

### **PROPOSED INTERIM ACTION ACTIVITIES**

Decision units 3c and 3e (16.5 acres) will be revegetated in phases with dense stands of native shrubs and trees in order to limit access to recreational users as well as to provide beneficial ecological habitat. This IA will begin that revegetation by completing the first three to four acres of 16.5 acres. The prohibitive costs involved with revegetation of 16.5 acres at once and the potential erosion and sedimentation problems inherent with clearing vegetation makes it impracticable to do the entire area at one time. The estimated cost for revegetation is \$90,000 per acre. It is anticipated that available funding will support revegetation of three to four acres during the IA. The schedule for revegetation of the remaining areas will be provided in the Draft Cleanup Action Plan to be prepared for the site under the Agreed Order.

Revegetation during the IA will focus on those areas closest to the main trails. Selected areas will be cleared of vegetation and grubbed to remove roots of invasive plants. Removed above-ground vegetation and grubbed material will be screened to remove all soil. Screened soil will be stockpiled separately from the vegetation and placed on plastic sheeting on the ground surface. The screened soil will be sampled according to Ecology guidelines and disposed of in a permitted solid waste landfill if soil concentrations are found to be above cleanup levels. Vegetative material will be hauled off site and disposed of in the same permitted solid waste landfill. The IA Contractor will coordinate with the landfill regarding testing requirements for disposal for both the soil and

vegetation. It is anticipated that minimum sampling requirements will consist of total lead and arsenic for the stockpiled soil and TCLP lead and arsenic for the vegetation.

A 6-inch thick layer of a combination of coarse compost and mulch will be placed on the cleared ground surface to provide nutrients, mulch, and a physical barrier similar to a gravel cap. Selected native shrubs and trees will be planted through the mulch layer and will be spaced 4-feet on center. Planted areas will be protected from browsing deer with an eight foot tall deer fence constructed of timber posts and galvanized steel mesh fencing. The fence will also discourage human access while the plants mature. Plants will be watered until they become established and no longer require watering. It is anticipated that watering will be required for at least the first two years following planting, but based on the existing soil conditions additional years of watering may be needed.

Refer to the attached Interim Action Plans for a site plan and construction details.

**Maintenance of IA Elements**

County staff will inspect the site weekly to check for vandalism and maintenance issues such as areas of dead vegetation in the revegetation area that require replanting. Maintenance to correct these issues will be performed by County staff or by a Contractor in a timely fashion in order to protect the integrity of the IA. A formal maintenance plan and schedule will be provided for the site under the Agreed Order.

**REPORTING**

At the completion of the IA, a brief report will be prepared that provides a summary of the work performed including photographs documenting the work. Record drawings will also be provided as an appendix. The record drawings will show the limits of actual work performed and will be sealed by a professional engineer licensed to practice in the state of Washington.

**SCHEDULE**

A proposed schedule for the IA activities is provided in Table 1 below.

**Table 1. Proposed Work Schedule**

<b>Work Element</b>	<b>Completed or Submitted By</b>
Final IA Work Plan	June 2016
Public Comment Period	July/August 2016
Final IA Construction Documents Ready for Advertisement	August 2016
IA Construction Notice to Proceed	October 2016
Final IA Report	December 2016

**REFERENCES**

CDM Smith. 2014a. Final Remedial Investigation, Maury Island Open Space Property, Maury Island, Glacier Pit, Maury Island Washington. Project No. 19897-99064. June 2.

CDM Smith. 2014b. Draft Net Environmental Benefit Analysis, Maury Island Open Space Property, Maury Island, Glacier Pit, Maury Island Washington. Project No. 19897-99064. May 29.

CDM Smith. 2015. Preliminary Draft Feasibility Study, Maury Island Open Space Property, Maury Island, Washington. Prepared for King County Water and Land Resources Division. July 6.

