DRAFT ENVIRONMENTAL ASSESSMENT

Cedar River Right Bank
Levee Vegetation Management
Renton, Washington

July 2016

US Army Corps
of Engineers®
Seattle District

Cedar River Right Bank Levee Vegetation Maintenance

Renton, Washington

Draft Environmental Assessment
March 2016

Responsible Agency: The responsible agency for this project is the Seattle District, U.S. Army Corps of Engineers (Corps).

Abstract: There is a need to address levee safety maintenance by adding a more structured analysis for determining allowed vegetation; and to bring the maintenance requirements for the Project into compliance with ETL 1110-2-583 (30 April 2014). This proposed vegetation variance for maintenance of the Cedar River Flood Damage Reduction Project is being requested pursuant to the draft Policy Guidance Letter (PGL) "*Process for Requesting a Variance from Vegetation Standards for Levees and Floodwalls*" dated 17 February 2012. If approved, the vegetation variance would be incorporated into the Operation and Maintenance (O&M) requirements for the project adding a more structured analysis for determining allowed vegetation. If not approved the existing Project O&M manual would continue to be the controlling plan for operation and maintenance as required by the Project Cooperation Agreement for the project.

The Cedar River Flood Damage Reduction Project was authorized by Section 205 of the 1948 Flood Control Act (as amended by subsequent Water Resources Development Acts) which provides for the Corps to enter into a local/federal cost-shared agreement to plan and construct small flood control projects.

The Cedar River Flood Damage Reduction Project was constructed between 1998 and 2000 by the Corps, is located upstream of the mouth of the Cedar River, from river mile (RM) 0 to approximately RM 1.07, in the City of Renton, King County, Washington (City). The project includes earthen levees combined with steel and concrete floodwalls, along both banks of the river, as well as dredging in the river channel. The project was designed to provide protection for floods as large as the 100 year event (12,000 cfs) with 90 percent reliability along the right bank. The design provided for less reliability on the left bank in order to provide additional protection to the right bank. The project also includes the Elliott Spawning channel, and the Royal Hills Spawning Channel. The Elliott Spawning channel was constructed in about 2000 to compensate for over dredging that occurred as part of the original construction. The Royal Hills Spawning Channel replaced the Maplewood Golf Course spawning channel that was destroyed during the Nisqually earthquake. The Royal Hills Spawning Channel work was funded with PL84-99 funds but is still considered part of the Cedar River 205 project and completed in 2011.

The original design for the right bank levee of the Cedar River Section 205 Flood Damage Reduction Project incorporated a park for recreational use by the residents of Renton and employees of the surrounding companies. The Project's O&M manual set the criteria for maximum size trees (based on diameter at breast height [DBH]) that can grow within the levee prism. Since being planted certain trees have grown to sizes requiring removal in accordance with the O&M manual.

In 2014 a new Engineering Technical Letter (ETL) 1110-2-583 (30 April 2014), was created. The Project's O&M manual does not comply with the ETL because it does not follow the same analysis requried for retention of vegetation. ETL 1110-2-583 does allow for the local sponsor to apply for a variance from the standard levee vegetation guidelines set forth in the ETL. ETL 1110-2-583 at paragraph 1-2, provides guidance on analyses to be completed for a variance. This guidance requires evidence that flood damage reduction would not be compromised and that vegetation is required to preserve, protect, and enhance natural resources, and/or protect the rights of Native Americans, pursuant to treaty and statute.

The City of Renton (City) is the non-Federal sponsor, Owner and Operator of the Cedar River Flood Damage Reduction Project. Pursuant to the Project Cooperation Agreement for the project, the City is responsible for vegetation removal in accordance with the Project's O&M Manual. The City is working with the King County Flood Control District to incorporate this vegetation variance request into the project's long-term maintenance and operation program funding with a corresponding revision to the Project's O&M Manual. The Seattle District is assisting the City in requesting a vegetation variance for portions of the project. The Federal action analyzed in this Environmental Assessment (EA) is approving a vegetation variance pursuant to ETL 110-2-583 and correspondingly modify the Project's O&M manual. The implementation of the variance would allow for removal of trees and implementation of mitigation. The actual cutting and implementation of mitigation would be conducted by the City.

Without a new variance, compliance at this time with the national standard would require the removal of 368 trees (retention of 457 trees). With the new proposed variance, the Corps' engineering analyses determined that, currently 133 trees would be required to be removed and 692 trees could be retained in the project area to maintain the design level of protection under the new guidance. An additional 64 trees would be required to be removed as trees exceed 10 inches DBH. Compliance with the existing Project's O&M manual, also would require removal of 133 trees greater than 10 inches DBH along the levee prism and vegetation free zone with an additional 64 trees potentially removed in later years as the trees exceed 10 inches DBH - similar to the proposed variance. Even though the removal under the Project O&M manual is similar to the proposed variance, this new variance would place the project on a maintenance path in accordance with supported standards.

The trees that would need to be removed in order to comply with the proposed variance are typically set back from the river, often behind a narrow primary riparian buffer that would not be affected by any planned tree removal. The trees that would need to be removed provide habitat for passerine birds as well as aesthetic and recreational benefits to the park. Their nutrient input to the river is minimal though they may provide some minimal protection for the river from light pollution. Plantings are proposed to mitigate these impacts.

This document is available online at the following website:
http://www.nws.usace.army.mil/Missions/Environmental/Environmental-Documents/
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APE	Area of potential effect
CAA	Clean Air Act
cfs	cubic feet per second
CO	carbon monoxide
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DBH	diameter at breast height
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
ETL	Engineering Technical Letter
FRM	Flood Risk Management
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
HPA	Hydraulic Project Approval
LWD	large woody debris
MBTA	Migratory Bird Treaty Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
O_3	ozone
O&M	Operations and Maintenance
OHW	ordinary high water
Pb	lead
PGL	Policy Guidance Letter
PL	Public Law
PSCAA	Puget Sound Clean Air Agency
RCRA	Resource Conservation and Recovery Act
RM	river mile
SHPO	State Historic Preservation Office
SIP	State Implementation Plans
SO_2	sulfur dioxide
TMDL	total maximum daily load
TSP	total suspended particulates
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

UST	underground storage tank
VFZ	Vegetation Free Zone
WDFW	Washington Department of Fish and Wildlife
WDOE	Washington Department of Ecology
WISAARD	Washington Information System Architectural and Archaeological Records Database

1 INTRODUCTION

The United States (U.S.) Army Corps of Engineers, Seattle District (Corps), with the City of Renton (City) as the local project sponsor, constructed the Cedar River Flood Damage Reduction Project in 1999. The original design incorporated a park for recreational use by the residents of Renton and employees of the surrounding companies. The project's operations and maintenance (O&M) manual set the criteria for maximum size trees (based on diameter at breast height [DBH]) that can grow within the levee prism. The project also includes the Elliott Spawning channel which was constructed to compensate for the over dredging that occurred as part of the original construction. Elliott spawning channel was constructed in about 2000, and the Royal Hills Spawning Channel that was completed in 2011 to replace the Maplewood Golf Course spawning channel. The Maplewood Golf Course spawning channel that was destroyed during the Nisqually earthquake. The Royal Hills Spawning Channel was funded with PL84-99 funds.

The proposed project is to initiate for the Cedar River Flood Damage Reduction Project a variance to the levee vegetation standards outlined in Engineering Technical Letter (ETL) 1110-2-583 and allow for a corresponding modification to the Project's Operation and Maintenance (O&M) manual. This new variance would allow the levee to be incompliance with the ETL and add a more structured analysis for determining allowed vegetation; it would also maintain the 100-year level of protection afforded to the surrounding infrastructure, and maintain Federal Emergency Management Agency (FEMA) certification for eligibility in the National Flood Insurance Program.

There is a need to address levee safety maintenance by adding a more structured analysis for determining allowed vegetation; and to bring the maintenance requirements for the Project into compliance with ETL 1110-2-583 (30 April 2014). The vegetation in the project area of the Cedar River Flood Damage Reduction Project has been maintained consistent with the O&M manual. The Project O&M manual does not have a structured method of analysis for determining allowed levee vegetation. Today the trees on the levee are getting to the size that they need to be cut down due to levee safety concerns, consistent with ETL 1110-2-583 (30 April 2014). A clear protocol needs to be established in line with current rules and regulations for vegetation management.

ETL 1110-2-583 does allow for the local sponsor to apply for a variance from the standard levee vegetation guidelines set forth in the ETL. The ETL, provides guidance on analyses to be completed to show that flood damage reduction would not be compromised and that vegetation is required to preserve, protect, and enhance natural resources, and/or protect the rights of Native Americans, pursuant to treaty and statute. The draft Policy Guidance Letter (PGL) "Process for Requesting a Variance from Vegetation Standards for Levees and Floodwalls" dated 17 February 2012 outlines the procedures for obtaining a variance from the ETL.

The City, as the non-federal sponsor, is responsible for vegetation removal and is working with the King County Flood Control District to incorporate the vegetation removal into the project's long-term maintenance and operation program funding. Removal of any trees and implementation of any mitigation would be conducted by the City under their responsibilities for operating and maintaining the Federal project. The Seattle District is assisting the City in requesting a new vegetation variance for portions of the Cedar River Flood Damage Reduction Project and incorporated into the Project's O&M manual for the project. The Federal action

analyzed in this document is the request for a vegetation variance. This new vegetation variance would allow the project to have the vegetation maintained incompliance with the ETL, and would provide a more structured analysis for determining allowed vegetation.

With the proposed variance, the Corps' engineering analyses determined that 692 trees could be retained in the project area and that 133 trees must be removed to maintain the design level of protection under the new ETL 1110-2-583 guidance. An additional 64 trees are estimated to be removed in the near future (1-2 years) as they outgrow the size limitation, for a total of 197 trees. Without a variance, compliance with ETL 1110-2-583 would require the removal of 368 trees (457 trees retained). Without a variance, compliance with the existing Project's O&M manual would also require removal of 133 trees with an additional 64 trees potentially being removed in the near future (1-2 years) when the trees exceed 10 inches DBH. Beyond 1-2 years, additional vegetation and woody vegetation removal is to be expected, consistent with the variance but those numbers are unknown at this time.

This Federally authorized flood management system is located upstream of the mouth of the Cedar River, from river mile (RM) 0 to approximately RM 1.07, in the City of Renton, King County, Washington (Figure 1). The project includes earthen levees combined with steel and concrete floodwalls, along both banks of the river as well as dredging in the river channel. The project was designed to provide protection for floods as large as the 100 year event (12,000 cubic feet per second, or cfs) with 90 percent reliability along the right bank. The design provided for less reliability on the left bank in order to provide additional protection to the right bank.

The Council On Environmental Quality implementing regulations for the National Environmental Policy Act (NEPA) of 1969 provide at 40 C.F.R.§ 1500.1(c): "The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment." 40 C.F.R. § 1508.9(a)(1) provides that an environmental assessment is required to "provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact" on actions authorized, funded, or carried out by the federal government. This assessment evaluates environmental consequences for the implementation of any maintenance in order to comply with the Seattle District's proposed variance request for the Cedar River project.

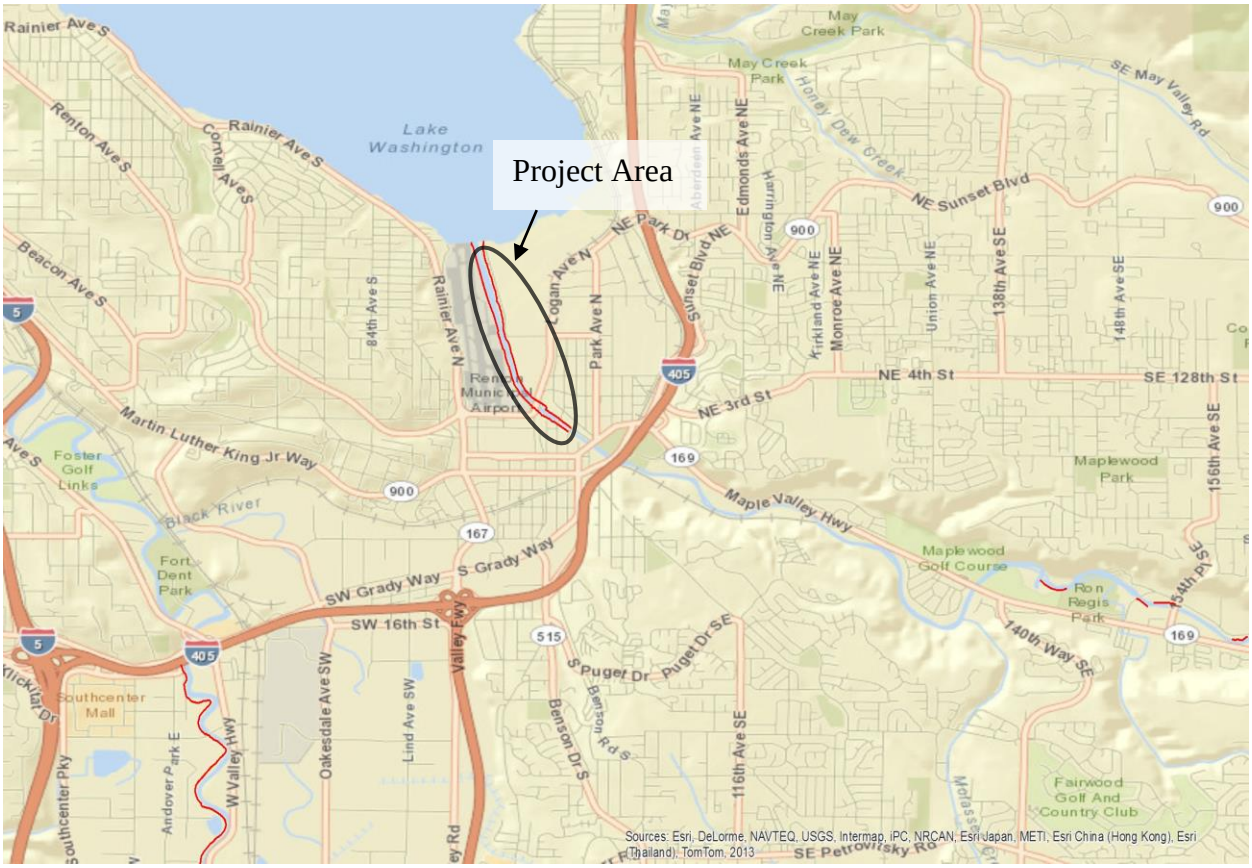

Figure 1. Location Map of Project Site in Renton, Washington.

2 BACKGROUND

2.1 Project Location

The Cedar River Flood Damage Reduction project and associated vegetation is located in the floodplain along the right bank from Logan Avenue (RM 1.07) to Lake Washington (RM 0) on the Cedar River in the City of Renton, King County, Washington (Figures 1 and 2).

2.2 Project History

The Cedar River Flood Damage Reduction Project included constructing earthen levees combined with steel sheet-wall pilings and concrete floodwalls along both banks of the river and dredging in the river channel. The dredging is designed to reduce flooding which results from sediment deposition in this reach of the Cedar River, which is a constructed artificial channel. Levees and floodwalls were raised along both banks from its confluence with Lake Washington to Williams Avenue, 1.07 miles upstream. Dredging lowered the river channel approximately four feet deeper from the mouth of the river to the Logan Avenue Bridge (at RM 1), gradually decreasing the slope upstream another 0.5 mile to meet the existing grade. Its goal was to reduce potential flood damage along approximately 1.5 miles of the lower Cedar River through downtown Renton, primarily protecting the Boeing aircraft manufacturing plant and the Renton Municipal Airport. An overflow section downstream of the south Boeing Bridge on the left bank insures that if the level of protection is exceeded, flooding will occur on the less developed left

bank. Boeing has added hydraulic jacks to the south Boeing Bridge to lift it clear of floodwaters. This Boeing feature is not part of the Federal Cedar River Flood Damage Reduction Project.

The project also includes the Elliott Spawning channel, and the Royal Hills Spawning Channel that was completed in 2011. The Elliott Spawning channel was constructed in about 2000 to compensate for the over dredging that occurred as part of the original construction. The Royal Hills Spawning Channel replaced the Maplewood Golf Course spawning channel that was destroyed during the Nisqually earthquake. This work was funded with PL84-99 funds but is still considered part of the Cedar River 205 project.

