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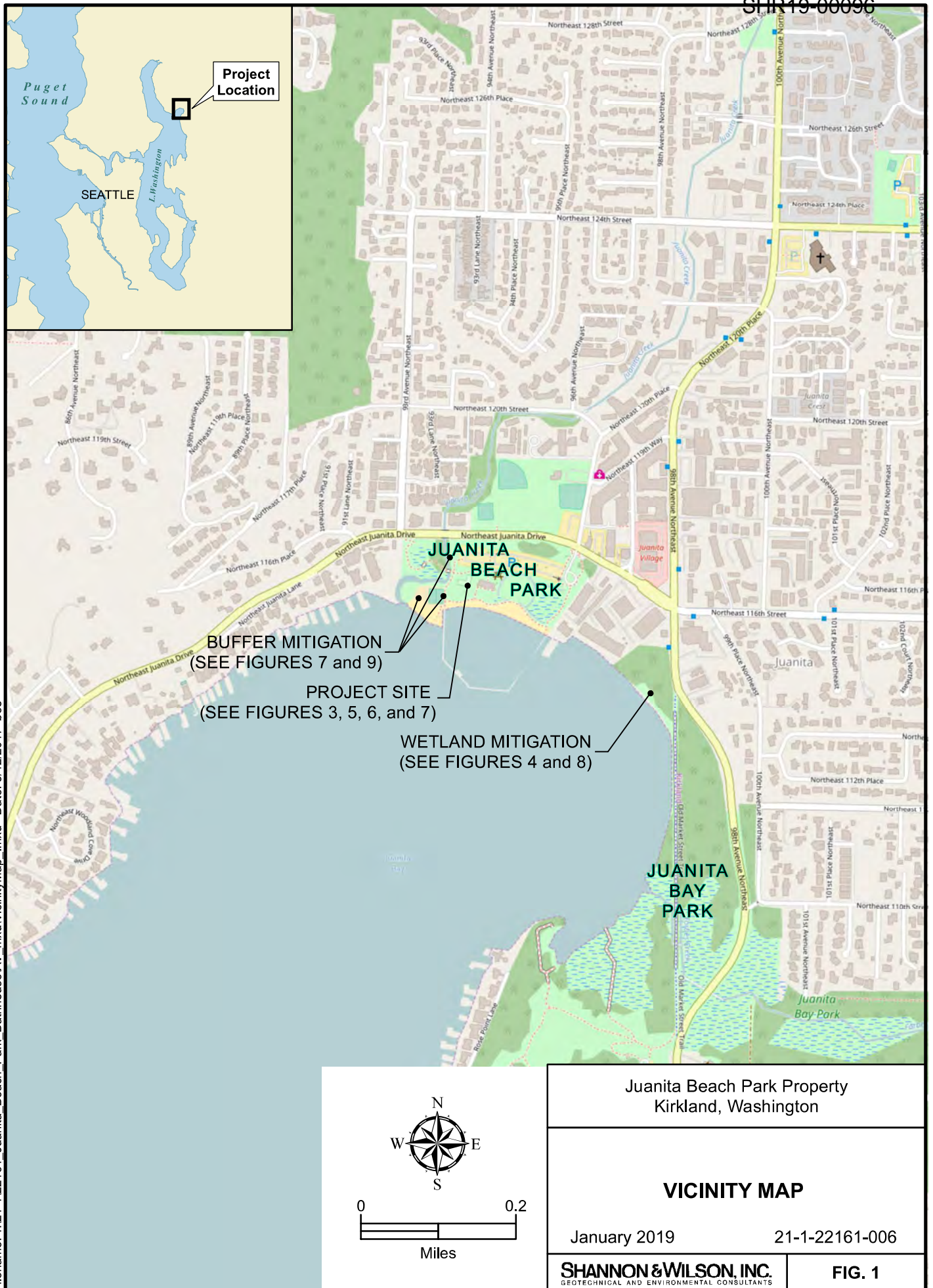
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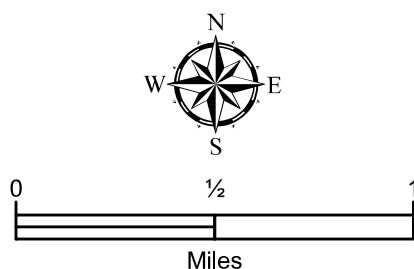
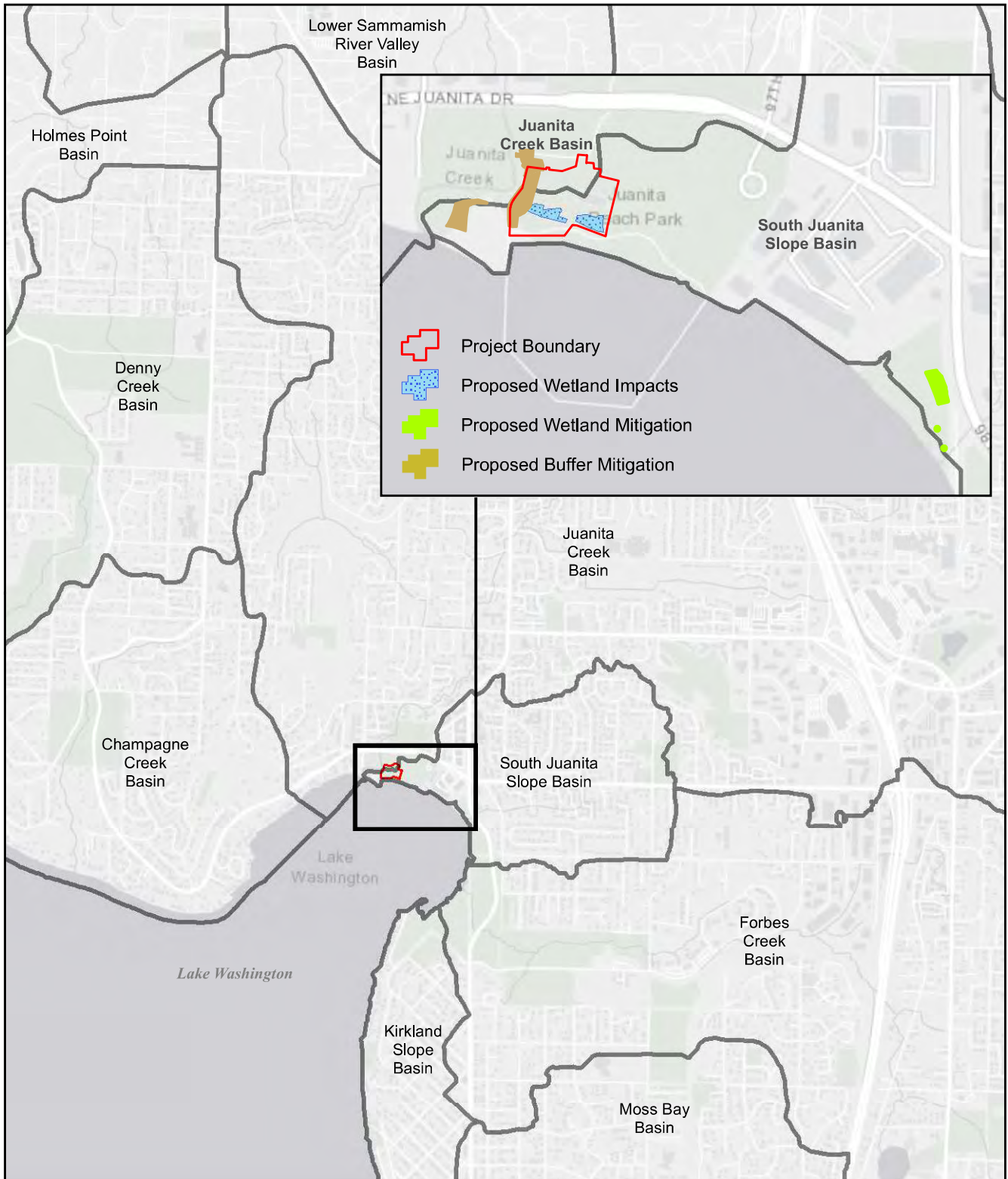
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Filename: T:\21-1\22161\_Juanita\_Beach\_Park\_Bathhouse\AV\_mxd\January\_2019\_Revisions\FIG-2\_DrainageBasinMap.mxd Date: 1/9/2019 brl