**ATTACHMENTS**

Site Photographs

Preliminary Interim Action Plans



Decision Unit 3e to be revegetated in phases



Decision Unit 3e to be revegetated in phases



Decision Unit 3c to left and right to be revegetated in phases



Decision Unit 3c to left and right to be revegetated in phases

# KING COUNTY MAURY ISLAND OPEN SPACE PROPERTY INTERIM ACTION MAURY ISLAND, WASHINGTON

INDEX TO DRAWINGS		
DWG NO.	SHT NO.	SHEET TITLE
1	G1	COVER
2	C1	PLAN
3	C2	DETAILS



VICINITY MAP



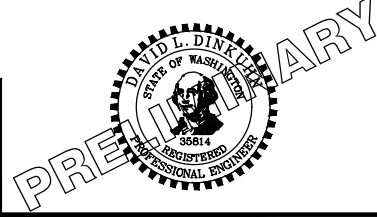
LOCATION MAP

LAYOUT: Layout1; PATH: U:\PSO\Projects\Clients\1521-KingCo\233-1521-175\_Maury\_CleanupActionPin\995\es\CADD\DWG\_PLOTTED BY: ceralde DATE: Thursday, March 03, 2016 3:44:14 PM

REVISIONS	DATE	BY	DESIGNED
			D. DINKUHN
			DRAWN
			J. CERALDE
			CHECKED
			APPROVED

ONE INCH AT FULL SCALE,  
IF NOT, SCALE ACCORDINGLY

FILE NAME  
PS1521175-G1  
JOB No.  
233-1521-175  
DATE  
MARCH 2016



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4660 KITSAP WAY, SUITE A | BREMERTON, WA 98312  
P 360.377.0014  
WWW.PARAMETRIX.COM