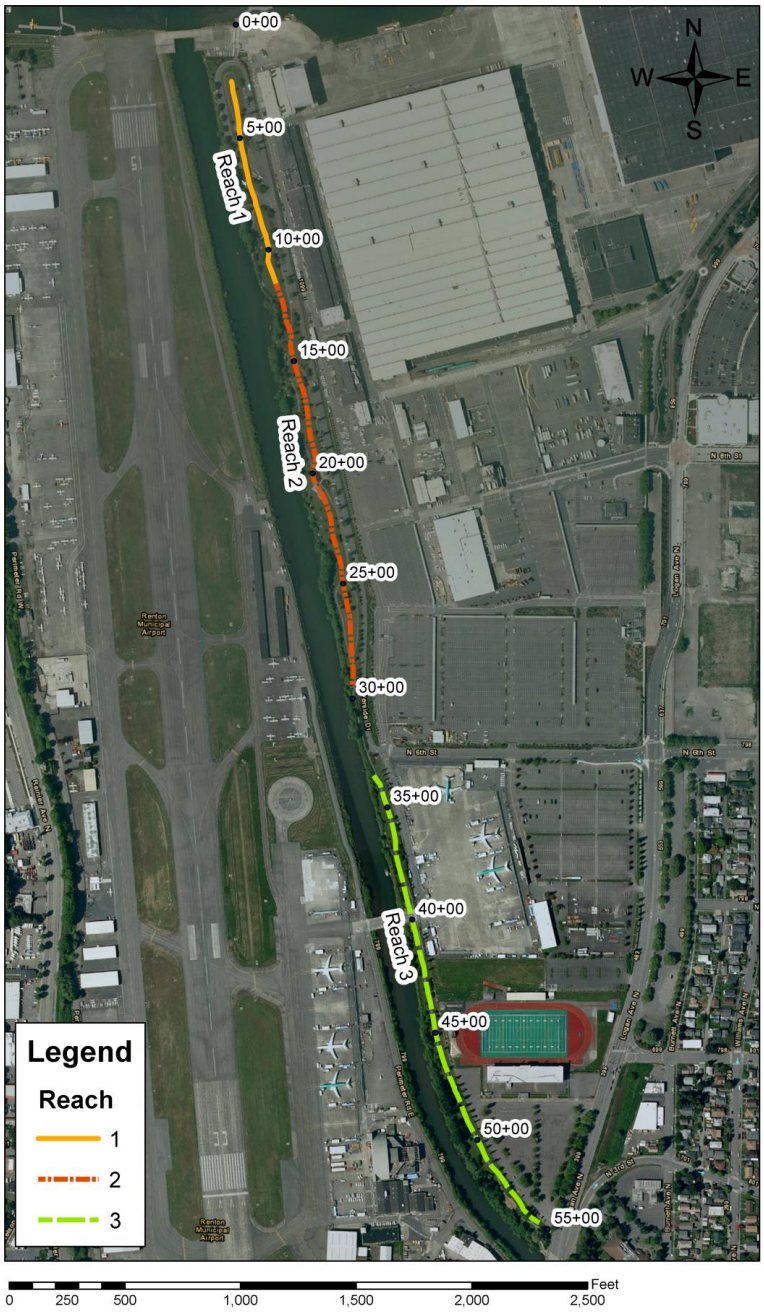

Figure 2. Vegetation Variance Request Reaches

The Cedar River Flood Damage Reduction Project is designed to provide protection from periodic, recurring floods up to the 100-year event level. The Project's O&M plan includes a requirement to re-dredge as needed to remove sediment deposits in the project reach. Because of this sedimentation and re-dredging cycle, the level of protection can vary through the life of the project. While maintenance dredging was to occur every 3 to 10 years to maintain the flood protection benefits, it has not yet been needed. The City is dredging summer of 2016 for the first time since project construction in 1998.

2.3 Project Authority

This proposed vegetation variance for maintenance of the Cedar River Flood Damage Reduction Project is being requested pursuant to ETL 1110-2-583, "*Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures*", dated 30 April 2014; and the draft PGL "*Process for Requesting a Variance from Vegetation Standards for Levees and Floodwalls*" dated 17 February 2012. The PGL outlines the procedures for obtaining a variance from the Corps' mandatory vegetation-management standards contained in the ETL. The Cedar River Flood Damage Reduction Project was authorized by Section 205 of the 1948 Flood Control Act (as amended by subsequent Water Resources Development Acts) which provides for the Corps to enter into a local/federal cost-shared agreement to plan and construct small flood control projects.

2.4 Need and Purpose

Large single stemmed woody vegetation can impact the function of a flood risk reduction levee by decreasing the factor of safety against slope failure, increasing the risk of seepage leading to a piping failure, and increasing the potential for localized scour in the vicinity of the vegetation. The unknowns associated with large woody vegetation add to the risk of levee performance and therefore the risk to the protected population relying on the levee. Removal of trees in accordance with the variance reduces risks to levee performance associated with the presence of large single-stemmed woody vegetation on and near flood risk reduction levees. At the same time, woody riparian vegetation provides important habitat and aesthetic value to the river corridor and is required to comply with environmental laws and Tribal Treaty Rights.

There is a need to address levee safety maintenance by adding a more structured analysis for determining allowed vegetation; and to bring the maintenance requirements for the Project into compliance with ETL 1110-2-583 and allow for a corresponding modification to the Project's O&M manual. The proposed variance would reduce the amount vegetation that would need to be removed by the City in order to comply with ETL 1110-2-583 levee vegetation standards and would also include revising the current the O&M Manual to be consistent with the variance requirements. This new variance would allow the levee to maintain the 100-year level of protection afforded to the surrounding infrastructure, and maintain FEMA certification for eligibility in the National Flood Insurance Program. If the variance is not approved, the current Project's O&M manual would continue to be the controlling plan for operation and maintenance as required by the Project Cooperation Agreement for the project.

3 DESCRIPTION OF PREFERRED ALTERNATIVE

The preferred alternative includes the establishment of a new vegetation variance which would currently allow the retention of 692 trees on the levee. This variance would also currently

require the removal of 133 trees from the project area, with an additional 64 trees to be removed as they outgrow the size limitation, for a total of 197 trees. Technical analyses established three zones: a vegetation free zone (VFZ) where no trees will be allowed to remain, Zone 1 where trees up to 10 inches DBH are allowed, and Zone 2 where trees up to 24 inches DBH are allowed. Location of these zones was determined through analyses of wind throw and toe scour. See Appendix A for the Engineering Analysis. Zone widths are shown in Table 1. The work would be accomplished over several field seasons with mitigation plantings being started before tree removal occurs on the levee prism. The Project's O&M manual for the Cedar River Flood Damage Reduction Project would be modified to follow the proposed variance requirements.

Table 1. Minimum width (feet) from levee centerline for Zones 1 and 2 in each reach, with the requirements for the VFZ as designed in the ETL shown for comparison

Total Required Width (ft)						
	Zone 1 - DBH ≤ 10 inch		Zone 2 - DBH ≤ 24 inch		ETL - Compliant VFZ*	
	Riverward	Landward	Riverward	Landward	Riverward	Landward
Reach 1	20	14	28	18	>69.2	61.4
Reach 2	29	15	37	19	53.6	68.9
Reach 3	33	18	44	22	44.1	>28.8

*ETL compliant VFZ is defined here as the aerial extent of the constructed levee footprint and a 15 foot buffer on the riverward and landward sides.

Implementing the variance zones as described will have the following impacts to the existing trees currently located on the project:

- Trees located in the proposed VFZ to be removed: Reach 1 – 8 trees, Reach 2 – 39 trees, Reach 3 – 77 trees, for a total of 124 trees.
- Trees in Zone 1 with DBH exceeding 10 inches that must be removed immediately: Reach 1 – 0 trees, Reach 2 – 3 trees, Reach 3 – 6 trees, for a total of 9 trees.
- Trees located in Zone 1 that are currently smaller than 10 inches DBH can remain for the time being but will have to be removed at some point in the future once they exceed 10 inches DBH: Reach 1 – 11 trees, Reach 2 – 22 trees, Reach 3 – 31 trees for a total of 64 trees.
- Trees located in Zone 2 (managed zone with trees not to exceed 24 inch DBH) would not need to be removed under the proposed variance: Reach 1 – 81 trees, Reach 2 – 80 trees, and Reach 3 – 10 trees for a total of 171 trees.
- Trees located beyond Zone 2 are outside of the ETL-Compliant VFZ and can remain without the variance: Reach 1 – 13 trees, Reach 2 – 221 trees, Reach 3 – 223 trees for a total of 457 trees.

As noted above, the Federal action to be analyzed is the request for a new variance as allowed by ETL 1110-2-583 (2014) and the PGL as well as a corresponding change to the maintenance standards in the existing Project O&M manual. The removal of any trees in order to comply with the new variance would be completed by the City as would the implementation of any required mitigation.

Exisiting Trees by Variance Zone					
	VFZ	Zone 1 - DBH ≤ 10"	Zone 1 - DBH > 10"	Zone 2 - DBH ≤ 24"	Outside ETL-Compliant VFZ
Reach 1	8	11	0	81	13
Reach 2	39	22	3	80	221
Reach 3	77	31	6	10	223
Total	124	64	9	171	457

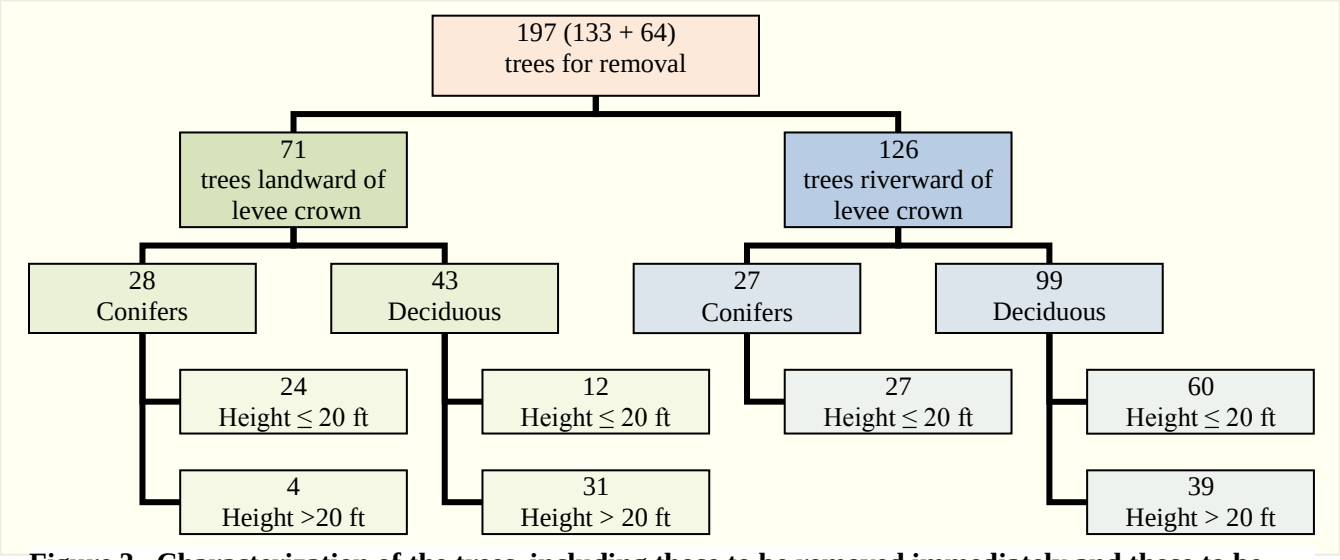

Figure 3. Characterization of the trees, including those to be removed immediately and those to be removed as they outgrow the size limit.

To help offset impacts of vegetation removal, on-site and off-site plantings will occur. This will include tree plantings onsite outside the restricted areas whenever sufficient space allows, as well as in place shrub plantings. See Appendix C for a detailed description of the mitigation plan. A 1:1 replacement ratio will be used for trees planted onsite and a 3:1 for replacement ratio will be used with offsite plantings occurring in advance of tree removal so as to compensate for temporal loss. Since trees will be planted in advance of the removal of the trees on the levee a lower than standard replacement ratio is being proposed. Onsite plantings is the preferred mitigation method, with offsite plantings included as an option if there is not sufficient space on site. A tentative location for offsite plantings has been identified on the left-bank slope just upstream of Logan Street but this location could change as the City reviews other potential mitigation sites. Trees to be removed on the backside of the levee will not be subject to ESA consultation. The City will determine if these trees can also be replaced onsite in the park for aesthetic purposes.

3.1 Conservation Measures

Several measures would be employed by the City during construction to minimize adverse project effects on protected species and their habitat:

- A Biologist will supervise the moving of any trees and the mitigation efforts;

- Refueling of all equipment will occur in the staging area on the landward side of the floodwall; no equipment fueling or servicing will occur on the riverward side of the floodwall;

- At least one fuel spill kit with absorbent pads will be onsite at all times and construction personnel will be trained in its proper use;

- No equipment will operate in the water;

- Soil disturbance will be minimized during vegetation removal by cutting the stems and using a portable stump grinder to grind all stumps to ground level;

- Hydroseed application following vegetation removal will be applied to land only; care will be taken to ensure no hydroseed enters the river;

- All work will be performed in the dry;

- Work would occur during daylight hours only;

- Tree removal would be done in the fall to avoid the nesting season for migratory birds;

- Off-site planting material for mitigation will be healthy and disease free with a contractor guaranteed survival rate of 100 percent after 30 days and 80 percent at one year;

- Willow stakes will be planted using hand installation methods to minimize soil disturbance;

- Understory vegetation will be hand-cleared to an approximately 6 foot diameter circle around each planting;

- Throughout the planting site, Japanese knotweed (*Polygonum cuspidatum*) will be hand cleared to ground level and disposed of off-site at the time of construction and annually during early spring or earliest feasible time for 5 years; no cuttings will be allowed to enter the water;

- In the onsite park setting larger stock will be used to minimize disturbance and all plants will be watered at the time of planting;

4 OTHER ALTERNATIVES CONSIDERED

4.1 No Action – Project O&M manual

The No-Action alternative is compliance with the existing Project's O&M manual. In accordance with the criteria identified in the Project's O&M manual, at this time the sponsor would be required to remove 133 trees greater than 10 inches DBH and potentially 64 more trees when those trees exceed 10 inches DBH. This alternative is similar to the preferred variance alternative but does not contain the same structured analysis for determining allowed vegetation that is in the proposed variance for determining allowed vegetation and would not be in compliance with Corps' guidance (ETL 1110-2-583). Although the no-action alternative does not meet authorized project objectives, it was carried forward since it is consistent with the

existing Project O&M manual, as well as for comparison purposes and has similar impacts to the preferred alternative. Please refer to the impacts section for the preferred alternative for the impact analysis for the No Action Alternative.

4.2 Preferred Alternative – Vegetation Variance Implementation

The preferred alternative is to institute a levee vegetation variance in accordance with ETL 1110-2-583 guidelines and a corresponding change to the Project's O&M manual. This alternative would currently allow retention of 692 trees and require the removal of 133 trees to maintain the design level of protection under the new guidance. Additionally, an estimated 64 would be removed in the near future (1-2 years) as they outgrow the size limitation. Beyond 1-2 years, additional vegetation and woody vegetation removal is to be expected, consistent with the variance but those numbers are unknown at this time. Since the variance would be approved by Corps of Engineers Headquarters using the guidelines established in ETL 1110-2-583 and the PGL, the project would be in compliance with that ETL.

4.3 ETL 1110-2-583 (2014) Compliance without a Variance

Without a new variance, compliance with the national standard as defined in ETL 1110-2-583 currently would require the removal of 368 trees and retention of 457 trees. Under this alternative no woody vegetation (to include trees) would occur on the levee or in a 15 foot buffer on the riverward and landward sides. The definition of the landward toe is the intersection of the constructed levee embankment with natural soils. The riverward toe without a variance is defined by where the soil meets the air. This is based on the latest guidance from HQ USACE in the draft PGL. The ETL allows a covering of sod only.

While some mitigation may be able to occur on site by planting outside the complete levee prism, space would be limited. Therefore the majority of mitigation would likely occur offsite, at a suitable location further upstream in the watershed.

5 AFFECTED ENVIRONMENT

5.1 Topography, Hydrology and Soils

The existing topography and surface geology of the Puget Sound region are largely the result of Pleistocene glacial, Holocene river, and volcanic processes. The northwest/southeast trending valleys that contain the Cedar River, Lake Sammamish, and Lake Washington, were formed by the most recent retreat of the glaciers approximately 10,000 years ago. Glacially deposited soils predominate in the region, including till, outwash, and glaciolacustrine deposits. The Cedar River valley is composed primarily of alluvium deposited with the meanderings of the Cedar River across its floodplain.

During the last century, human activities have produced large-scale landscape modifications, such as the lowering of Lake Washington in the early 1900s and widespread topographic changes associated with urbanization.

Flows in the Cedar River include a mean low flow of 228 cubic feet per second (cfs) in September and a mean high flow of 1,100 cfs in January (USGS 2010). Flows in the Cedar River are regulated by the City of Seattle under the Habitat Conservation Plan. Operating hydrographs are broken into "critical," "normal minimum" and "normal high" flows for the

entire year. The low-flow months are August through mid-September. For the rest of the year, flows are usually at least twice the summer low-flow amount. Lake Washington is held at a high elevation from approximately March through July, and then drawn down to its winter low elevation from November through February. When the lake is at its high water elevation, the lower portion of the Cedar River is backwatered.

In the project area, the Cedar River is a confined, single-thread, low gradient artificial channel (the historic channel flowed into the Black River). The Renton Municipal Airport occupies the left bank, while the right bank is a city park and a Boeing manufacturing plant. The thalweg of the river is primarily located adjacent to the left bank.

In this reach, the river is highly modified and provides generally poor habitat for the fish and other aquatic species. The river is channelized with armored banks and has very little pool habitat. The river at this point primarily functions as a backwater for Lake Washington during the summer high pool, (elevation 22 feet above mean sea level [msl] as measured at the Hiram Chittenden Locks), but is a riffle or run during winter low water levels (elev. 20 feet msl) in Lake Washington. Spawning-sized gravel occurs in the streambed in this reach.

5.2 Water Quality

This reach of the Cedar River (Lake Washington to the Maplewood Bridge RM 4.1) has the following use designations: aquatic life uses – core summer habitat; recreation uses – primary contact recreation; water supply uses – domestic water supply, industrial water supply, agricultural water supply and stock water supply; miscellaneous uses – wildlife habitat, fish harvesting, commerce and navigation, boating and aesthetic values (WDOE 2006). Also, within the project limits the Cedar River is listed on the Washington State Department of Ecology's (WDOE) impaired water quality list, category 5 of the 303(d) list, for exceeding fecal coliform, temperature and dissolved oxygen standards (WDOE 2008). Category 5 listings are defined as polluted waters that require a total maximum daily load (TMDL). Also, it is listed as category 2, water of concern, for exceedances of pH standards (WDOE 2008).