Juanita Beach Park Property  
Kirkland, Washington

## DRAINAGE BASINS

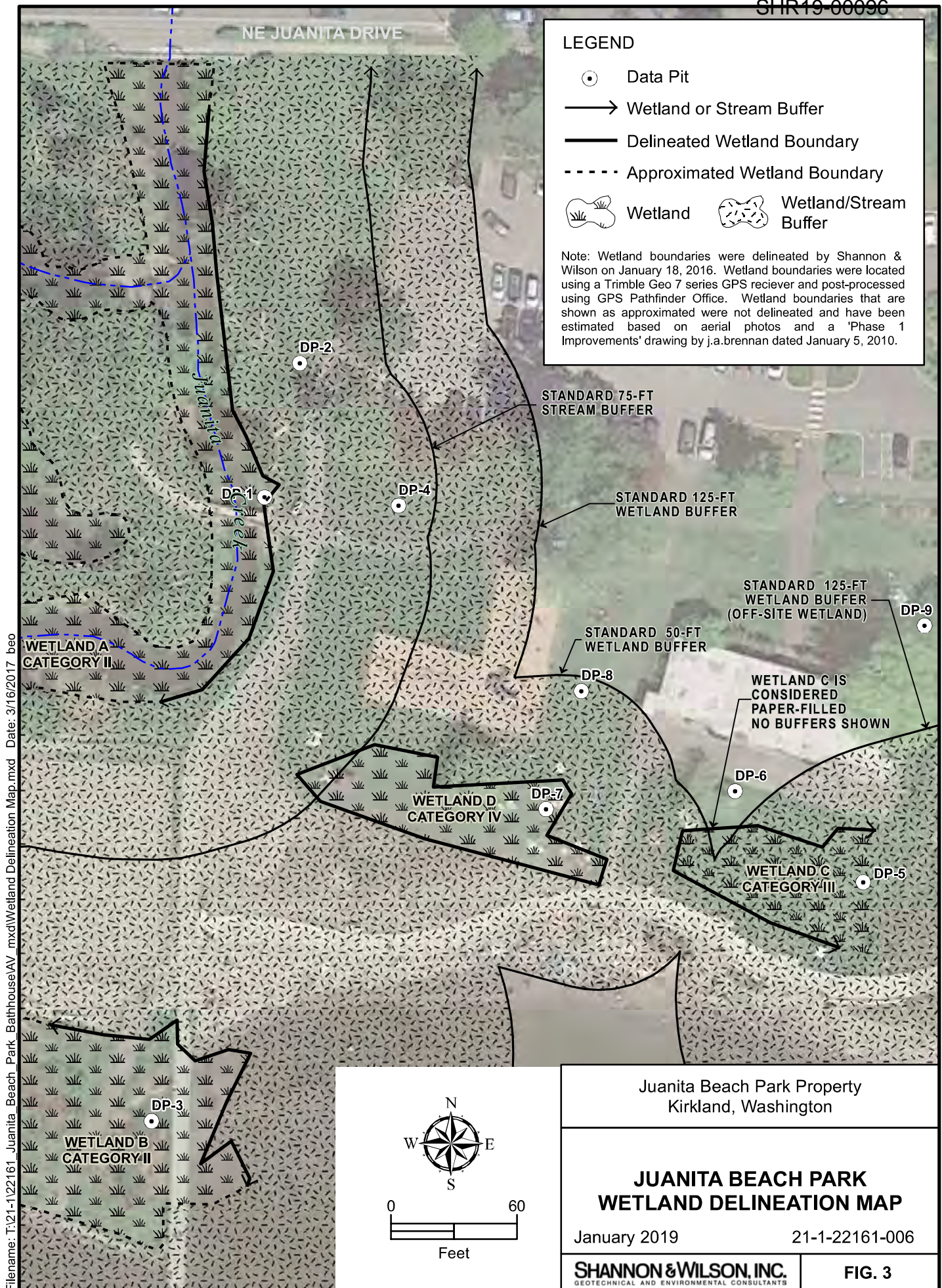
January 2019

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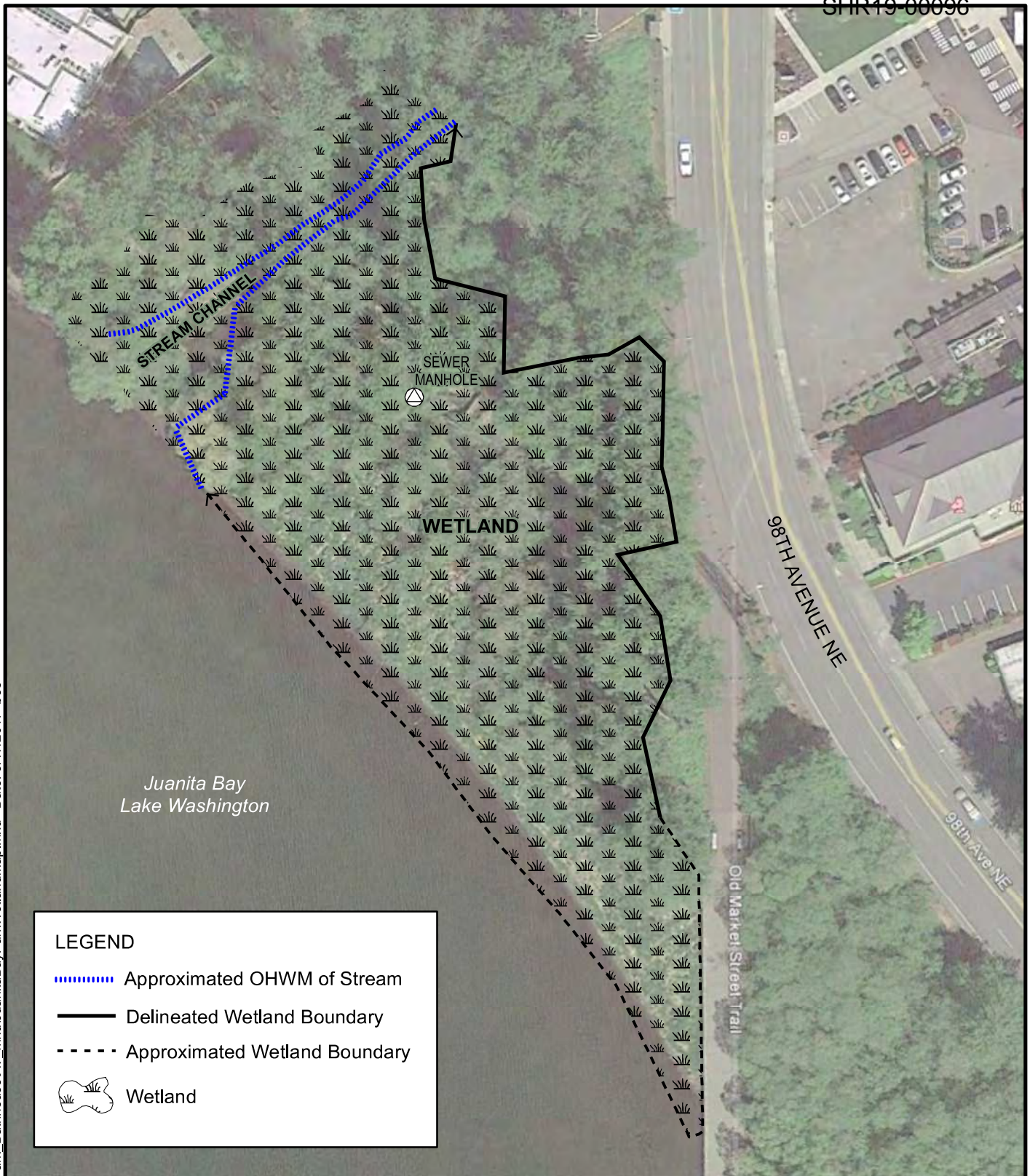
**FIG. 2**








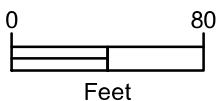
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#### LEGEND

- Approximated OHWM of Stream
- Delineated Wetland Boundary
- Approximated Wetland Boundary
-  Wetland

Note: Delineated wetland boundary shown here was delineated by The Watershed Company in April 2016 (see Appendix A). Shannon & Wilson visited the site in January 2017 to look for the wetland boundary flags and observe site conditions. Wetland boundary flags that were observed in the project wetland mitigation area were located using a hand-held Trimble Geo 7 series GPS receiver. The remaining approximated wetland boundary and ordinary high water mark (OHWM) were estimated by Shannon & Wilson based on field observations and aerial photography.