PROJECT NAME

**MAURY ISLAND  
OPEN SPACE PROPERTY  
INTERIM ACTION**

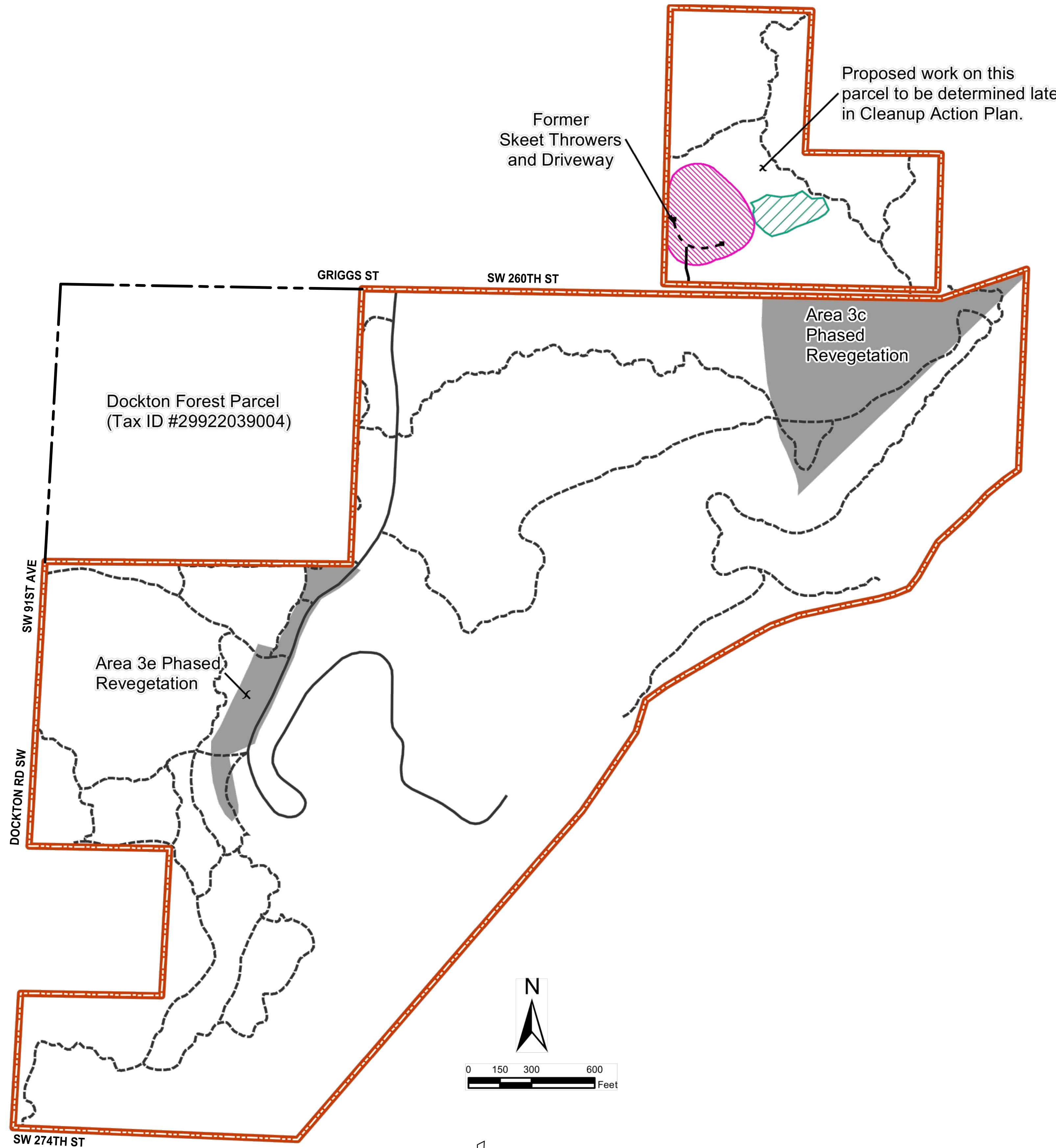
MAURY ISLAND, WA

**COVER**

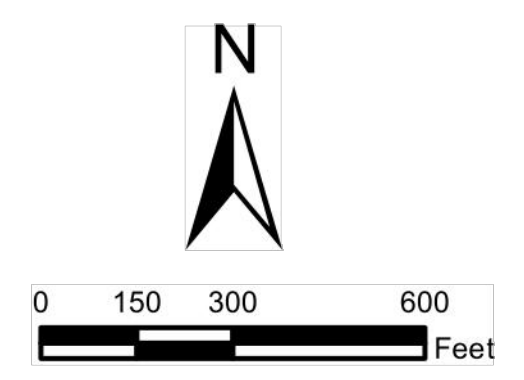
DRAWING NO.  
1 OF XX

**G1**

% REVIEW SUBMITTAL  
NOT FOR CONSTRUCTION



- Clean Roads/Trails
- Cleanup Unit Boundary
- Wetland, as mapped by King County 2013
- Former Skeet Range
- Phased Revegetation Area



**% REVIEW SUBMITTAL  
NOT FOR CONSTRUCTION**

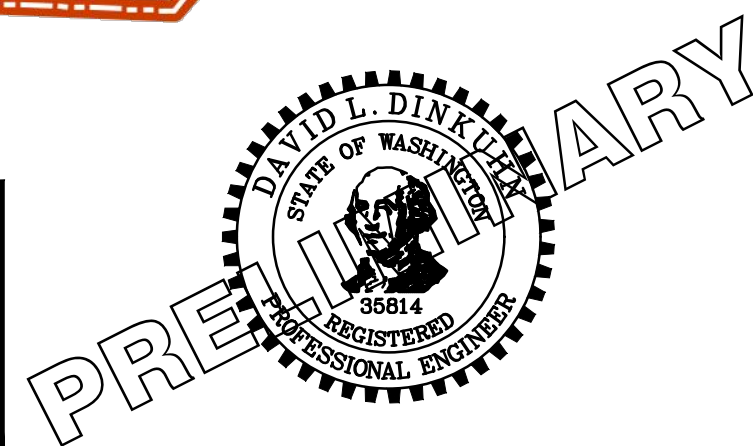
REVISIONS	DATE	BY	DESIGNED
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			DRAWN J. CERALDE
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IF NOT, SCALE ACCORDINGLY**

FILE NAME  
PS1521175-C1

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PROJECT NAME  
**MAURY ISLAND  
OPEN SPACE PROPERTY  
INTERIM ACTION**  
MAURY ISLAND, WA