5.3 Vegetation

The natural vegetative communities along most of the downstream reaches of the Cedar River include a forest dominated by black cottonwood (*Populus trichocarpa*) and red alder (*Alnus rubra*), with an understory of snowberry (*Symphoricarpos albus*), salmonberry (*Rubus spectabilis*), and sword fern (*Polystichum munitum*). In places, vine maple (*Acer circinatum*), Himalayan blackberry (*Rubus armeniacus*), Indian plum (*Oemleria cerasiformis*), bleeding heart (*Dicentra spectablilis*), giant horsetail (*Equisetum telmateia*), and Pacific waterleaf (*Hydrophyllum tenupies*) occur. Japanese knotweed (*Polygonum cuspidatum* previously known as *Fallopia japonica*), reed canarygrass (*Phalaris arundinacea*) are invasive plants which are found in the area also.

The levee is a well-used public park and as such the vegetation is highly managed and most of the trees within the project area are ornamental varieties. The park is maintained as a mosaic of trees and grassy areas. Typically there is a narrow buffer of trees at the river bank, though several small areas are kept open for views of the river. The site has maple trees (*Acer* spp.) and shore pines (*Pinus contorta*) throughout its length as well as cherry (*Prunus* spp.) and hawthorn (*Crataegus* spp). The trees within the levee were retained during construction of the original levee, planted as part of the levee construction project, or planted by the City parks department

after construction. Some of the trees are dedicated memorials or are dedicated to benefactors and likely were planted after levee construction was completed. Shore pine and red maple (*Acer rubrum*) are the most common tree types being recommended for removal. The majority of trees to be removed were originally planted as ornamental trees for the park and were not intended to directly provide fish and wildlife habitat.

The surrounding area is highly urbanized. Due to the proximity of the Renton Airport, trees are further limited to decrease potential for bird strikes on aircraft using the airport.

5.3.1 Riparian Habitat

Riparian buffers serve important functions, including water quality protection (including shading for temperature control), ; providing nutrient inputs, organic material and terrestrial insects to the aquatic food chain, ; wildlife habitat structure, ; providing overhead and in-water cover; and microclimate control. Vegetated buffers can include a variety of plant communities, each providing these functions to varying degrees. For example, grass buffers can effectively reduce pollutant concentrations from runoff (Bingham et al. 1980) but provide limited shading for temperature control.

For protection of salmon-bearing streams, such as the Cedar River, the focus is typically on forested riparian areas with overhanging vegetation to provide water temperature control and habitat functions. Shade does not cool the river water, but protects the water from being heated by the sun (Coffin et al. 2011). The effectiveness of shade is dependent upon several variables, including the height of the trees and the width and density of the planted riparian buffer (Coffin et al. 2011). Also, the location determines the effectiveness, with trees on the south and west banks being of most importance to provide shading from the afternoon sun. Although wide buffers may be preferred to provide other benefits, DeWalle (2010) found that increasing buffer widths beyond approximately 36 feet had limited effect on stream shade. DeWalle showed the importance of dense, tall buffers for stream shading.

The full suite of riparian functions is reduced in the highly modified riparian zones of urban areas. Despite being constrained by infrastructure and maintenance for public safety, the riparian habitat still remains an important feature along the Cedar River. For the development of their Shoreline Master Program, the City completed a literature review of the best available science on stream buffer recommendations (City of Renton 2003). The City's literature review found several reports that examined microclimate and forest practices; however no literature on the temperature control of varying buffer widths for urban areas was found. Through their review, Renton (2003) determined that the small scale temperature and shade control function of the urban riparian corridor in the project area has low to moderate potential for realization. The report concludes, through synthesis of all function potentials, that a 100 ft vegetated buffer is recommended within the City along waterways such as the Cedar. King County also completed a literature review (King County 2004) to support their Critical Area Ordinances. King County also found no consensus in the literature on buffer widths for particular functions; however their final recommendation is a buffer width of 115 ft in the project area (King County 2005).

Within the project area, the presence of the levee limits the riparian area to less than 100 feet. WDFW (Knutson and Naef 1997) defines riparian habitat as beginning at the ordinary high water line and extending to include the vegetation adapted to wet conditions as well as adjacent upland

plant communities that directly influence the stream system. Within leveed areas, this would include only the riverward face of the levee. The levee creates a divide that limits the influence of any backside vegetation on the river. The centerline of the Cedar River Right Bank Levee ranges from approximately 50 to 95 feet from the bank. Of the 133 trees slated for immediate removal, 78 are on the riverward side of the levee and therefore function as a part of the existing riparian buffer. The 55 trees on the backside of the levee provide minimal riparian habitat. In the near future (1-2 years), an estimated 64 trees which are currently less than 10 inches DBH will exceed that standard and would have to be removed. Beyond 1-2 years, additional vegetation and woody vegetation removal is to be expected, consistent with the variance.

Additionally the vegetation in the buffer is limited by the use of the project area as a park. A narrow band (typically 0 to 21 feet) of trees with native or invasive understory exists along the bank line as the primary buffer through much of the park, though some areas are maintained for open river views with limited vegetation. Inland from the primary buffer, a secondary buffer of scattered, mostly ornamental trees with a mown grass understory exists. At this site, the primary riparian buffer is largely responsible for the nutrient inputs and microclimate control. Both the primary and secondary buffers provide water quality protection, wildlife habitat, and protection from artificial light pollution.

A canopy cover analysis was completed to estimate the current condition of the riparian forest at the project site (see Appendix B for details). Using a grid system laid over aerial photos, the percent canopy cover was estimated. Canopy cover scores for any individual grid cell ranged from 0 to 100 percent. The densest cover occurs at the bank line, with percent cover decreasing further inland. See Table 2 for the results.

Table 2. Percent canopy cover estimates, from land closest to bankline (A) to furthest inland (F).

		A	B	C	D	E	F
Reach 1	average	47%	24%	6%	9%	4%	
	max	100%	90%	10%	30%	10%	
	min	0%	0%	0%	0%	0%	
	N	10	10	10	10	8	
Reach 2	average	85%	40%	15%	16%	5%	0%
	max	100%	100%	60%	80%	10%	0%
	min	0%	0%	0%	0%	0%	0%
	N	46	46	46	41	24	1
Reach 3	average	61%	40%	25%	17%	18%	
	max	100%	100%	80%	50%	20%	
	min	0%	0%	5%	5%	20%	
	N	43	43	25	12	1	
Entire Project Area	average	71%	40%	17%	15%	5%	0%
	max	100%	100%	80%	80%	20%	0%
	min	0%	0%	0%	0%	0%	0%
	N	99	99	81	63	33	1

The grid size is 50 feet by 50 feet. Further details of the canopy analysis can be found in Appendix B.

5.4 Wildlife

Wildlife species likely to be present at the site and surrounding area are black-tailed deer (*Odocoileus hemionus columbianus*), muskrat (*Ondatra zibethicus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), eastern gray squirrel (*Sciurus carolinensis*), opossum (*Didelphis virginianus*), beaver (*Castor canadensis*), cottontail rabbits (*Sylvilagus* spp.), striped skunk (*Mephitis mephitis*), Norway rats (*Rattus norvegicus*), various small rodents, and feral dogs (*Canis familiaris*), and feral cats (*Felis catus*). Red tailed hawks (*Buteo jamaicensis*) and bald eagles (*Haliaeetus leucocephalus*) use the taller cottonwoods for perching and foraging beyond the project area. However, regular operations at the Renton Municipal Airport may distract hawks and eagles due to noise and the physical presence of planes in the air. Mergansers (*Mergus merganser*), mallards (*Anas platyrhynchos*), and other waterfowl are present.

5.5 Fish

At least 22 species of fish inhabit the Cedar River, according to the Final Environmental Impact Study for the Cedar River 205 Flood Control Project prepared in August 1997 (USACE 1997). Based on its description and depending on season, the project site may include sockeye salmon (*Oncorhynchus nerka*), Chinook salmon (*O. tshawytscha*), coho salmon (*O. kisutch*), steelhead (*O. mykiss*), rainbow trout (*O. mykiss*), cutthroat trout (*O. clarki*), mountain whitefish

(*Prosopium williamsoni*), northern pikeminnow (*Ptychoceilus oregonensis*), peamouth chub (*Mylocheilus caurinus*), three-spine stickleback (*Gasterosteus aculeatus*), largescale sucker (*Catostomus macrocheilus*), longnose dace (*Rhinichthys cataractae*), and several species of sculpin (Cottus spp.). Approximately 80 percent of the Lake Washington sockeye salmon population (which was introduced) spawns in the Cedar River.

The project reach is currently used primarily as a migration corridor by anadromous fish. Sockeye salmon spawn in the upstream portion of the project area.

5.5.1 Artificial Lighting

Artificial lighting can affect fish behavior. Sockeye salmon fry use the cover of darkness to emigrate, however artificial lighting can slow or stop this movement, thereby increasing their vulnerability to predators (Tabor et al. 1998). The action area has numerous artificial light sources due to urban and residential development. Tabor et al. (1998) found the abundance of sockeye salmon fry was substantially higher at sites with high light intensity levels than at a nearby site with low light. This behavior was found to correlate to higher predation by cottids, particularly in areas of larger substrate size. Chinook did not exhibit the same light attraction, potentially due to low sample size. Tabor et al. (1998) found that within the lower 2.9 kilometers (1.8 miles) of the Cedar River, there were several locations with high light intensity levels, typically next to street bridges. The highest light readings recorded were at the I-405 Bridge and the Renton Library (approximately 0.5 miles upstream of the project site).

Lighting within the park occurs along the pathways to provide safety to park visitors. The lights are shaded to direct lighting at the path and limit any impact to the water. They are also kept dim to further reduce light pollution impacts, and the lights are turned off after 11 pm. Most of the lighting at the adjacent manufacturing plant is directed away from the park and water. However there are several individual lights that are currently directed towards the river (approximate station locations of 20+00; 35+00; and 40+00). The majority of the lighting directed towards the river comes from the left bank areas starting at approximately station 20+00 and going upstream. These lights are lit all night.

Threatened and Endangered Species

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species and their critical habitat. Three species listed as threatened are potentially found in the area of the project (Table 3).

Table 3: Listed species in project vicinity

Species	Listing Status	Critical Habitat
Coastal Puget Sound Bull Trout *Salvelinus confluentus*	Threatened	Designated (but doesn't include project area)
Puget Sound Chinook Salmon *Oncorhynchus tshawytscha*	Threatened	Designated
Puget Sound Steelhead *Oncorhynchus mykiss*	Threatened	Proposed

Gray wolf (*Canis lupus*), Canada lynx (*Lynx canadensis*), Grizzly bear (*Ursus arctos horribilis*), Marbled murrelet (*Brachyramphus marmoratus*),Northern spotted owl (*Strix occidentalis caurina*), Yellow-billed Cuckoo (*Coccyzus americanus*), and Golden paintbrush (*Castilleja levisecta*) are listed species which are expected to be found in King County, Washington. North American wolverine (*Gulo gulo luteus*) is proposed for listed and also expected to be found in King County. These species will not be found in the action area due to specialized habitat requirements that are not met there, lack of tolerance for human activity, or both. These species will not be treated further in this document.

5.5.2 Coastal/Puget Sound Bull Trout

The Coastal/Puget Sound bull trout distinct population segment was listed as a threatened species under the ESA in October 1999. Bull trout populations have declined through much of the species' range; some local populations are extinct, and many other stocks are isolated and may be at risk (Rieman and McIntyre 1993). A combination of factors, including habitat degradation, expansion of exotic species, and exploitation, has contributed to the decline and fragmentation of indigenous bull trout populations.

Washington's native char are known to exhibit four life history strategies (WDFW 2000). The three freshwater forms include adfluvial, which migrate between lakes and streams; fluvial, which migrate within river systems; and resident, which are non-migratory. The fourth and least common strategy, anadromy, occurs when the fish spawn in fresh water after rearing for some portion of their life in the ocean. The least information is available on the anadromous form of bull trout, but it is assumed that they occur in a number of Puget Sound basins.

Bull trout movements in response to developmental and seasonal habitat requirements are difficult to predict both temporally and spatially. A WDFW (1999) summary paper on bull trout in Stillaguamish Basin provided some general information on bull trout distribution in Puget Sound river basins. Newly emergent fry tend to rear near spawning areas, while foraging juvenile and sub-adults may migrate through river basins looking for feeding opportunities. Based on research in the Skagit Basin (Kraemer 1994), anadromous bull trout juveniles migrate to the ocean in April-May, then re-enter the river from August through November. Bull trout typically spawn from August to November during periods of decreasing water temperatures. Preferred spawning habitat consists of low gradient stream reaches with loose, clean gravel, with redds often constructed in stream reaches fed by springs or near other sources of cold groundwater (USFWS 2004). Post-spawn adults of the non-resident life form quickly vacate the spawning areas and move downstream to forage, some returning to their "home" pool for additional rearing. Anadromous sub-adults and non-spawning adults are thought to migrate from marine waters to freshwater areas to spend the winter.

5.6.1.1 Utilization of the Project Area

A resident/adfluvial population of bull trout resides in Chester Morse Lake (originally Cedar Lake). This lake is a core management area for bull trout, located within the Cedar River Municipal Watershed in the upper reaches of the Cedar River drainage, upstream of a natural migration barrier at Lower Cedar Falls (RM 34.4). Chester Morse Lake was naturally formed by glaciers; however, the natural lake was changed when the water elevation was raised 32 feet by the construction of the Masonry Dam to provide storage for the City of Seattle's municipal water supply and hydroelectric power generation. Bull trout from Chester Morse Lake may pass over

the Masonry Dam during high flows, but they pass below the dam there are no fish passage facilities for them to pass back upstream again.

A couple of native char (most likely bull trout) have been captured in the lower Cedar River, but it is not known whether these fish are from the resident/adfluvial population in Chester Morse Lake or the Masonry Pool or anadromous strays from other systems (USACE 2002).

The Lake Washington foraging, migration and overwintering habitat consists of the lower Cedar River, the Sammamish River, Lakes Washington, Sammamish and Union, the Lake Washington Ship Canal, and all accessible tributaries and lakes. These waters contain important foraging, migration and overwintering habitat necessary for bull trout recovery. Adult and sub-adult sized individuals have been observed infrequently in the lower Cedar River (below Cedar Falls), Lake Washington, and at a few other locations in the Lake Washington watershed. However, no spawning activity or juvenile rearing has been observed and no distinct spawning populations are known to exist in Lake Washington watershed, outside of the upper Cedar River in Chester Morse Lake (USFWS 2004).

5.5.3 Puget Sound Chinook Salmon

The Puget Sound Evolutionary Significant Unit (ESU) of Chinook salmon was listed as a threatened species under the Endangered Species Act of 1973, as amended, in March 1999, and reaffirmed in 2005 (NMFS 2005a). Chinook are anadromous and semelparous. Chinook display a wide range of variation in life histories including variation in age at seaward migration; variation in length of freshwater, estuarine and oceanic residence; variation in ocean distribution and ocean migratory patterns; and variation in age of spawning migrations. There are two predominant life history patterns in the eastern north Pacific populations: stream-type and ocean-type (Healy 1991). Stream type populations may rear as juveniles in streams for up to a year or more prior to migrating out to marine waters. Ocean-type populations have a wide range of rearing strategies, with some fish immediately migrating downstream after emerging from the gravel to rear in estuaries and others rearing for 1 to 6 months in freshwater prior to migrating to the estuaries.

In the Lake Washington basin, all Chinook stocks are summer/fall run, and presumably ocean-type fish. The Cedar stock is considered depressed due to a long-term negative trend in escapements and chronically low escapement values (WDFW 2010). Chinook salmon are typically mainstem spawners preferring higher velocity areas than the smaller salmon species.

Juvenile Chinook have been captured and counted in inclined plane and screw traps in Bear Creek and the Cedar River and show a long period of outmigration from the spawning grounds. In the Cedar River, small Chinook fry (approximately 1.5 inches, 40 mm) migrate from January through April. Then, larger Chinook (3 to 5 inches, 80 to 150 mm) migrate from May through at least the end of July. Due to the Locks and other shoreline development below the Locks, there is very limited estuary habitat for juvenile Chinook to rear in (NMFS 1998). There is some evidence that Chinook fry and smolts may rear in nearshore areas of Lake Washington.

Adult and juvenile Chinook use the entire mainstem of the Cedar River for migration, spawning, and rearing. In general, Chinook spawn from about RM 2 to RM 19 (USACE 2002). No Chinook spawning was observed below RM 1.5 in 1998. Due to very few side channels in the

Cedar River, there is limited off-channel rearing habitat available to juvenile Chinook. This lack of side channel rearing habitat is likely a limiting factor to Chinook production.

5.5.4 Puget Sound Steelhead

The Puget Sound Distinct Population Segment (DPS) of steelhead was listed as threatened effective June 2007 (NMFS 2007). Critical Habitat for this DPS has been proposed and includes the project area (NMFS 2013). The DPS includes all naturally spawned anadromous winter-run and summer-run steelhead (*O. mykiss*) populations, in streams in the river basins of the Strait of Juan de Fuca, Puget Sound, and Hood Canal, Washington.

Steelhead exhibit the most complex life history of any species of Pacific salmonid in that They can be anadromous (steelhead) or freshwater residents (rainbow or redband trout), and under some circumstances, they can yield offspring of an alternate life history form (Hard et al. 2007). Anadromous steelhead can spend up to 7 years in fresh water prior to smoltification (the physiological and behavioral changes required for the transition to salt water), and then spend up to 3 years in salt water prior to migrating back to their natal streams to spawn. Steelhead may spawn more than once during their life span (iteroparous), whereas the Pacific salmon species generally spawn once and die (semelparous).