Juanita Beach Park Property  
Kirkland, Washington

### JUANITA BAY PARK WETLAND DELINEATION MAP

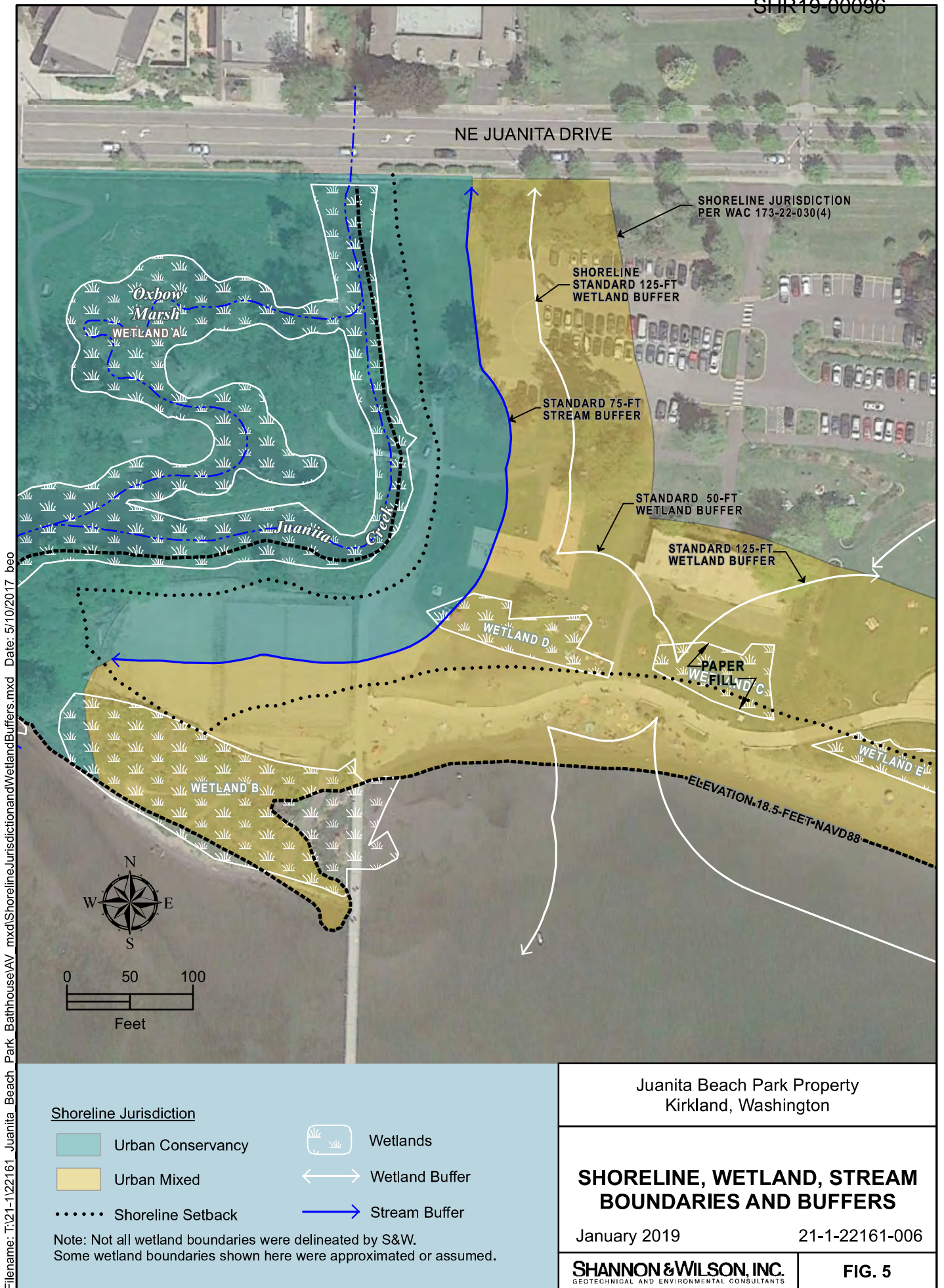
January 2019

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**FIG. 4**









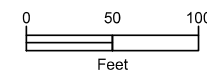
EXISTING CONDITIONS



PROPOSED CONDITIONS

LEGEND

	Sand/Gravel		Shoreline Jurisdiction
	Lawn		Shoreline Setback
	Shrub/Tree		Stream Buffer
	Paved		Wetland Buffer
	Bldg		Wetland
	Play Area		



Juanita Beach Park Property  
Kirkland, Washington

**SITE PLAN  
BEFORE AND AFTER**

January 2019

21-1-22161-006









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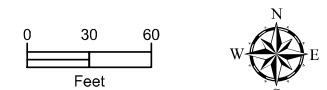
FIG. 6

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## Legend

-  Project Boundary
-  Wetland Fill 8,180 sf
-  Permanent Buffer Loss 8,421 sf
-  Temporary Buffer Impact 14,904 sf
-  Shoreline Setback  
Temporary Impacts 7,612 sf
-  Shoreline Jurisdiction
-  Shoreline Setback
-  Buffers



Juanita Beach Park Property  
Kirkland, Washington

## WETLAND AND BUFFER IMPACTS

January 2019

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
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FIG. 7



Filename: T:\21-122161 Juanita Beach Park Bathhouse\AV mxd\WetlandMitigationPlan.mxd Date: 12/5/2017 btl

#### WETLAND ENHANCEMENT PLANT SCHEDULE

Symbol	Common Name	Scientific Name	Size/Condition	Spacing	Quantity <sup>2</sup>
<b>Emergents</b>					
*	Slough sedge	<i>Carex obruata</i>	Plugs	2-ft O.C. in select areas <sup>3</sup>	200
*	Small-fruited bulrush	<i>Scirpus microcarpus</i>			104
<b>Shrubs</b>					
	Red-osier dogwood	<i>Cornus sericea</i>	1-Gallon Container	6-ft O.C.	34
	Black twinberry	<i>Lonicera involucrata</i>			34
	Salmonberry	<i>Pubis spectabilis</i>			34
	Pea-fruit rose	<i>Rosa pisocarpa</i>			34
○	Sitka willow	<i>Salix sitchensis</i>	6-Foot Stakes/Poles		34
<b>Trees</b>					
○	Pacific willow	<i>Salix lucida</i>	6-Foot Stakes/Poles	4-ft O.C.	12
	Western redcedar	<i>Thuja plicata</i>	1-Gallon Container	12-ft O.C. <sup>4</sup>	11
	Sitka spruce	<i>Picea sitchensis</i>			11

- 1 Place in random, natural clusters (see Typical). Spacing is cumulative on center (O.C.) spacing.
- 2 Quantities based on a total planting area of 4,866 square feet.
- 3 Unlike shrubs and trees, emergent plugs will not be placed over the entire site, but will be placed in patches
- 4 Conifers will be field placed in higher elevation areas to avoid summer inundation.