**PLAN**

DRAWING NO.  
2 OF XX

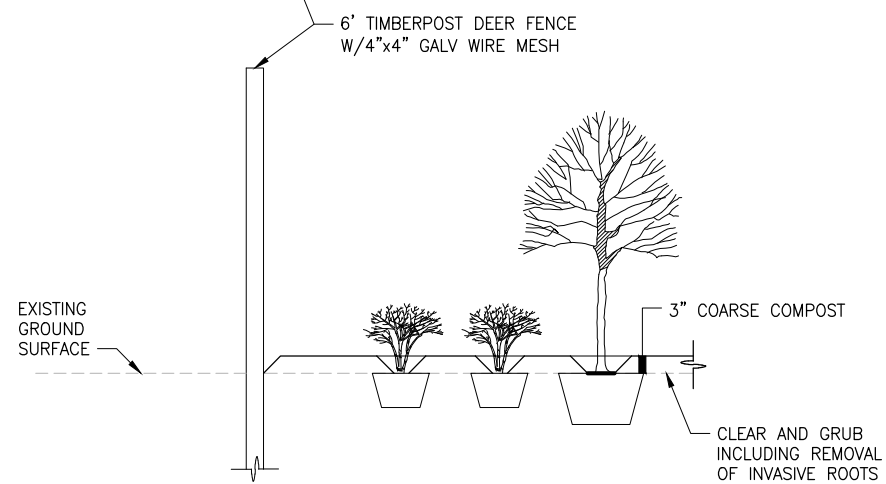
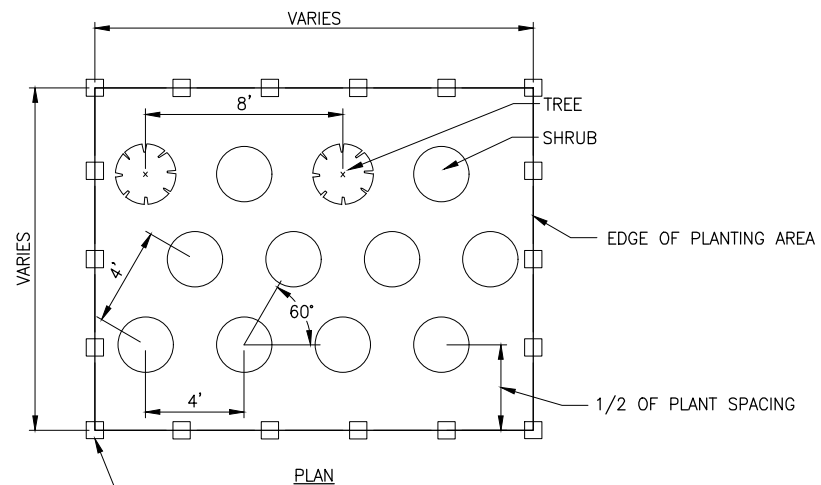
**C1**



PATH: U:\P50\Projects\Clients\1521-175\_Maury\_CleanUpActionPlan\99Sves\CADD\DWG PLOTTED BY: ceralps DATE: Thursday, March 03, 2016 3:44:37 PM LAYOUT: C2

**NOTE:**

1. NATIVE SHRUBS AND TREES, SPECIES TO BE DETERMINED.
2. PLANT SHRUBS IN SINGLE SPECIES GROUPS OF 7 TO 12 PLANTS EACH PLANT TREES IN SINGLE SPECIES GROUPS OF 1 TO 5 PLANTS EACH.



**PHASED REVEGETATION**

**DETAIL**

NO SCALE



REVISIONS	DATE	BY	DESIGNED
			D. DINKUHN
			DRAWN J. CERALDE
			CHECKED
			APPROVED

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JOB No. 233-1521-175
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PROJECT NAME  
**MAURY ISLAND  
OPEN SPACE PROPERTY  
INTERIM ACTION**  
MAURY ISLAND, WA

**DETAILS**

DRAWING NO.  
4 OF XX  
**C2**

**% REVIEW SUBMITTAL  
NOT FOR CONSTRUCTION**