Steelhead can be divided into two basic reproductive ecotypes, based on the state of sexual maturity at the time of river entry and duration of spawning migration (Burgner et al. 1992). The summer or stream-maturing type enters fresh water in a sexually immature condition between May and October, and requires several months to mature before spawning. The winter or ocean maturing type enters fresh water between November and April, with well-developed gonads and spawns shortly thereafter. In basins with both summer and winter steelhead runs, the summer run generally occurs where habitat is not fully utilized by the winter run, or where an ephemeral hydrologic barrier separates them, such as a seasonal velocity barrier at a waterfall.

Winter steelhead in the Cedar River are of the Lake Washington stock and were identified as a stock based on their distinct spawning distribution. The Lake Washington stock is a native stock with wild production (WDFW 2010). Stock status was rated as depressed in 1992 and was changed to critical in 2002 due to chronically low escapements and a short-term severe decline in escapement in 2000 and 2001 (WDFW 2010). Spawning takes place throughout the Lake Washington Basin. In the Cedar River, spawning occurs in the lower reaches. Spawning occurs from mid-December through early June (WDFW 2010). The project reach of the Cedar River is documented as winter steelhead rearing habitat (WDFW, 2013a; 2013b). However, steelhead are known not to spawn in the Cedar River below I-405 (pers. comm., Aaron Bosworth, District Biologist, WDFW, June 23, 2014).

5.6 Cultural Resources

The Corps has coordinated its environmental review of impacts on cultural resources for NEPA with its responsibilities to take into account effects on historic properties[1] as required by Section 106 of the National Historic Preservation Act (NHPA). The Corps has determined and documented the area of potential effect (APE) for both direct and indirect effects, as required at 36 C.F.R § 800.4 of the regulations implementing Section 106. The APE includes all variance

zones along the Cedar River right bank, totaling 3.5 acres. The Washington State Historic Preservation Officer (SHPO) agreed with our determination of the APE on 21 January 2014.

The Corps has conducted a records search and literature review of the Washington Information System Architectural and Archaeological Records Database (WISAARD). The literature review and records search revealed that the entire project area has been previously surveyed (Celmer 1995, Kent 2007, Kanaby 2011). There are no properties listed in the National Register of Historic Places or the Washington State Historic Site Register in the project vicinity, and no cultural resources have been recorded within the APE. The Corps notified the Muckleshoot Tribe of Indians on 24 January 2014, and asked the Tribe to identify any concerns and sought information about properties of religious or cultural significance that might be affected by the project. The Tribe did not provide comment.

5.7 Land Use

Land use in the lower Cedar River basin is highly urbanized. The area surrounding the project site is dominated by industrial and commercial land uses. The Cedar River Flood Damage Reduction Project reduces the risk of flooding for the Boeing aircraft manufacturing plant on the right bank and the Renton Municipal Airport on the left bank.

5.8 Air Quality

In accordance with the Clean Air Act (CAA) and its amendments, National Ambient Air Quality Standards (NAAQS) have been established by the Environmental Protection Agency (EPA) for several criteria pollutants including lead (Pb), ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), total suspended particulates (TSP), and particulates with aerodynamic diameters of less than 10 microns (PM_{10} and $PM_{2.5}$). Three agencies have jurisdiction over air quality in the project area: the EPA, Ecology, and the Puget Sound Clean Air Agency (PSCAA). These agencies establish regulations that govern both the concentrations of pollutants in the outdoor air and contaminant emissions from air pollution sources. Although their regulations are similar in stringency, each agency has established its own standards. Unless the state or local jurisdiction has adopted more stringent standards, the EPA standards apply. The project area is classified as an attainment area for all criteria pollutants except CO and O_3. For CO and O_3, the region is classified as a maintenance area, which is a provisional attainment status that must be maintained for several years before being reclassified as full attainment.

5.9 Noise

State, county, and local noise regulations specify standards that restrict both the level and duration of noise measured at any given point within a receiving property. The maximum permissible environmental noise levels depend on the land use of the property that contains the noise source (e.g., industrial, commercial, or residential) and the land use of the property receiving that noise. Sound levels throughout the Cedar River are variable and depending on location, ranging from relatively loud noises associated with urban and industrial activities near the project area to very quiet rural environments in the upper basin. The project area location is between the Renton Municipal Airport and a Boeing Company aircraft factory, both of which are sources of common and repeated elevated noise levels.

5.10 Transportation

The project area is located in the City of Renton which is approximately 25 minutes south of downtown Seattle and is situated in the center of a regional transportation network that connects

State Highways 167, 169, 515 and 900 to Interstate Highways 5, 405 and 90. The Renton Municipal Airport is adjacent to the project area and provides "regional aviation services for air charter, air taxi, corporate, business and recreational flyers". It is also an FAA-designated "Reliever airport", diverting general aviation aircraft traffic from Sea-Tac International Airport (City of Renton 2014).

5.11 Recreation

The proposed project area is within the City of Renton's Cedar River Trail Park. The Cedar River Trail is 4.5 miles long within the city limits and connects to the east to Maple Valley. It is a 24-acre park which contains picnic areas, play equipment as well as a non-motorized boat launch. The park provides views of Lake Washington and aircraft taking-off from Renton Municipal Airport (City of Renton 2014).

5.12 Aesthetics

The proposed project area is located in an urban/industrial dominated landscape, including the Renton Municipal Airport and the Boeing Company manufacturing facility. The left bank in the project area is dominated by a floodwall. The right bank of the Cedar River, where the project will occur, offers views of the river from the City of Renton public park. The park is landscaped with ornamental and native species.

6 ENVIRONMENTAL CONSEQUENCES

6.1 Topography, Hydrology, and Soils

6.1.1 No Action – Project's O&M manual

Under the No Action Alternative, the levee would not include the more structured analysis for determining allowed vegetation and would remain out of compliance with Corps' levee safety guidance. If a flood caused levee failure, the river channel could migrate into developed areas. This would change the hydrology in the immediate area of the failure and throughout the affected reach of the river. Emergency actions would be undertaken to prevent such an event. It is unlikely that topography or soils would be affected in the project area, since prior development along the lower Cedar River has already altered the native soils and topography. No impacts to topography, hydrology and soils would result from this alternative.

6.1.2 Preferred Alternative – Vegetation Variance Implementation

Removal of vegetation can result in a net increase in hydraulic conveyance due to decreased bank roughness values. This would result in a very small decrease in water surface elevation throughout the project area during a flood event. Very minor changes to hydrology would be expected, however no changes to the topography and soils would occur.

6.1.3 ETL Compliance without a Variance

Removing the existing vegetation would result in a minor net increase in hydraulic conveyance due to lower bank roughness values. This would result in very slightly lower water surface elevations through the reach during larger flood events due to higher channel velocities. This could cause additional toe scour and potential levee damage, if not controlled by backwater from a downstream structure and/or feature. However, if the bridge abutments for the South Boeing Bridge create backwater, then the vegetation removal would have no impact other than adding a

few cubic feet of volume in the channel. Lower stage flood events (below the vegetation line) would not result in any changes to velocity or water surface elevation. Minor changes to hydrology would be expected, however no changes to the topography and soils would occur.

6.2 Water Quality

6.2.1 No Action – Project's O&M manual

Please refer to section 6.2.2 for analysis of impacts to water quality that would occur if the no action alternative is implemented according to the requirements of the current Project's O&M manual.

6.2.2 Preferred Alternative – Vegetation Variance Implementation

This alternative would use best management practices, such as working completely in the dry as well as soil disturbance minimization measures as described in Section 3.1, to ensure no sediment enters the river during project work. All cleared areas would be mulched, seeded and planted with appropriate grass species to prevent erosion from storm water runoff after completion. No turbidity is expected to occur, however visual monitoring would occur during construction so that corrections can be made if necessary. No short-term impacts to water quality are expected.

Because the project is on the east bank, the trees provide morning shade to the river. River shading is most critical from the south and west banks to protect from the afternoon sun. The amount of morning shade will decrease with the tree removal; however this is not expected to result in a water temperature increase in the river or Lake Washington.

The distance of the trees from the water minimizes any long-term impacts to water quality from their removal. Additionally, the mitigation efforts to replant trees within the same reach are also expected to offset any impact. With mitigation, no reduction in shading from sunlight or loss of nutrient input is expected. Bank plantings of shrubs and trees, replacing distant trees with plantings that are closer to the water, would improve the water quality over the long-term by improving shading and increasing nutrient input. The temporal lag from the removal of vegetation to maturity of tree plantings would be reduced by starting mitigation plantings before tree removal begins. This will reduce temporary minor impacts to water quality due to the temporal lag of plantings.

6.2.3 ETL Compliance without a Variance

This alternative would use best management practices, such as working completely in the dry as well as soil disturbance minimization measures as described in Section 3.1, to ensure no sediment enters the river during project work. All cleared areas would be mulched, seeded and planted with appropriate native grass species to prevent erosion from storm water runoff after completion. No turbidity is expected to occur, however visual monitoring would occur during construction so that corrections can be made if necessary. The distance of the trees from the water minimizes any long-term impacts to water quality from their removal.

This alternative would require the removal of additional trees closer to the bank line, resulting in a loss of shading and diminished nutrient input to the river. This alternative would require offsite mitigation due to the lack of space for replanting tree species. This could result in long term temperature impacts within the project area.

6.3 Vegetation

6.3.1 No Action – Project's O&M manual

Under the no-action alternative, the levee would not include the more structured analysis for determining allowed vegetation and would remain out of compliance with Corps' levee safety guidance. Implementation of the Project O&M manual tree removal requirements by the City would result in the immediate removal of 133 trees. An additional 64 trees would be removed as they grow and exceed the size limits. As mentioned in Section 3, the vegetation buffer provides numerous functions, with the primary buffer chiefly responsible for nutrient inputs to the aquatic food chain and microclimate control. Both the primary and secondary buffers provide water quality benefits, protection from artificial lighting, and wildlife habitat structure.

Please refer to section 6.3.2 for a more detailed analysis of impacts to vegetation that would occur if the no action alternative is implemented according to the requirements of the current project O&M Manual.

6.3.2 Preferred Alternative – Vegetation Variance Implementation

Implementation of the vegetation variance by the City would result currently in the retention of 692 trees in the project area and the immediate removal of 133 trees. Additionally, an estimated 64 more trees may be removed in the near future (1-2 years) as they reach the size limitation. As mentioned in Section 3, the vegetation buffer provides numerous functions, with the primary buffer chiefly responsible for nutrient inputs to the aquatic food chain and microclimate control. Both the primary and secondary buffers provide water quality benefits, protection from artificial lighting, and wildlife habitat structure. Beyond 1-2 years, additional vegetation and woody vegetation removal is to be expected, consistent with the variance.

As seen in Table 4, the tree removal causes canopy cover to decrease nearest the shoreline by an average of 8 percent if no onsite mitigation or other plantings occur. Approximately 7 trees that are due to be removed (immediately and as they grow) are outside the 100 foot buffer. All others are within 100 feet of the bank. However, of these 197 (133 + 64) trees proposed for removal, 126 are riverward of the levee and therefore currently contribute to the function of the riparian habitat. Also, 52 of the trees are within the primary buffer (28 of which would be removed immediately, 24 would be removed as the trees exceed the size limit). The largest impact is to the secondary buffer, with 145 trees to be removed. Estimates are of canopy cover immediately after tree removal.

Table 4. Future (immediately after tree removal) with Project estimates of canopy cover within the project area and the change from the Current Condition (shown in Table 2). This assumes no onsite mitigation.

		A	change	B	change	C	change	D	change	E	change	F	change
Reach 1	average	47%	0	21%	-3%	2%	-4%	9%	0	4%	0		
	max	100 %	0	90%	0	10%	0	30%	0	10%	0		
	min	0%	0	0%	0	0%	0	0%	0	0%	0		
	N	10		10		10		10		8			
Reach 2	average	77%	-8%	34%	-6%	9%	-6%	16%	0	5%	0	0%	0
	max	100 %	0	100 %	0	60%	0	80%	0	10%	0	0%	0
	min	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
	N	46		46		46		41		24		1	
Reach 3	average	52%	-9%	30%	-10%	10%	-15%	5%	-12%	20%	0		
	max	100 %	0	100 %	0	80%	0	50%	0	20%	0		
	min	0%	0	0%	0	0%	-5%	0%	-5%	20%	0		
	N	43		43		25		12		1			
Entire Project Area	average	63%	-8%	32%	-8%	9%	-8%	13%	-2%	5%	0	0%	0
	max	100 %	0	100 %	0	80%	0	80%	0	20%	0	0%	0
	min	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
	N	99		99		81		63		33		1	

Mitigation efforts would largely replace these trees on site, within close proximity to those that are being removed. There would be a temporal lag of habitat function of 3 to 10 years while newly planted vegetation is established however this lag would be reduced by planting larger stock trees and planting before tree removal begins. Some trees may be replaced by shrub species in the same location or by bank plantings within the project area to improve the understory diversity. This out of kind replacement would be a permanent change of the types of vegetation and habitat structure within the park. The project area would remain a park and no increase in impervious surface would occur.

All necessary measures, including monitoring, would be taken to ensure mitigation planting success. Invasive species would be removed from the planting sites for replacement by natives. The project area would be hydroseeded to minimize erosion following tree removal. Minor impacts would result from this alternative due to the diminished habitat function during the establishment of new plantings and from the permanent transition from trees to shrubs in some cases. Larger tree stock would be used where possible to minimize the time lag before their

function is restored. Also, plantings would be done in advance of the removal. Trees to be removed under this alternative are shown in Figure 3.

Figure 3 – Trees to be removed under proposed variance (red dots show trees to be removed; green dots show trees to be retained)

6.3.3 ETL Compliance without a Variance

Compliance with the ETL would require the removal of 368 trees (Figure 4). This would leave 457 trees within the project area, all of which are outside the entire levee prism and predominantly along the banks in Reach 2 and the southern portion of Reach 3. Compliance with the ETL would transform the park from its current moderately diverse habitat of a variety of trees interspersed throughout open greenspace to being predominantly open mown grass. As seen in Table 1 the width of the vegetation free zone under this alternative varies from 73 to 130 feet in a linear park that is approximately 150 foot wide at its widest point. Some smaller bushes could be retained within the overbuilt portions of the levee prism. Offsite mitigation plantings would offset the impacts of vegetation loss to the watershed.

Figure 4 – Trees to be removed to comply with ETL and no variance (red dots show trees to be removed; green dots show trees to be retained)

6.4 Wildlife

6.4.1 No Action – Project's O&M manual

Please refer to section 6.4.2 for analysis of impacts to wildlife that would occur from the no action alternative.

6.4.2 Preferred Alternative – Vegetation Variance Implementation

A short-term but immediate impact to wildlife is expected during vegetation removal activities. Cutting, stump grinding and transportation would require the use of construction equipment whose presence and noise may temporarily displace some species at the site. The site is in a highly developed area with an adjacent airport, so wildlife species present would be tolerant of humans and their activities. Displaced individuals would be expected to recolonize the area soon after construction is complete. The removal work would be done in the fall to avoid the nesting season.

Removal of trees under this alternative coupled with mitigation plantings is not expected to have a significant impact on wildlife. The replacement of some trees with shrub species could change the habitat structure and may favor different bird species; however the loss of 133 trees while maintaining 692 trees within the project area is not expected to significantly alter the species use. Removal of invasive species and replanting with natives will improve the overall biodiversity of the riparian buffer.

Minor short-term impacts to wildlife are expected to occur from equipment noise with mitigation efforts offsetting any long-term loss of vegetation.

6.4.3 ETL Compliance without a Variance

The greater vegetation removal required by this alternative and the limited availability for onsite mitigation would decrease the available habitat at the project site. Offsite mitigation would be completed to offset the impact to the watershed; however local habitat impacts in the project are reach of the Cedar River would be unavoidable. Wildlife usage of the area would be reduced due to the removal of approximately 60 percent of the riparian trees.

6.5 Fish

6.5.1 No Action – Project's O&M manual

Please refer to section 6.4.2 for analysis of impacts to wildlife that would occur from the no action alternative.

6.5.2 Preferred Alternative – Vegetation Variance Implementation

Tree cutting would occur during the day, when the typical ambient noise can be quite high at this urban site. Any additional noise or vibration from the tree removal process is not expected to be outside the typical range for this area.

The primary buffer provides the greatest benefit to the aquatic habitat. As DeWalle's (2010) research suggests, a narrow dense buffer can have a meaningful impact on stream shading for temperature control. Currently, only 28 trees in the primary buffer would need to be removed immediately and 24 would be removed in the near future (1-2 years). This loss may cause a minor decrease in stream shading and a reduction in nutrient input to the river. As seen in Table 4, an average decrease of 8 percent of canopy cover over the project site nearest the bank would immediately occur if on site mitigation plantings was not completed after tree removal. Because the project is on the east bank, morning shade is provided to the river. River shading is most critical from the south and west banks to protect the river from the afternoon sun. The amount of morning shade would decrease with the tree removal; however this is not expected to result in a water temperature increase in the river or Lake Washington.

No change in large woody debris recruitment to the river is expected due to ongoing park maintenance and the distance of the trees from the water's edge. Inputs of detritus, terrestrial insects, and nutrients are similarly not expected to be significantly impacted due to distance and ongoing park maintenance.

The secondary buffer provides additional protection from artificial light penetration. Because of the presence of the airfield and manufacturing facility, as well as other urban features, there is considerable use of artificial lighting all night along this reach of the Cedar. Following tree removal, there may be an alteration in artificial light penetration to the river, particularly during the summer months. The majority of trees to currently be removed are deciduous (142 deciduous to 55 conifers) which block only a small amount of light from fall through early spring. Sockeye salmon fry, which Tabor et al (1998) found to be sensitive to light pollution, emigrate in January and February when deciduous trees provide minimal light blockage. Throughout much of the site, the primary buffer of trees will remain at the river's edge and will limit the increase of light penetration to the river.