#### INSTALLATION NOTES

PRIOR TO THE START OF MITIGATION WORK, THE BIOLOGIST WILL USE FLAGGING OR STAKES TO IDENTIFY IN THE FIELD THE LOCATIONS OF THE PROPOSED MITIGATION AREAS.

INSTALL EROSION CONTROL BEST MANAGEMENT PRACTICES (BMPs) AS NEEDED AND PROTECT EXISTING NATIVE WOODY VEGETATION IN AND ADJACENT TO THE PLANTING AREAS. EARTH DISTURBANCE SHOULD BE MINIMIZED TO THE EXTENT POSSIBLE TO AVOID DAMAGING EXISTING TREE ROOTS IN THE AREA.

WITH THE ASSISTANCE OF THE BIOLOGIST, INVASIVE SPECIES SHALL BE IDENTIFIED FOR REMOVAL TO AVOID IMPACTING THE BIRD NESTING SEASON AND HIGH WATER LEVELS IN THE LAKE. INVASIVE SPECIES REMOVAL SHALL OCCUR BETWEEN OCTOBER 15 AND MARCH 1.

REMOVE EXISTING NON-NATIVE INVASIVE SPECIES SUCH AS HIMALAYAN BLACKBERRY, ENGLISH IVY, ENGLISH HOLLY, AND BAMBOO FROM THE ENHANCEMENT AREA USING A COMBINATION OF GRUBBING AND HAND PULLING/CUTTING, DEPENDING ON SIZE OF INDIVIDUALS. GRUBBING IVY VINES GROWING ON TREES SHALL BE CUT AT SHOULDER HEIGHT AND ALL ROOTS AND STEMS BELOW THE CUT AND ALONG THE GROUND SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF. HIMALAYAN BLACKBERRY ROOTS SHALL BE GRUBBED OUT. GOLDEN AND PURPLE LOOSESTRIPE SHALL BE HAND PULLED, GRASP THE BASE OF THE PLANT AND PULL SLOWLY

WITH STEADY PRESSURE TO RELEASE THE ROOTS FROM THE SOIL. OLDER PLANTS WITH LARGER ROOTS CAN BE EASED OUT WITH A GARDEN FORK. REMOVE AS MUCH OF THE ROOT SYSTEM AS POSSIBLE, BECAUSE BROKEN ROOTS MAY SPROUT NEW PLANTS. IF THE PLANTS ARE IN FLOWER OR SEED, CUT OFF AND BAG ALL FLOWER STALKS AND SEED HEADS BEFORE PULLING TO PREVENT SEED DISPERSAL. ALL LOOSESTRIPE PLANT PARTS, INCLUDING FLOWERS, SEED HEADS, STEMS, LEAVES AND ROOTS, MUST BE SECURELY BAGGED AND DISCARDED IN THE TRASH OR TAKEN TO A TRANSFER STATION.

INVASIVE SPECIES SHOULD BE DISPOSED OF WHERE THEY CANNOT REESTABLISH IN CRITICAL AREAS OR BUFFERS. CARE SHALL BE TAKEN DURING INVASIVE SPECIES REMOVAL TO PRESERVE NATIVE TREES AND SHRUBS.

AFTER OTHER INVASIVE SPECIES ARE COMPLETELY REMOVED FROM THE SITE, REMAINING REED CANARYGRASS WITHIN THE MITIGATION AREA SHALL BE MOVED TO GROUND LEVEL. IF PLANTING DOES NOT OCCUR PRIOR TO MARCH 1, NEW REED CANARYGRASS GROWTH SHALL BE MOVED AGAIN WITH A HAND-HELD GRASS TRIMMER PRIOR TO PLANTING. HIGH WATER LEVELS IN LAKE WASHINGTON FOLLOWING MARCH 1 WILL PRECLUDE THE USE OF WHEELED OR TRACKED EQUIPMENT IN THE WETLAND MITIGATION AREA.

PROCURE PLANTS AND STORE PROPERLY. PLANT MATERIAL WILL BE NATIVE TO THE PACIFIC NORTHWEST AND FROM PLANT

STOCK GENOMES FROM WESTERN WASHINGTON. BIOLOGIST SHALL REVIEW PLANT MATERIAL AND PLANT LAYOUT PRIOR TO PLANTING. EACH PLANT SHALL BE LOOSELY FLAGGED FOR EASY IDENTIFICATION DURING FUTURE MONITORING VISITS.

MULCH THE MITIGATION AREAS WITH 6 INCHES OF WOOD CHIPS TO DISCOURAGE WEED ESTABLISHMENT. HAND-DIG CIRCULAR PLANT PITS, TAKE CARE TO AVOID CUTTING THROUGH EXISTING NATIVE TREE ROOTS. INSTALL PLANTS BY HAND IN THE PLANTING AREAS IN NATURAL, RANDOM CLUSTERS. BACKFILL WITH NATIVE SOIL THAT HAS BEEN MIXED WITH 3 INCHES OF COMPOST. PLANTING SHOULD OCCUR BETWEEN OCTOBER 15 AND APRIL 1. TO TAKE ADVANTAGE OF COOL TEMPERATURES, PRECIPITATION, AND LOW LAKE LEVELS.