The secondary buffer also provides high flow refuge habitat. The removal of the current 126 trees waterward of the levee crown would decrease this function. However as most of these trees

are in the secondary buffer and are at quite a distance to the bankline, they would only provide this habitat in infrequent very large flood events. The use of shrubs to replace single-stemmed trees will improve this function.

Planting trees or multi-stemmed bushes in close proximity to the trees that must be removed is the preferred method of mitigation of the trees removed. Where replacement within the reach is not possible, offsite plantings will occur. Refer to Appendix C for the mitigation plan. Also, native bank plantings would occur, benefitting fish by improving the riparian buffer and increasing overhanging vegetation. The overall impacts to fish habitat from the preferred alternative would be minor and the implementation of onsite mitigation is expected to offset these impacts.

6.5.3 ETL Compliance without a Variance

This alternative would require the current removal of 368 trees. This would currently leave 457 trees within the project area, predominantly along the banks in Reach 2 and the southern portion of Reach 3.

As with the preferred alternative, tree cutting would occur during the day with minimal impact to fish. A decrease in the inputs of detritus, terrestrial insects, and nutrients would be expected with the removal of a larger number of trees at the bank line. Similarly, the removal of trees in the primary buffer, as well as those in the secondary buffer will impact the amount of light pollution on the river and will decrease available high flow refugia. These effects in combination would reduce the function of this bank for fish habitat.

Plantings would be undertaken to offset impacts. This alternative greatly limit the available space on site where plantings are allowed, thereby requiring a majority of the mitigation to occur offsite. This alternative remove trees from approximately 1,700 ft of bank line, over 30% of the project area. This would significantly reduce the function of this bank for fisheries. Riparian habitat would be improved off-site in the mitigation area.

6.6 Threatened and Endangered Species

Puget Sound Chinook salmon, Puget Sound steelhead and Coastal/Puget Sound bull trout are the focus of the biological evaluation that was prepared by the Corps and transmitted to both the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS).

6.6.1 No Action – Project's O&M manual

Impacts to Chinook, steelhead, and bull trout are the same as those described for Fish in Section 6.5.

6.6.2 Preferred Alternative – Vegetation Variance Implementation

Impacts to Chinook, steelhead, and bull trout are the same as those described for Fish in Section 6.5.

A biological evaluation (BE) is to be submitted to both UWFWS and NMFS in July 2016 with a determination that the proposed action *may affect, but is not likely to adversely affect* threatened Puget Sound Chinook salmon, Puget Sound steelhead, Coastal/Puget Sound bull trout and their designated critical habitat. Impacts to sensitive, threatened and endangered species are expected

to be minor related to noise and/or vibration from equipment and reduced cover impacts would be offset as plantings mature.

6.6.3 ETL Compliance without a Variance

Impacts to Chinook, steelhead, and bull trout are the same as those described for Fish in Section 6.5.

6.7 Cultural Resources

6.7.1 No Action – Project's O&M manual

Please refer to section 6.7.2 for analysis of impacts to cultural resources that would occur if the no action alternative is implemented according to the requirements of the current project O&M Manual.

6.7.2 Preferred Alternative – Vegetation Variance Implementation

The Preferred alternative would have no adverse impact on cultural resources, as there are no cultural resources within the project APE.

6.7.3 ETL Compliance without a Variance

ETL compliance would have no adverse impact on cultural resources, as there are no cultural resources within the project APE.

6.8 Land Use

6.8.1 No Action – Project's O&M manual

Please refer to section 6.8.2 for analysis of impacts to land use that would occur if the no action alternative is implemented according to the requirements of the current project O&M Manual.

6.8.2 Preferred Alternative – Vegetation Variance Implementation

No changes to land use are expected to occur as a result of this alternative. The levee will remain in place and the protected area will be unchanged. There would be slight changes to the aesthetic of the park and temporary closure of areas with ongoing tree removal, but the park would reopen and continue to be available to the public. The loss of memorial trees will have some effect on park aesthetics and the public's enjoyment of the area.

6.8.3 ETL Compliance without a Variance

No changes to land use are expected to occur as a result of this alternative. The levee will remain in place and the protected area will be unchanged. There would be moderate changes to the aesthetic of the park and temporary closure of areas with ongoing tree removal, but the park would reopen and continue to be available to the public.

6.9 Air Quality, Noise and Transportation

6.9.1 No Action – Project's O&M manual

Please refer to section 6.9.2 for analysis of impacts to air quality, noise and transportation that would occur if the no action alternative is implemented according to the requirements of the current project O&M Manual.

6.9.2 Preferred Alternative – Vegetation Variance Implementation

Proposed activities would be conducted in an area that has attainment for all priority pollutants. The proposed activities would not exceed *de minimus* levels of direct emissions of a criteria pollutant or its precursors (100 tons/year for carbon monoxide and PM-10; 50 tons/year for ozone) and are exempted by 40 CFR Section 93.153(c)(2)(iv) from the conformity determination requirements. Emissions generated by the construction activity are expected to be minor, short-term and well below the *de minimus* threshold. Noise would be generated by vegetation removal equipment such as chainsaws, trucks, and portable stump grinder. All noise levels would return to background levels, including those of the adjacent Renton Municipal Airport, following the project duration. Vegetation removal activity would have minor, short-term impacts to transportation in the form of additional vehicles and equipment present at the project site. No roads would be closed but traffic would be controlled as needed during daylight hours only.

6.9.3 ETL Compliance without a Variance

Proposed activities would be conducted in an area that has attainment for all priority pollutants. The proposed activities would not exceed *de minimus* levels of direct emissions of a criteria pollutant or its precursors (100 tons/year for carbon monoxide and PM-10; 50 tons/year for ozone) and are exempted by 40 CFR Section 93.153(c)(2)(iv) from the conformity determination requirements. Emissions generated by the construction activity are expected to be minor, short-term and well below the *de minimus* threshold. Noise would be generated by vegetation removal equipment such as chainsaws, trucks, and portable stump grinder. All noise levels would return to background levels, including those of the adjacent Renton Municipal Airport, following the project duration. Vegetation removal activity would have minor, short-term impacts to transportation in the form of additional vehicles and equipment present at the project site. No roads would be closed but traffic would be controlled as needed during daylight hours only.

6.10 Recreation

6.10.1 No Action – Project's O&M manual

Please refer to section 6.10.2 for analysis of impacts to recreation that would occur if the no action alternative is implemented according to the requirements of the current project O&M Manual.

6.10.2 Preferred Alternative – Vegetation Variance Implementation

Recreational activities at the project area are not expected to change after completion of vegetation removal. Public access would be temporarily limited during tree removal and planting activities, with detours and signage as needed. Any impacts to traffic and/or public access at the project site or off-site planting locations would be limited to the duration of vegetation removal activities. Cedar River Trail Park will reopen fully upon completion of the construction.

6.10.3 ETL Compliance without a Variance

Recreational activities at the project area are not expected to change after completion of vegetation removal. Public access would be temporarily limited during tree removal activities, with detours and signage as needed. Any impacts to traffic and/or public access at the project site or off-site planting locations would be limited to the duration of project construction activities. Cedar River Trail Park will reopen fully upon completion of the construction.

6.11 Aesthetics

6.11.1 No Action - Project's O&M manual

Please refer to section 6.11.2 for analysis of impacts to recreation that would occur if the no action alternative is implemented according to the requirements of the current project O&M Manual.

6.11.2 Preferred Alternative – Vegetation Variance Implementation

The Preferred Alternative, including tree removal combined with onsite plantings of trees and shrubs is expected to create a similar overall landscape in the project vicinity. However, there will be some aesthetic change with larger areas of open space along the crown of the levee. There would be a change in visual quality from the Cedar River Trail within the project area following vegetation removal. Where possible, trees would be retained or replanted near their current location and shrubs will be planted to add visual diversity.

6.11.3 ETL Compliance without a Variance

This alternative would remove a large number of trees, having a distinct impact on the aesthetics of the park. The amount of open space would increase, with few trees remaining, generally only along the bank in the more southern areas of the park. Reach 1, the northern section of the park, would be predominantly grass only. Where possible, replanting of shrub species and trees would occur on site, though this would be very limited and most mitigation would occur off site.

7 Cumulative Impacts

Cumulative effects include the effects of other past, present, and reasonably foreseeable future Federal, State, tribal, local or private actions in the action area considered in this evaluation.

The City and the Corps conducted a tree removal project on the left bank in October 2012 to ensure the safety of the floodwall. A total of 220 trees were removed. Mitigation for this action included willow stake plantings on the left bank and the right bank in the project area. Further mitigation was completed at Ron Regis Park and at the Elliott Spawning Channel. The willow plantings along the right bank were largely unsuccessful and were replanted in May 2014. The plantings were again unsuccessful.

The City proposes to conduct maintenance dredging in 2016 of the Cedar River project. The dredging would involve the removal of sediment from the channel bottom and disposal through either a beneficial use site or open water disposal area. The long-term cumulative environmental effects of the Cedar River project which include the Elliott Spawning channel, and the Royal Hills Spawning Channel. The Elliott Spawning channel was constructed in about 2000 to compensate for the over dredging that occurred as part of the original construction. The Royal Hills Spawning Channel replaced the Maplewood Golf Course spawning channel that was destroyed during the Nisqually earthquake. The Royal Hills Spawning Channel work was funded with PL84-99 funds but is still considered part of the Cedar River 205 project and completed in 2011. The Royal Hills Spawning Channel Project between RM 3.4 and 3.6 (completed summer 2009) was fully evaluated in the Environmental Impact Statement (EIS) for the Cedar River Flood Section 205 Flood Damage Reduction Study and project specific EAs. As part of the mitigation for the dredging, the lighting at the Boeing plant would be changed in response to input from the Muckleshoot Tribe.

The City has received a Puget Sound Acquisition and Restoration Program grant for knotweed removal and replanting of native species to restore 17 acres of riparian cover along the Cedar River. Part of this project is ongoing within the Cedar River Trail Park. Coordination with the City has occurred to ensure that there would not be conflicts with the proposed project or mitigation activities.

A levee removal and floodplain reconnection project is being completed by King County on the Cedar River at Rainbow Bend, approximately 9 miles upstream. In 2012, 1200 feet of levee was removed to reconnect 40 acres of floodplain (King County 2013). In November 2013 native plantings were completed.

The proposed action to O&M vegetation consistent with the proposed variance is not anticipated to generate incremental adverse effect on the quality of the human environment, when considered in conjunction with other past and present actions and future proposals. Cumulative impacts from local, short-term disturbances caused by the proposed action to O&M vegetation consistent with the proposed variance (noise, emissions, traffic disruptions, etc.) would be minor and temporary.

8 Coordination

The following agencies and entities have been involved with the environmental coordination of this project:

- National Marine Fisheries Service
- U.S. Fish and Wildlife Service
- Washington Department of Fish and Wildlife
- Washington Department of Ecology
- Washington State Office of Archaeology and Historic Preservation
- Muckleshoot Indian Tribe
- City of Renton

9 Environmental Compliance

9.1 National Environmental Policy Act (42 USC 4321 et seq.)

In accordance with the NEPA, federal projects are required to evaluate potential environmental impacts of federal actions. The Council On Environmental Quality implementing regulations for the National Environmental Policy Act (NEPA) of 1969 provide at 40 C.F.R.§ 1500.1(c): "The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment." 40 C.F.R. § 1508.9(a)(1) provides that an environmental assessment is required to "provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact (FONSI)" on actions authorized, funded, or carried out by the federal government. In accordance with NEPA requirements, this assessment evaluates environmental consequences from the implementation of vegetation maintenance in order to comply with the Corps' variance request policy. This draft EA will be made available for public review and comment. Public comments received during the public review period will be included and incorporated into the Final EA. The submittal of

the Final EA and singing of the FONSI would complete the NEPA process and fully comply with this Act.

9.2 Endangered Species Act of 1973, as Amended (16 USC 1531-1544)

The Corps plans to initiate informal consultation for the proposed action with the USFWS and the NMFS concerning anticipated effects on threatened and endangered species and their critical habitat, pursuant to Section 7(a)(2) of the ESA. The BE is to be sent in July 2016, based on the determination that the project is not likely to adversely affect threatened Puget Sound Chinook salmon, Puget Sound steelhead, Coastal/Puget Sound bull trout and their designated critical habitats.

9.3 Clean Water Act, as Amended (33 USC 1251 et seq.)

The Clean Water Act (CWA) is the primary legislative vehicle for federal water pollution control program and the basic structure for regulating discharges of pollutants into waters of the United States. The proposed action would not involve a discharge of fill material into waters of the United States; therefore Section 404 of the CWA is not applicable. Work would be completed in the dry, and BMPs would be in place to prevent sediment entering the river.

9.4 Coastal Zone Management Act (16 USC 1451-1465)

The Coastal Zone Management Act (CZMA) of 1972 as amended requires Federal agencies to carry out their activities in a manner, which is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Zone Management Program. A review of the City of Renton Shoreline Master Program was conducted for the proposed project. A detailed analysis of consistency with the CZMA is to be submitted to the Washington Department of Ecology in July 2016. (See Appendix F)

9.5 National Historic Preservation Act (16 USC 470 et seq., 110)

The National Historic Preservation Act (NHPA) (16 U.S.C. 470) requires that the effects of proposed federal undertakings on sites, buildings structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. The Cedar River Right Bank Levee Vegetation Variance project is a Federal undertaking of the type which has No Potential to cause effects to Historic Properties as the area has been highly disturbed by modern construction and there are no historic structures adjacent to the undertaking, or within immediate view sheds that are eligible for the National Register (Appendix F). This determination completes the NHPA process. The Corps notified the SHPO of our finding of No Historic Properties Affected on February 27, 2015 and the SHPO agreed with our determination on February 27, 2015.

9.6 Clean Air Act, as Amended (42 USC 7401 et seq.)

The Clean Air Act requires states to develop plans, called State Implementation Plans (SIP), for eliminating or reducing the severity and number of violations of NAAQS while achieving expeditious attainment of the NAAQS. The Act also required Federal actions to conform to the appropriate SIP. An action that conforms with a SIP is defined as any action that would not: (1) cause or contribute to any new violation of any standard in any area; (2) increase the frequency or severity of any existing violation of any standard in any area; or (3) delay timely attainment of any standard required interim emission reductions or other milestones in any area.

The Corps has determined that emissions associated with the proposed action would not exceed EPA's *de minimus* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone).

9.7 Wild and Scenic Rivers Act (16 USC 1271-1287)

No portions of the Cedar River have been designated as a Wild and Scenic River and this act is therefore not applicable to the proposed action.

9.8 Migratory Bird Treaty Act and Migratory Bird Conservation Act (16 USC 701-715)

The Migratory Bird Treaty Act (MBTA), establishes a Federal prohibition, unless permitted by regulations to "*pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, … or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird.*" This prohibition applies to birds included in the respective international conventions between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and the former Union of Soviet Socialist Republics.

The alternatives considered in this draft EA are evaluated with regard to effects on birds and their habitat. The site is in a highly developed area with an adjacent airport, so birds present would be relatively tolerant of humans and their activities. The tree removal work would be done in the fall which would avoid the nesting season. Mitigation activities will be completed to offset any impacts to habitat.

9.9 Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801 et seq.)

The Magnuson Stevens Fishery Conservation and Management Act requires Federal agencies to consult with NMFS on activities that may adversely affect EFH. The objective of an EFH assessment is to determine whether or not the proposed action(s) "may adversely affect" designated EFH for relevant commercial, federally-managed fisheries species within the proposed action area. The assessment also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects to designated EFH resulting from the proposed action.

The BE is to include a determination that the project would not reduce the quality and/or quality of Essential Fish Habitat (EFH) for Pacific salmon under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The Corps has determined that the proposed action would not reduce the quality and/or quantity of EFH for Pacific salmon or federally managed fisheries in Washington waters. This determination is based on the limited scope and duration of the vegetation removal, the proposed mitigation planting plan, and the lack of in-water work.

9.10 Federal Water Project Recreation Act, as Amended (16 USC 4612 et seq.)

In the planning of any Federal navigation, flood control, reclamation, or water resources project, the Federal Water Project Recreation Act, requires that full consideration be given to the opportunities that the project affords for outdoor recreation and fish and wildlife enhancement. The Act requires planning with respect to development of recreation potential. Projects must be constructed, maintained and operated in such a manner if recreational opportunities are consistent with the purpose of the project.

This draft EA assesses impacts of alternative actions on recreation. The project is occurring within the Cedar River Trail Park. Access would be temporarily limited during construction activities to the immediate area of ongoing work. It is not expected that the park would be closed in its entirety, but only within the area immediately surrounding the ongoing effort. The park would reopen immediately following tree removal and planting completion.

9.11 Fish and Wildlife Coordination Act (16 USC 661)

The Fish and Wildlife Coordination Act (FWCA) requires that wildlife conservation receive equal consideration and be coordinated with other features of water resource development projects. This goal is accomplished through Corps funding of USFWS habitat surveys evaluating the likely impacts of proposed actions, which provide the basis for recommendations for avoiding or minimizing such impacts. A FWCA Report was completed for the 1997 Final EIS for the Cedar River Section 205 Flood Control Project and the current project is consistent with that report. No FWCA Report is required for the proposed action.