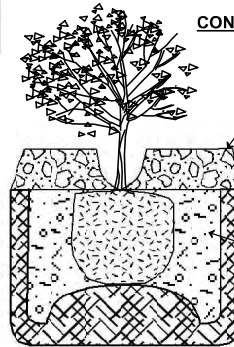
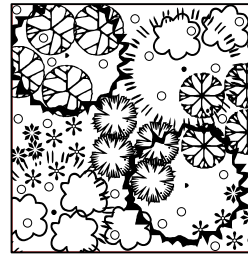
WATER PLANTS THOROUGHLY AFTER PLANTING TO AVOID CAPILLARY STRESS. PLANTED AREAS SHALL BE WATERED WITH APPROXIMATELY 1 INCH OF WATER IMMEDIATELY AFTER PLANTING.

REMOVE CONSTRUCTION DEBRIS AND ANY OTHER UNNATURAL REFUSE. REMOVE BMPs AFTER SITE IS STABILIZED.

LANDSCAPER SHALL SUBMIT COPIES OF THE PLANTING INVOICES SHOWING PLANTED SPECIES AND QUANTITIES.

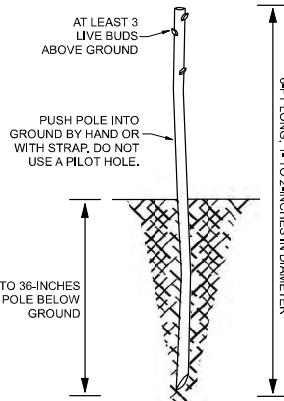
LANDSCAPER SHALL REPLACE ALL PLANT MORTALITIES AND PERFORM MAINTENANCE FOR ONE YEAR AFTER INSTALLATION.

#### WETLAND LAYOUT TYPICAL



#### CONTAINER DETAIL (NTS)

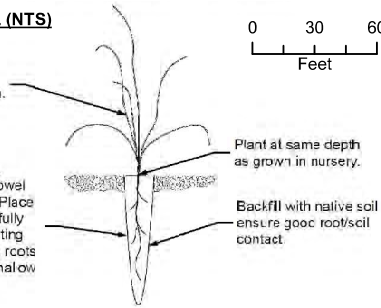
#### STAKE/POLE DETAIL (NTS)



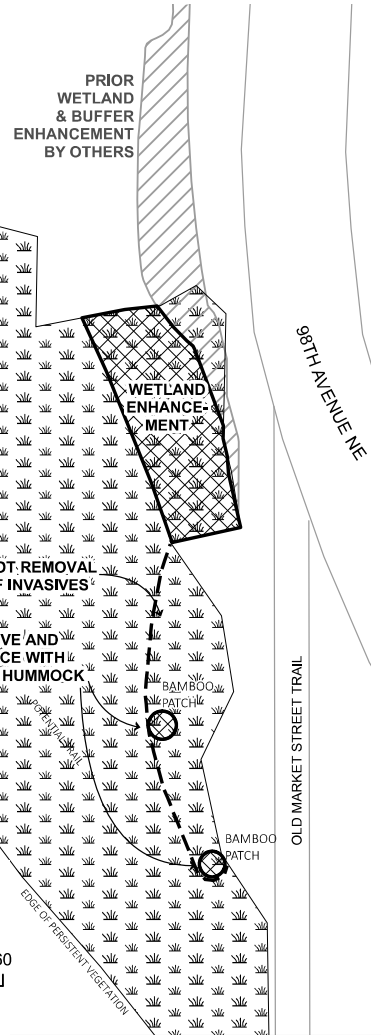
#### PLUG DETAIL (NTS)

Avoid breaking or burying top growth.

Dig hole w/ dibble, small shovel, or trowel to full root depth. Place plant so roots are fully extended into planting hole. Do not force roots into too small or shallow a planting hole.



- Wetland Enhancement (4,866 sf)
- Existing Wetland
- Prior Wetland & Buffer Enhancement by Others



Juanita Beach Park Property  
Kirkland, Washington

#### WETLAND MITIGATION PLAN SHEET

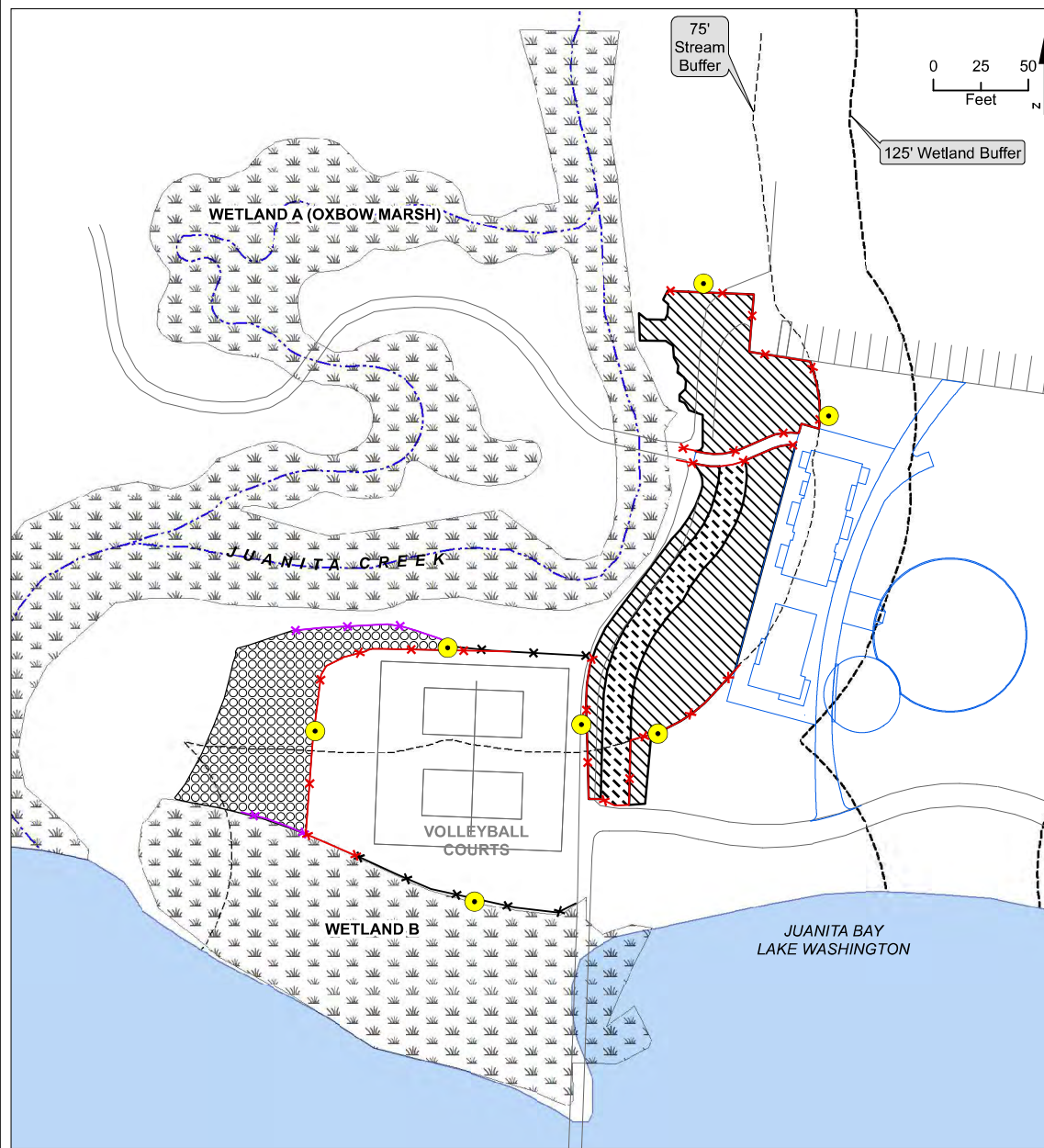
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FIG. 8