9.12 Treaty Rights

In the mid-1850s, the United States entered into treaties with nearly all of the Native American tribes in the territory that would become Washington State. These treaties guaranteed the signatory tribes the right to "*take fish at usual and accustomed grounds and stations... in common with all citizens of the territory*" [U.S. v. Washington, 384 F. Supp. 312 at 332 (WDWA 1974)]. In U.S. v. Washington, 384 F. Supp. 312 at 343 - 344, the court resolved that the Treaty tribes had the right to take up to 50 percent of the harvestable anadromous fish runs passing through those grounds, as needed to provide them with a moderate standard of living (Fair Share). Over the years, the courts have held that this right comprehends certain subsidiary rights, such as access to their "*usual and accustomed*" fishing grounds. More than *de minimis* effects to access to usual and accustomed fishing areas may violate this treaty right [Northwest Sea Farms v. Wynn, F. Supp. 931 F. Supp. 1515 at 1522 (WDWA1996)]. In U.S. v. Washington, 759 F.2d 1353 (9th Cir 1985) the court indicated that the obligation to prevent degradation of the fish habitat would be determined on a case-by-case basis. The Ninth Circuit has held that this right encompasses the right to take shellfish [U.S. v. Washington, 135 F.3d 618 (9th Cir 1998)].

The Cedar River Flood Damage Reduction Project is located within the adjudicated usual and accustomed treaty fishing area of the MIT. The Tribe in the past has expressed concerns regarding the need for vegetation shading for temperature control along the Cedar River in the area of the Cedar River Flood Damage Reduction Project to protect fish habitat and spawning.

No in water work is involved and the project would not affect tribal fishing seasons and areas. To address impacts of the proposed work on fisheries habitat, mitigation is proposed to include onsite and offsite replacement of trees. The Corps believes that the plantings adequately compensate for project impacts identified in early discussions with the Muckleshoot Indian Tribe (MIT) Fisheries Division.

Coordination has been ongoing with the MIT. Tribal staff has attended a site visit on February 7, 2014. The MIT submitted comments to the Corps on an Initial Assessment memo that was provided during a site visit. The Tribe provided a number of considerations and recommendations that were taken into account during this impact analysis.

Though the MIT continues to have concerns with the removal of vegetation, the Corps has analyzed the proposed project with respect to its effects on the treaty rights. The Corps believes its actions are consistent with our Tribal Treaty and Trust responsibilities and concludes the following:

(1) The work would not interfere with access to usual and accustomed fishing and gathering areas;
(2) The work would not cause the degradation of fish runs in usual and accustomed fishing grounds or with fishing activities or shellfish harvesting and habitat;
(3) The work would not impair the Treaty tribes' ability to meet moderate living needs; and
(4) The impacts to fish habitat are believed to be minimal and would not violate the MIT's treaty fishing rights.

9.13 Executive Order 11988, Floodplain Management (24 May 1977)

Executive Order 11988 requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy of the floodplain, and to avoid direct and indirect support of floodplain development where there is a practicable alternative. In accomplishing this objective, "*each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains.*" Section 8 of the order notes that it does not apply to assistance provided for emergency work essential to save lives or protect public property, health, and safety. The proposed action would not create a change that would affect occupancy of the floodplain. By removing vegetation, the proposed action would be consistent with the executive order by bringing the levee into compliance with Corps guidance and minimize structural integrity concerns, while not changing floodplain occupancy conditions.

9.14 Executive Order 12898, Environmental Justice

Executive Order 12898 directs every Federal agency to identify and address disproportionately high and adverse human health or environmental effects of agency programs and activities on minority and low-income populations. The proposed action does not involve siting a facility that would discharge pollutants or contaminants, so no human health effects would occur. Therefore, the proposed action is in compliance with this order.

9.15 Executive Order 11990, Protection of Wetlands

Executive Order 11990 encourages federal agencies to take actions to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands when undertaking federal activities and programs. The proposed action would not impact wetlands.

9.16 Engineering Technical Letter (ETL) 1110-2-583 with draft Policy Guidance Letter (PGL) issued on 17 February 2012

The proposed variance request would be consistent with the existing ETL and draft Policy Guidance Letter. If in the future, a less stringent levee vegetation policy is developed by the Corps, then implementation of the variance described in this document will either not occur of be modified to account for the changes in policy.

10 List of Preparers

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APPENDIX A: ENGINEERING ANALYSIS

APPENDIX B: CANOPY COVER ANALYSIS

Canopy Cover Analysis
For the Cedar River Right Bank Variance
U.S. Army Corps of Engineers

The City of Renton is the non-Federal sponsor, owner and operator of the Cedar River Flood Damage Reduction Project. Maintenance efforts, including any required vegetation removal, are the responsibility of the City. The Seattle District is assisting the City in requesting a vegetation variance for portions of the project.

The Corps' engineering analyses determined that 457 trees could be retained in the project area and that 133 trees must be removed to maintain the design level of protection under the new Corps' guidance. Additionally 64 trees will need to be removed as they grow and exceed the size limit. Without a variance, compliance with the Corps' national standard would require the removal of 368 trees.

The levee is a well used public park. The vegetation is highly managed within the park and most of the trees within the project area are ornamental varieties. The park is maintained as a mosaic of trees and grassy areas. A narrow band (typically 0 to 21 feet wide) of trees with native or invasive understory exists along the bankline as the primary buffer through much of the park, though some areas are maintained for open river views with limited vegetation. Inland from the primary buffer, a secondary buffer of scattered, mostly ornamental trees with a mown grass understory exists.

To analyze the impacts of the tree removal, the Corps estimated canopy cover of the project area in the current condition and the estimated future with project condition using aerial imagery.

Methods:
Using GIS, a 50 foot by 50 foot grid was laid over aerial images of the project area. Each grid cell was then visually scored based on the percent of land mass within the square that was covered by tree canopy. Shrubs were not included in the analysis.

Grid cells at the edge of the water were scored based on the land/canopy portion of the square only. If a square is half covered by tree canopy but the other half is water, the square received a 100 percent rating. As the study is interested in characterizing riparian habitat, as opposed to analyzing strictly landcover, this method gives a clearer idea of what riparian cover is on site. A rating of 50 percent because a cell is half water wouldn't capture that at the water's edge; a good canopy exists, which is the more important aspect to calculate.

The exact location of the bank line in the aerial images was unknown. It is expected that the canopy extends over the water such that the first grid square with a canopy score could be almost completely over water. Scoring these squares is valid, as canopy cover over water provides important riparian functions.

The grid runs in straight lines directed North-South and East-West with double letters designating columns and numbers designating rows. To assess the general trends of the shoreline and the interior, the park was in essence "straightened" for analysis, such that the first scored cell for each row was analyzed together as Column A. The second scored grid cell, as column B. For example Column A would include grid cells aa1, aa2, bb2, bb3,…, cc10, etc.

Because the shoreline is not a straight line, Column A + Column B does not directly correlate to the 100 foot buffer area. Particularly in Reach 3, an approximated 100 foot buffer extends into columns C and D. Columns do show relative distance from the shoreline. All but 7 trees that would be removed as a part of the project are within approximately 100 feet of the shoreline.

The Future with Project numbers reflect the canopy estimates without any onsite mitigation and with the removal of all trees from the Vegetation Free Zone and Zone 1. Although the project includes the immediate removal of only the larger trees in Zone 1 (those already greater than 10 inches DBH), it is assumed that the smaller trees will also reach this threshold eventually and will need to be removed. Therefore this canopy analysis assumes the longer term future by including the removal of all trees within Zone 1. This analysis does not take into account other planting efforts that are ongoing or planned for the near future at the park.

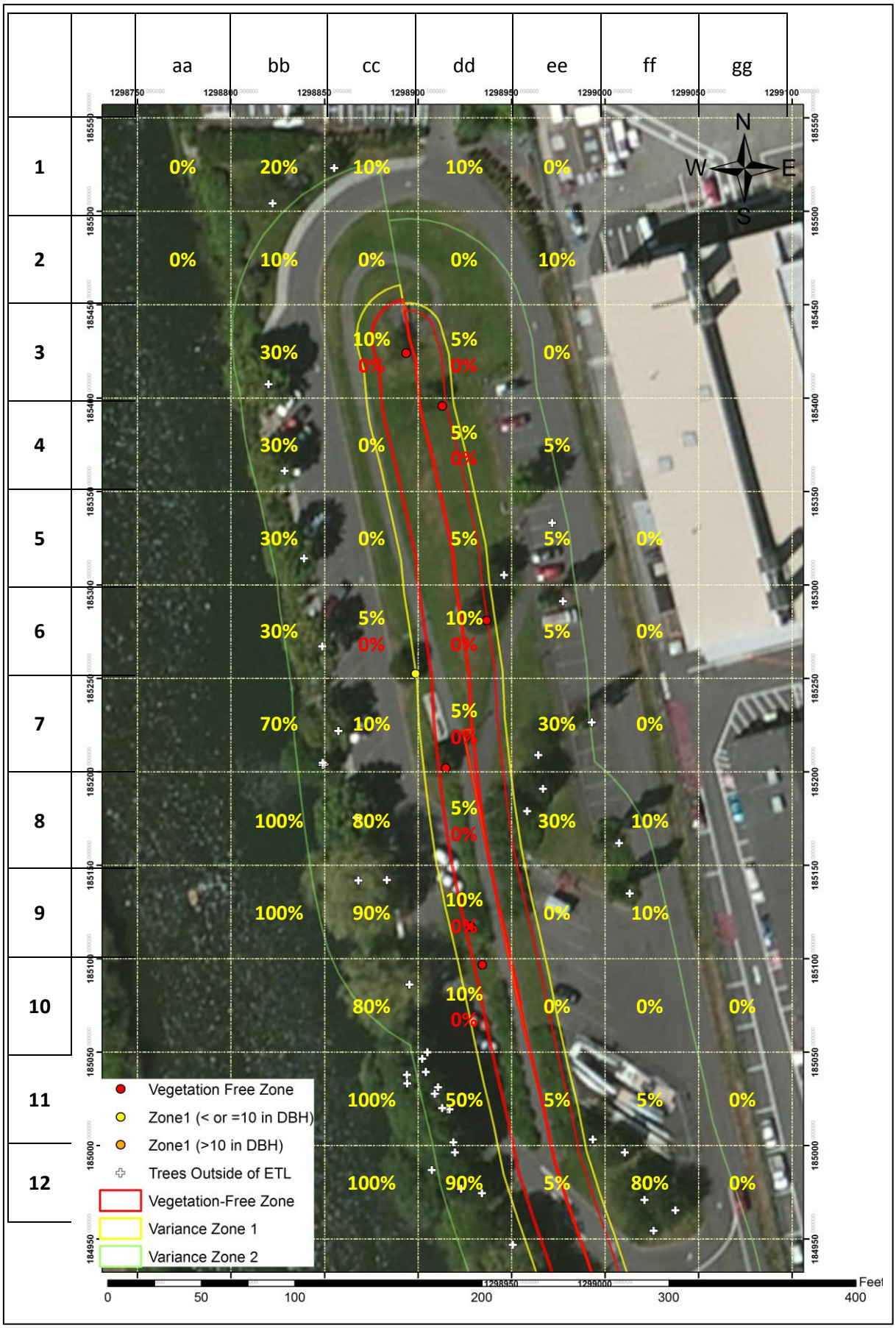
Results:
Tables of the results are provided below. The aerial images and estimated canopy percentages are also provided, following the tables. On the aerial images, the Current Condition estimate is shown in yellow text. The Future with Project condition is noted in red text where a change occurs (otherwise the current condition is expected to continue to apply).

Table 1. Current Condition and Future With Project estimates of canopy cover within the project area. Areas outside the park boundary were not analyzed. Changes in the future condition are noted in red.

		Current Condition						Future With Project					
		A	B	C	D	E	F	A	B	C	D	E	F
Reach 1	average	47%	24%	6%	9%	4%		47%	21%	2%	9%	4%	
	max	100 %	90%	10%	30%	10%		100 %	90%	10%	30%	10%	
	min	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	
	N	10	10	10	10	8		10	10	10	10	8	
Reach 2	average	85%	40%	15%	16%	5%	0%	77%	34%	9%	16%	5%	0%
	max	100 %	100 %	60%	80%	10%	0%	100 %	100 %	60%	80%	10%	0%
	min	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	N	46	46	46	41	24	1	46	46	46	41	24	1
Reach 3	average	61%	40%	25%	17%	18%		52%	30%	10%	5%	20%	
	max	100 %	100 %	80%	50%	20%		100 %	100 %	80%	50%	20%	
	min	0%	0%	5%	5%	20%		0%	0%	0%	0%	20%	
	N	43	43	25	12	1		43	43	25	12	1	
Total Project Area	average	71%	40%	17%	15%	5%	0%	63%	32%	9%	13%	20%	0%
	max	100 %	100 %	80%	80%	20%	0%	100%	100%	80%	80%	20%	0%
	min	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	N	99	99	81	63	33	1	99	99	81	63	33	1

Table 2. Current Condition and Future With Project estimates of canopy cover within the Reach 3 subdivisions. Areas outside the park boundary were not analyzed. Changes in the future condition are noted in red.

		Distance from the river bank									
		Current Condition					Future With Project				
		A	B	C	D	E	A	B	C	D	E
3350 to 4000	average	18%	12%	14%			4%	2%	3%		
	max	50%	40%	20%			50%	10%	5%		
	min	0%	0%	5%			0%	0%	0%		
	N	14	14	4			14	14	4		
4000 to 4200	average	58%	16%	10%			58%	5%	10%		
	max	100%	50%	10%			100%	20%	10%		
	min	0%	0%	10%			0%	0%	10%		
	N	4	4	1			4	4	1		
4200 to 4400	average	15%	19%	20%			8%	0%	0%		
	max	30%	30%	20%			30%	0%	0%		
	min	0%	5%	20%			0%	0%	0%		
	N	4	4	2			4	4	2		
4400 to 4650	average	100%	26%	5%			50%	13%	5%		
	max	100%	60%	5%			100%	50%	5%		
	min	100%	5%	5%			0%	0%	5%		
	N	4	4	2			4	4	2		
4650 to 5450	average	100%	83%	35%	17%	20%	100%	75%	17%	7%	20%
	max	100%	100%	80%	50%	20%	100%	100%	80%	50%	20%
	min	100%	5%	5%	5%	20%	100%	5%	0%	0%	20%
	N	17	17	16	12	1	17	17	16	12	1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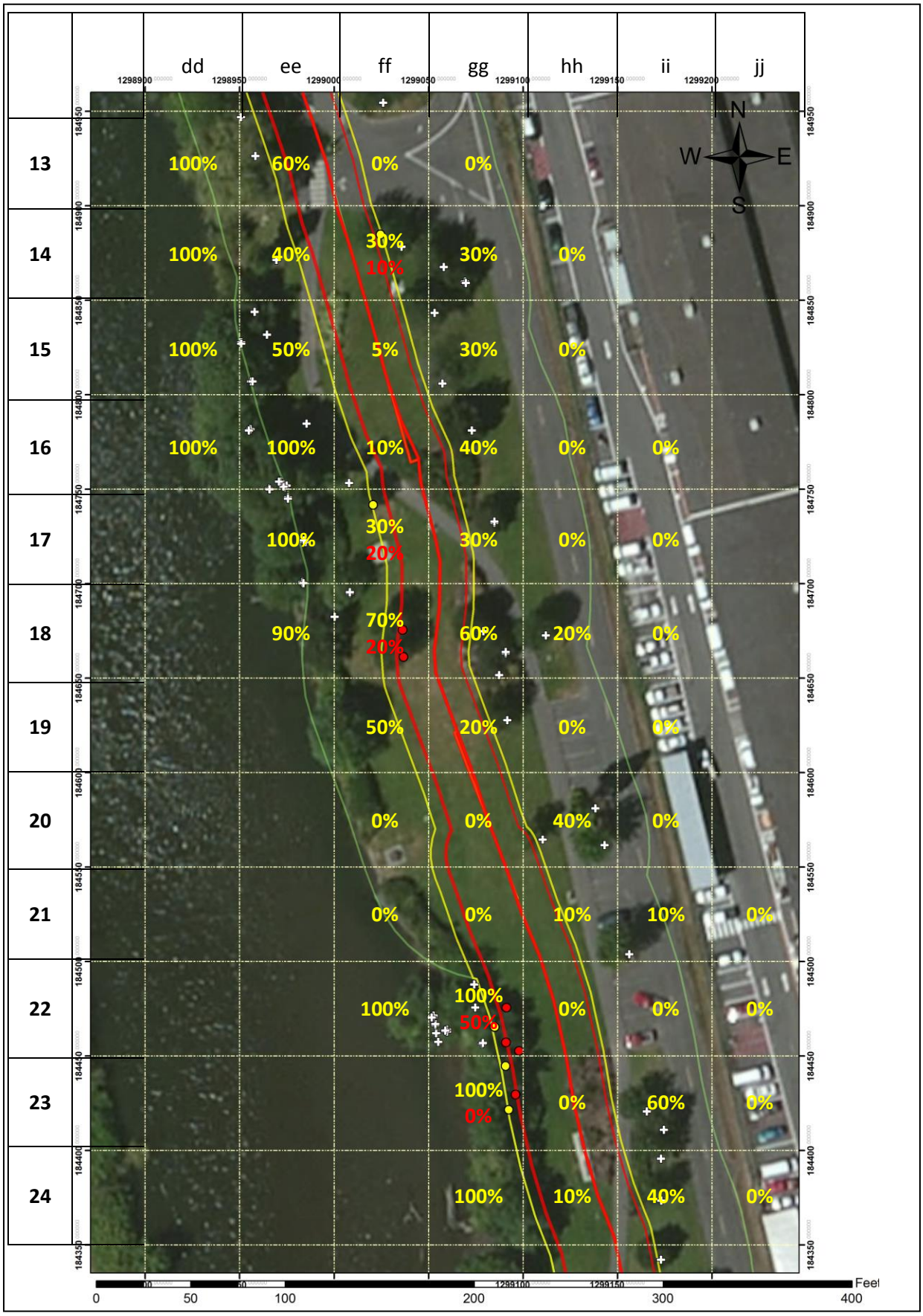
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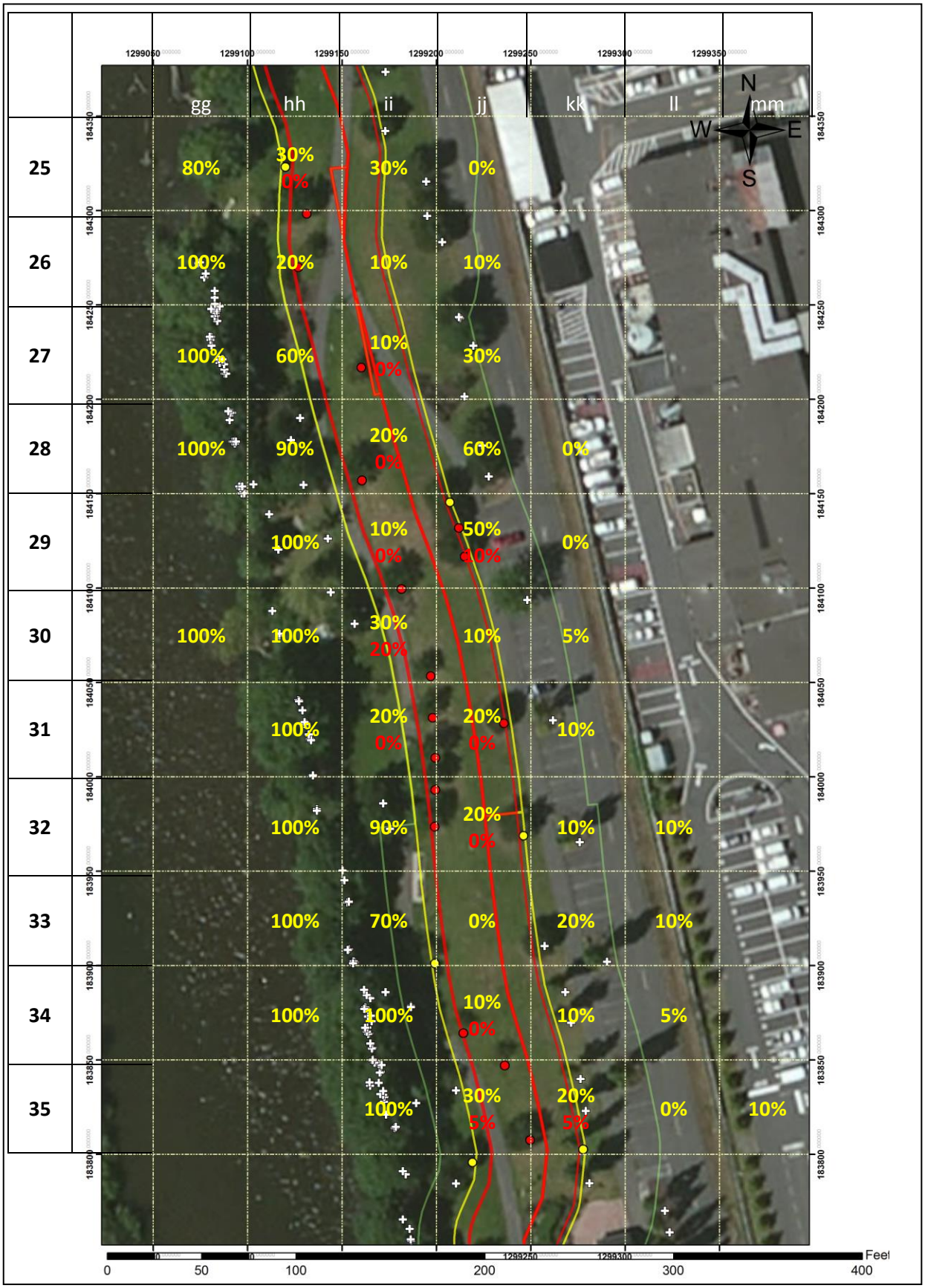
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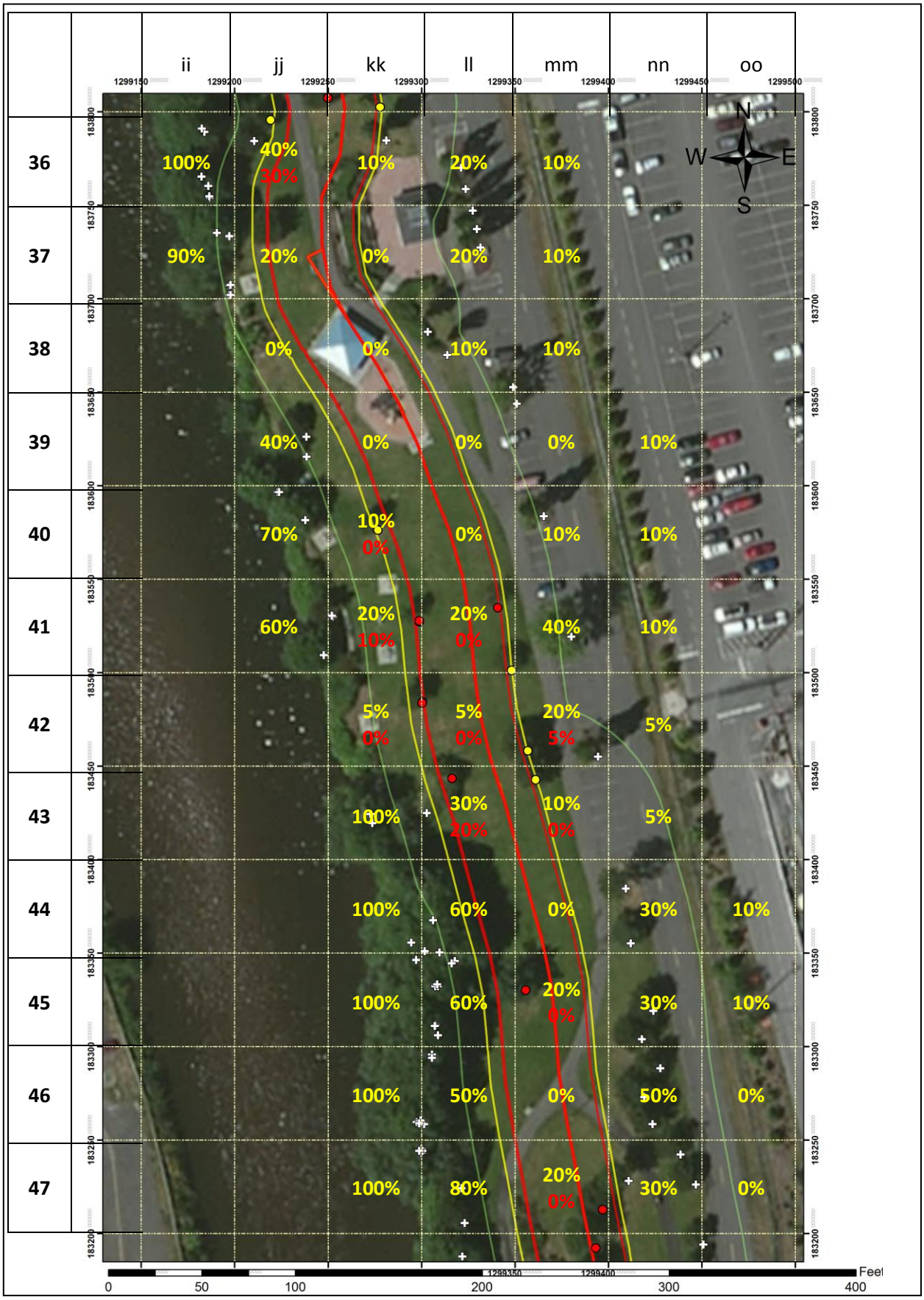
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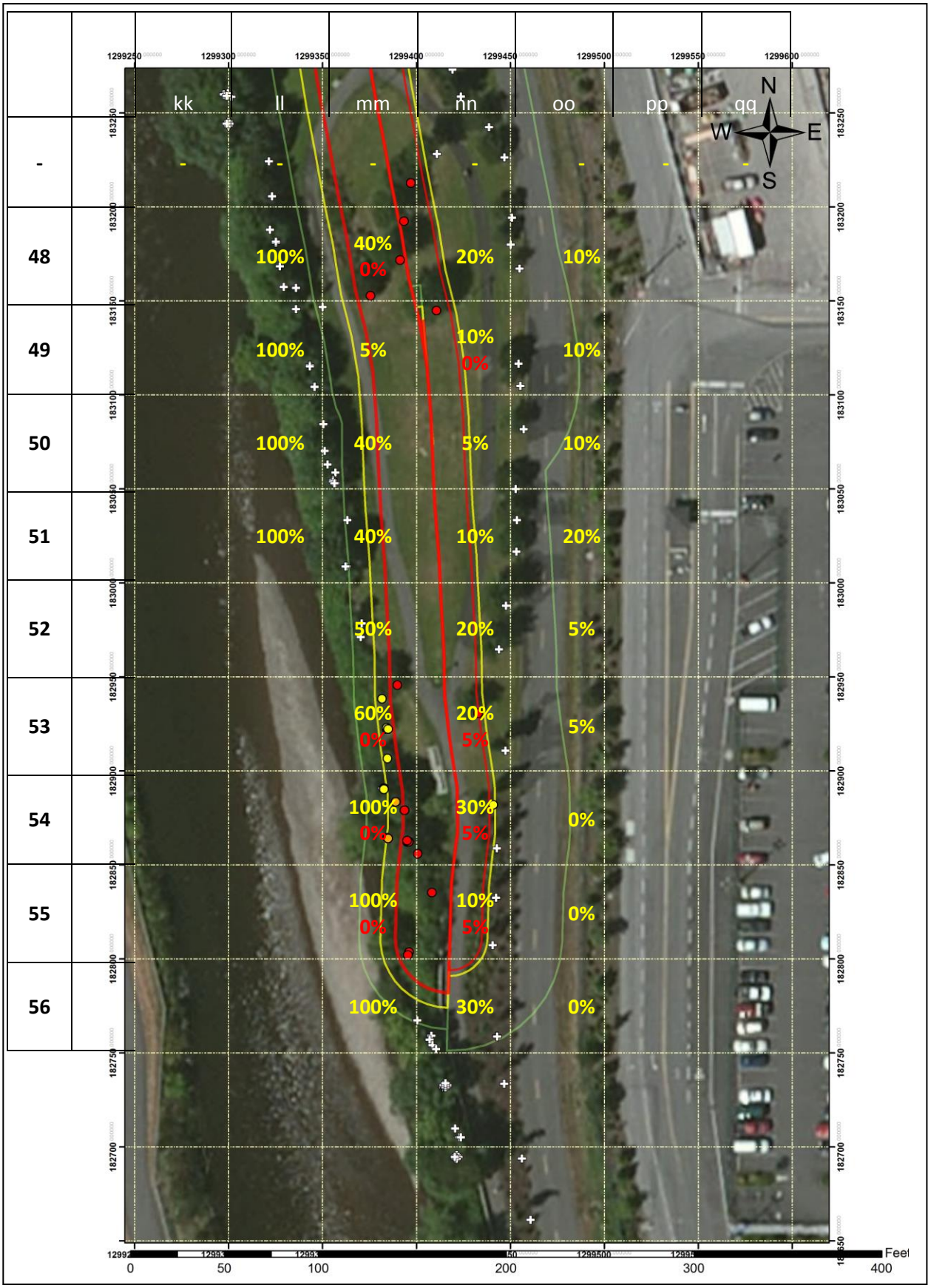
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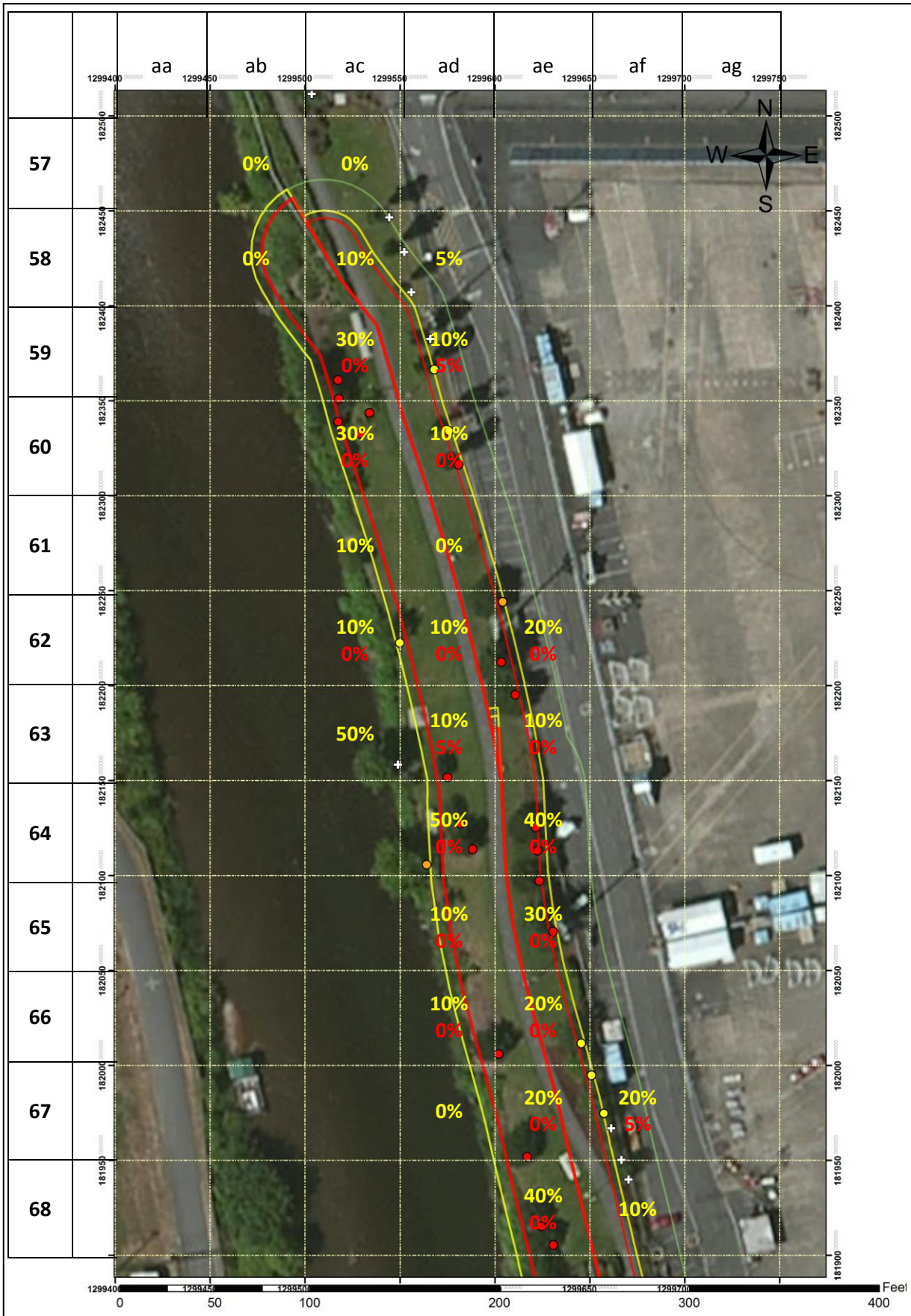
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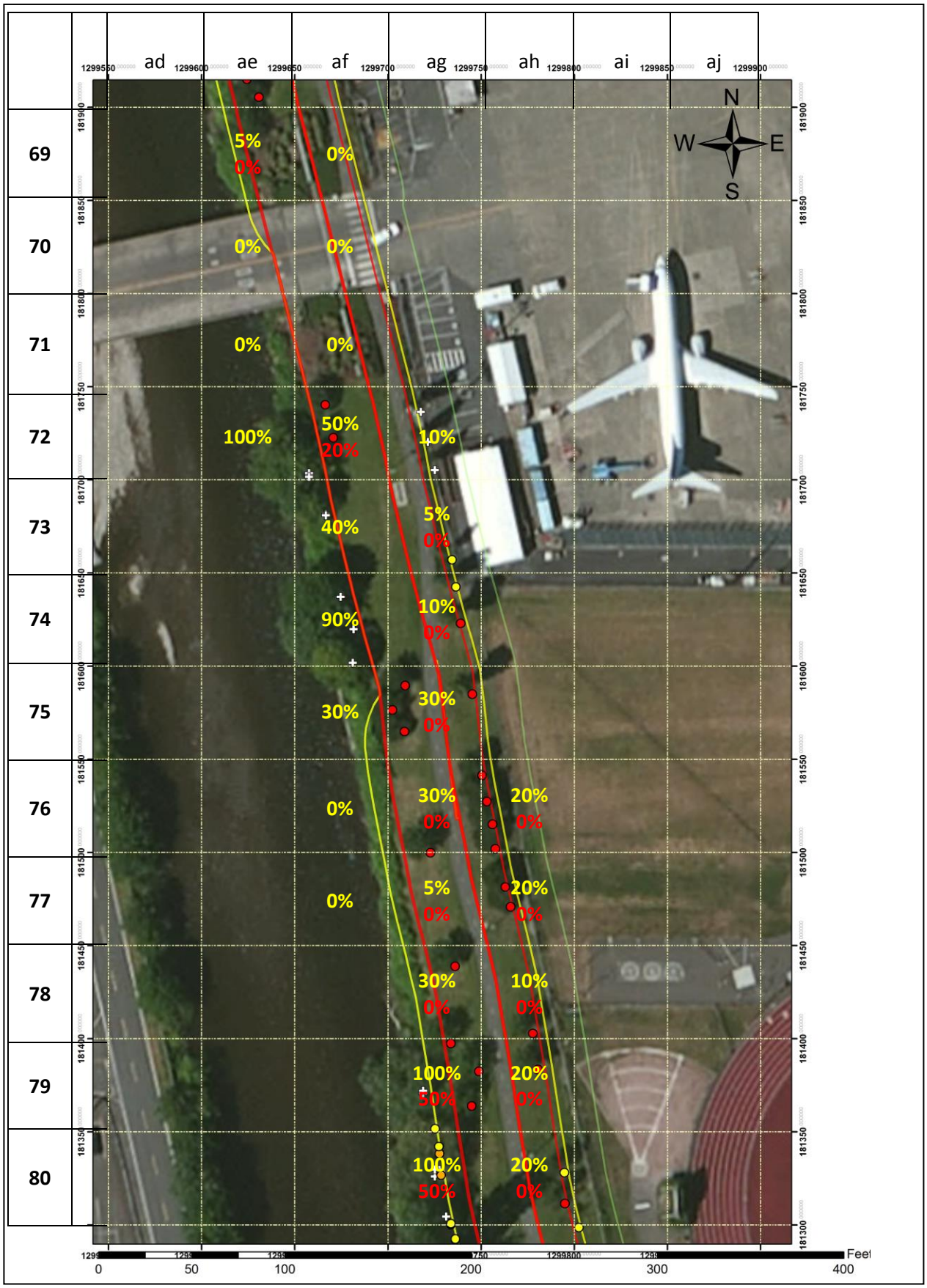
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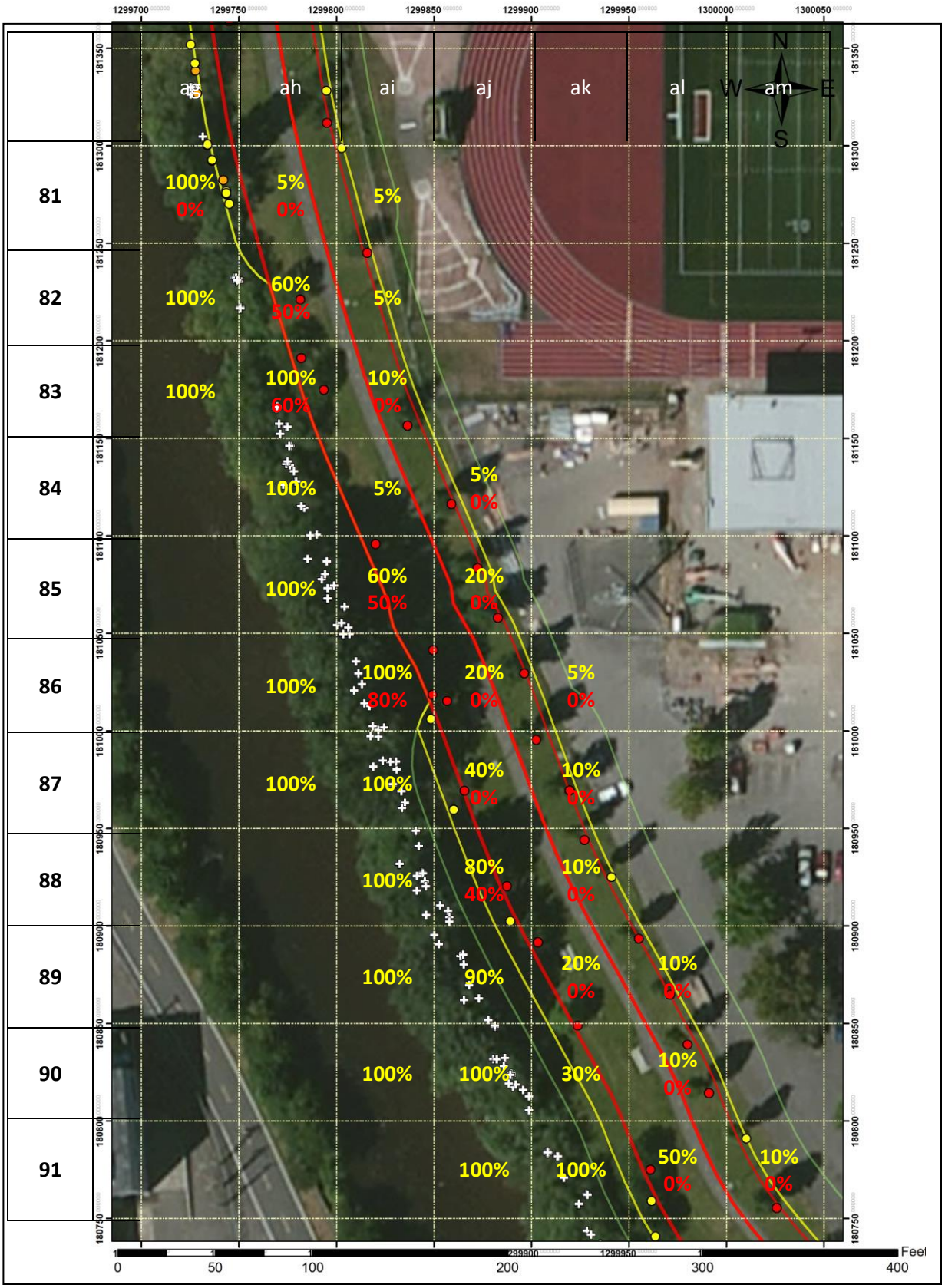
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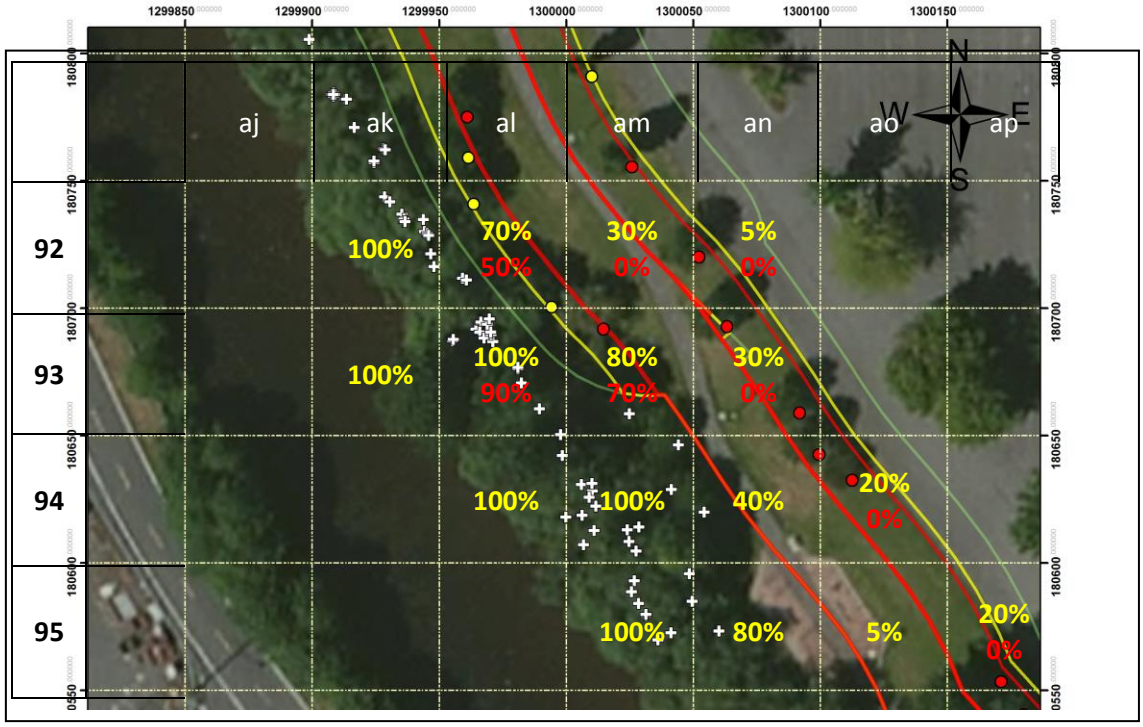
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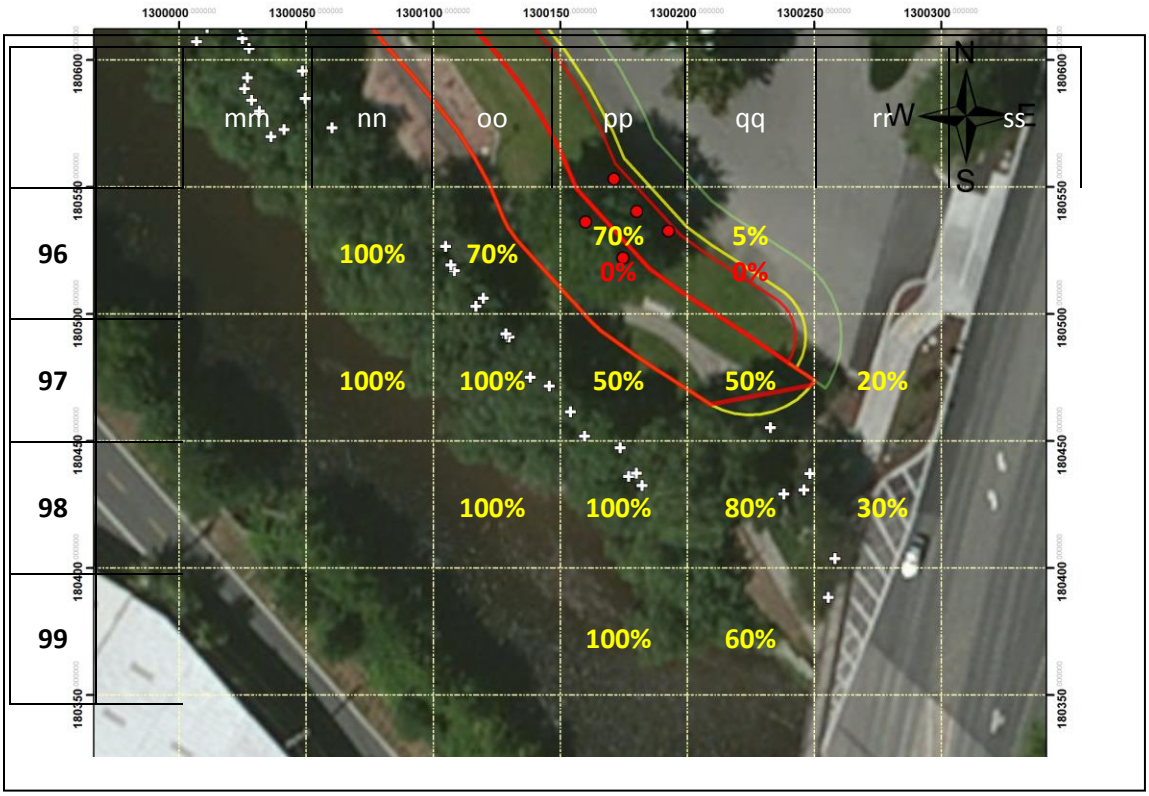
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Table 3. Future (immediately after tree removal) With Project estimates of canopy cover within the project area and the amount of change from the Current Condition. This assumes no onsite mitigation.