Filename: T:\21-122161 Juanita Beach Park Bathhouse\AV mxd\md 2017\FIG-9 Sh1 BufferMitigationPlan.mxd Date: 1/2/2019 btl



## INSTALLATION NOTES

PRIOR TO THE START OF MITIGATION WORK, THE BIOLOGIST WILL USE FLAGGING OR STAKES TO IDENTIFY IN THE FIELD THE LOCATIONS OF THE PROPOSED MITIGATION AREAS.

INSTALL EROSION CONTROL BEST MANAGEMENT PRACTICES (BMPs) AS NEEDED AND PROTECT EXISTING NATIVE WOODY VEGETATION IN AND ADJACENT TO THE PLANTING AREAS. EARTH DISTURBANCE SHOULD BE MINIMIZED TO THE EXTENT POSSIBLE TO AVOID DAMAGING EXISTING TREE ROOTS IN THE AREA.

WITH THE ASSISTANCE OF THE BIOLOGIST, INVASIVE SPECIES SHALL BE IDENTIFIED FOR REMOVAL.

REMOVE EXISTING NON-NATIVE INVASIVE SPECIES SUCH AS HIMALAYAN BLACKBERRY, ENGLISH IVY, AND ENGLISH HOLLY FROM THE ENHANCEMENT AREA USING A COMBINATION OF GRUBBING AND HAND PULLING/CUTTING, DEPENDING ON SIZE OF INDIVIDUALS.

PROCURE PLANTS AND STORE PROPERLY. PLANT MATERIAL WILL BE NATIVE TO THE PACIFIC NORTHWEST AND FROM PLANT STOCK GENOMES FROM WESTERN WASHINGTON. BIOLOGIST SHALL REVIEW PLANT MATERIAL AND PLANT LAYOUT PRIOR

TO PLANTING. EACH PLANT SHALL BE LOOSELY FLAGGED FOR EASY IDENTIFICATION DURING FUTURE MONITORING VISITS.

IN THE FLAT, SANDY PORTION OF THE BUFFER MITIGATION AREA ADJACENT TO THE EXISTING VOLLEYBALL COURT, 4 INCHES OF COMPOST SHALL BE ADDED AND MIXED INTO THE UPPER 12 INCHES OF SOIL. 4 INCHES OF COMPOST SHALL BE TILLED INTO UPPER 8 INCHES OF SOIL IN THE BUFFER ENHANCEMENT AREA BETWEEN THE PROPOSED BATHHOUSE AND EXISTING TRAIL.

MULCH THE MITIGATION AREA WITH 6 INCHES OF WOOD CHIPS TO DISCOURAGE WEED ESTABLISHMENT. HAND-DIG CIRCULAR PLANT PITS; TAKE CARE TO AVOID CUTTING THROUGH EXISTING NATIVE TREE ROOTS. INSTALL PLANTS BY HAND IN THE PLANTING AREAS IN NATURAL, RANDOM CLUSTERS, EXCEPT THAT ROSE SHALL BE CONCENTRATED ALONG FENCE LINE TO DISCOURAGE ACCESS. BACKFILL WITH NATIVE SOIL THAT HAS BEEN MIXED WITH 3 INCHES OF COMPOST. PLANTING SHOULD OCCUR BETWEEN SEPTEMBER 15 AND JANUARY 15 TO TAKE ADVANTAGE OF COOL TEMPERATURES AND PRECIPITATION.

WATER PLANTS THOROUGHLY AFTER PLANTING TO AVOID CAPILLARY STRESS. PLANTED AREAS SHALL BE WATERED WITH APPROXIMATELY 1 INCH OF WATER IMMEDIATELY AFTER PLANTING.

INSTALL WIRE FENCING AROUND EACH PLANT INSTALLATION, AROUND PLANTED CLUSTERS, OR AROUND THE WHOLE MITIGATION AREA WEST OF THE VOLLEYBALL COURTS TO PROTECT FROM BEAVER HERBIVORY. INSTALL SPLIT-RAIL FENCING AS SHOWN ON PLAN.