		A	change	B	change	C	change	D	change	E	change	F	change
Reach 1	average	47%	0	21%	-3%	2%	-4%	9%	0	4%	0		
	max	100 %	0	90%	0	10%	0	30%	0	10%	0		
	min	0%	0	0%	0	0%	0	0%	0	0%	0		
	N	10		10		10		10		8			
Reach 2	average	77%	-8%	34%	-6%	9%	-6%	16%	0	5%	0	0%	0
	max	100 %	0	100 %	0	60%	0	80%	0	10%	0	0%	0
	min	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
	N	46		46		46		41		24		1	
Reach 3	average	52%	-9%	30%	-10%	10%	-15%	5%	-12%	20%	0		
	max	100 %	0	100 %	0	80%	0	50%	0	20%	0		
	min	0%	0	0%	0	0%	-5%	0%	-5%	20%	0		
	N	43		43		25		12		1			
Entire Project Area	average	63%	-8%	32%	-8%	9%	-8%	13%	-2%	5%	0	0%	0
	max	100 %	0	100 %	0	80%	0	80%	0	20%	0	0%	0
	min	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
	N	99		99		81		63		33		1	

Discussion:
As seen in Table 3, the average change in canopy cover nearest the shoreline over the entire project area with implementation of the project is 8 percent if no-onsite mitigation occurs. The greatest change occurs in Reach 3.

This analysis looks at the worst case scenario future condition by looking at the full removal in Zone 1 (trees that have already exceeded the size limit and those that would be removed in the future once they also meet the size limit) and assuming no on site mitigation. However, the Zone 1 removal will not occur simultaneously and onsite mitigation is planned. Some plantings would occur within the secondary buffer area, though there is limited space. Much of the mitigation will occur in the form of planting of trees and native understory along the bankline, creating or augmenting the primary buffer. At this site, the primary riparian buffer is largely responsible for the nutrient inputs to the river and microclimate control. Both the primary and secondary buffers provide water quality protection, wildlife habitat, and protection from artificial light.

APPENDIX C: MITIGATION PLAN

CEDAR RIVER RIGHT BANK VARIANCE – MITIGATION PLAN

Location – Right Bank Cedar River, Cedar River Park, Renton

BACKGROUND – Changes in enforcement of Corps regulations for vegetation on levees has resulted in the Corps requesting that the local sponsor, the city of Renton remove trees on the existing Cedar River Section 205 project on the right bank. Based on the Corps analysis, 133 trees currently would be removed as part of the variance effort versus 368 trees if the Corps Levee Vegetation Policy was implemented.

Of the estimated 133 trees to be removed using the variance, 55 are on the landward side of the levee and because of their distance from the riverbank have limited value and are not covered under ESA or Hydraulic Project Approval (HPA). The City will elect to replace these trees onsite if possible at a 1:1 ratio. The remaining 78 trees to be removed are on the riverward side and subject to ESA consultation and for the city, a review by Washington Department of Fish and Wildlife under the state Hydraulic Code. Trees being replaced in the park will be of larger stock because park staff will be available to water and maintain these trees as they develop. The trees planted in the park proper (i.e. on-site) will be replaced at 1:1 ratio since larger stock will be used and planting will occur in a staggered fashion to allow the new trees to establish before cutting occurs. Use of larger stock, planting closer to the river and using advance mitigation with these trees will compensate for any temporal loss. Mitigation plantings accomplished off-site will be at a 3:1 replacement ratio.

In some cases some trees may be replaced by shrub species in the same location within the project area to improve the understory diversity. If shrubs are used, a 4:1 replacement ratio will be employed.

No in-water structures will be placed because trees placed in the park while being closer to the river will not be at the bankline. In addition, placement of in-stream structures will potentially increase channel roughness, potentially impacting the level of flood protection provided by the existing flood damage reduction project.

The City of Renton is examining the available space in the park to see if there are places where trees can be planted to offset the aesthetic loss of existing trees.

The existing bankline within the park is not available for planting because of:

1. The presence of mitigation plantings for the original Section 205 Flood Damage Reduction Project
2. Some potential areas are targeted to be used for the proposed mitigation for the Section 205 project maintenance dredging.

3. Areas on the upstream right bank have already been used to mitigate for removal of trees on the left bank.

4. Corps Levee Vegetation policy prohibits vegetation within 15 feet of the levee prism.

The mitigation for the remaining 78 riverward trees that cannot be planted onsite will be accomplished upstream of the park.

A potential location of the mitigation is on the left bank of the Cedar River upstream of the Logan Street Bridge. Mitigation at a 3:1 ratio for up to 78 trees being removed for variance compliance would result in trees being planted in two rows with 1 foot spacing and a vertical separation of 1 foot. Three hundred (300) trees (likely willow, but may include cottonwood and conifer species) would be planted over a 200 foot stretch of bankline.

The City of Renton is currently analyzing restoration opportunities along the Cedar River. Based on the results of that review, alternative mitigation locations might be proposed versus the Logan Street site.

Several measures would be employed by the City during construction to minimize adverse project effects on protected species and their habitat:

- A Biologist will supervise the moving of any trees and the mitigation efforts;
- Refueling of all equipment will occur in the staging area on the landward side of the floodwall; no equipment fueling or servicing will occur on the riverward side of the floodwall;
- No equipment will operate in the water;
- At least one fuel spill kit with absorbent pads will be onsite at all times and no equipment will operate in the water and construction personnel will be trained in its proper use;
- Soil disturbance will be minimized during vegetation removal by cutting the stems and using a portable stump grinder to grind all stumps to ground level;
- Hydroseed application following vegetation removal will be applied to land only; care will be taken to ensure no hydroseed enters the river;
- All work will be performed in the dry;
- Work would occur during daylight hours only;
- Tree removal would be done in the fall to avoid the nesting season;
- Off-site planting material for mitigation will be healthy and disease free with a contractor guaranteed survival rate of 100 percent after 30 days and 80 percent at one year;
- Willow stakes will be planted using hand installation methods to minimize soil disturbance;
- Understory vegetation will be hand-cleared to an approximately 6 foot diameter circle around each planting;
- Throughout the planting site, Japanese knotweed (*Polygonum cuspidatum*) will be hand cleared to ground level and disposed of off-site at the time of construction and annually

during early spring or earliest feasible time for 5 years; no cuttings will be allowed to enter the water;

- In the onsite park setting, larger stock will be used to minimize disturbance and all plants will be watered at the time of planting.

APPENDIX D: PROJECT PHOTOS

Photo 1. View looking downstream in Reach 1 towards Lake Washington.

Photo 2. View looking upstream towards Logan Avenue of the I-type Floodwall on the left bank of the Cedar River with Renton Airport to the right (West).

Photo 3. View looking downstream near the upstream extent of the project area. Note mostly small diameter red alder.

APPENDIX E: ESA CONCURRENCE LETTERS

APPENDIX F: COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION AND CONCURRENCE LETTER

APPENDIX G: COMMENTS RECEIVED AND THE CORPS RESPONSES

APPENDIX H: NHPA DOCUMENTATION