REMOVE CONSTRUCTION DEBRIS AND ANY OTHER UNNATURAL REFUSE. REMOVE BMPs AFTER SITE IS STABILIZED.

LANDSCAPER SHALL SUBMIT COPIES OF THE PLANTING INVOICES SHOWING PLANTED SPECIES AND QUANTITIES.

LANDSCAPER SHALL REPLACE ALL PLANT MORTALITIES AND PERFORM MAINTENANCE FOR ONE YEAR AFTER INSTALLATION.

- Critical Areas Signs
  - Proposed Features
  - Existing Features
- Mitigation Fence**
- Name**
- ✕ Remove Existing Fence
  - ✕ New Split-Rail Fence
  - ✕ Existing Fence

## BUFFER MITIGATION (See Plant Schedules on Fig. 9, Sh. 2)

- Native Shrub 9,881 sf
- Native Emergent 2,941 sf
- Native Forest 6,001 sf

Juanita Beach Park Property  
Kirkland, Washington

## WETLAND BUFFER MITIGATION PLAN SHEET

January 2019

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FIG. 9  
SHEET 1 OF 2

**NATIVE SHRUB BUFFER ENHANCEMENT PLANT SCHEDULE**

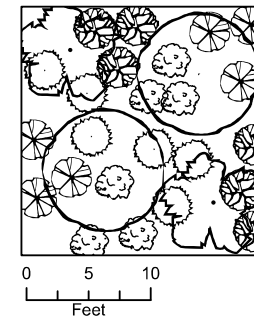
Common Name	Scientific Name	Size/Condition	Spacing <sup>1</sup>	Quantity <sup>2,3</sup>
<b>Shrubs</b>				
Red-flowering Currant	<i>Ribes sanguineum</i>	2-Gallon Container	3-ft O.C.	75
Osceberry	<i>Oemleria cerasiformis</i>	2-Gallon Container		60
Red Elderberry	<i>Sambucus racemosa</i>	2-Gallon Container		75
Vine Maple	<i>Acer circinatum</i>	3-gal on Container		35
Nootka rose	<i>Rosa nutkana</i>	2-Gallon Container		75
Oval-leaved blueberry	<i>Vaccinium ovalifolium</i>	2-Gallon Container		75
<b>Groundcovers</b>				
Sword fern	<i>Polystichum munitum</i>	1-Gallon Container	4-ft O.C.	118
Coastal strawberry	<i>Fragaria chiloensis</i>	4" pct		118
Oregon grape	<i>Mahonia nervosa</i>	1-Gallon Container		118
Salal	<i>Gaultheria shallon</i>	3-Gallon Container		118
Nodding onion	<i>Allium cernuum</i>	4" pct		118

1 Place in random, natural clusters (see Typical). Spacing is cumulative on center (O.C.) spacing.

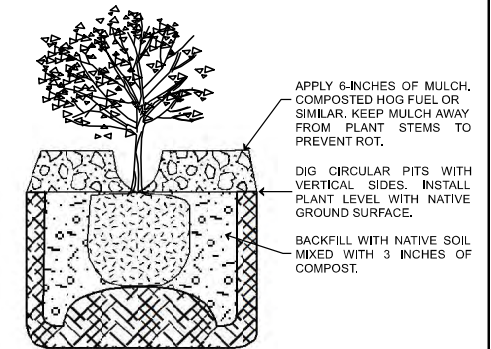
2 Quantities based on a total planting area of 9,881 square feet.

3 Vine maple should be preferentially located along trails and fence lines.

**WETLAND BUFFER PLANT  
TYPICAL**



**CONTAINER DETAIL (NTS)**



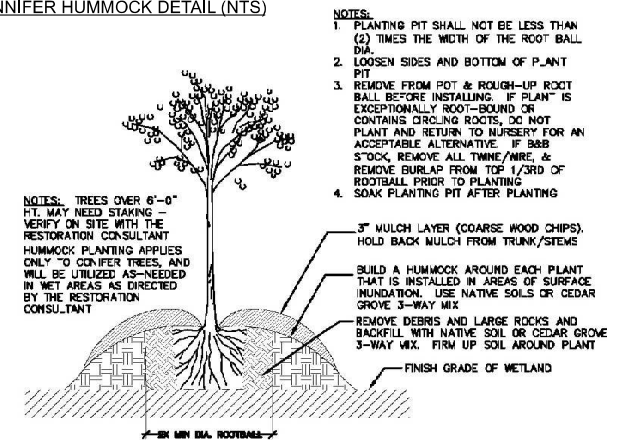
**NATIVE FOREST BUFFER ENHANCEMENT PLANT SCHEDULE**

Common Name	Scientific Name	Size/Condition	Spacing <sup>1</sup>	Quantity <sup>1</sup>
<b>Shrubs</b>				
Red-flowering Currant	<i>Ribes sanguineum</i>	1-Gallon Container	4-ft O.C.	74
Osoberry	<i>Oemleria cerasiformis</i>			74
Red Elderberry	<i>Sambucus racemosa</i>			74
Nootka rose	<i>Rosa nutkana</i>			74
Vine Maple	<i>Acer circinatum</i>			74
<b>Trees</b>				
Cascara	<i>Rhamnus purshiana</i>	1-Gallon Container	10-ft O.C.	30
Douglas Fir	<i>Pseudotsuga menziesii</i>			30

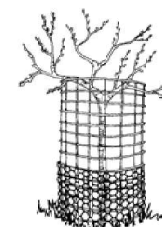
1 Place in random, natural clusters (see Typical). Spacing is cumulative on center (O.C.) spacing.

2 Quantities based on a total planting area of 6,001 square feet.

**CONNIFER HUMMOCK DETAIL (NTS)**



**BEAVER FENCE DETAILS (NTS)**



BEAVER FENCE SHALL BE AT LEAST 4 FEET HIGH, PLACED FAR ENOUGH OUT FROM THE PLANT TO PREVENT BEAVER FROM CAUSING DAMAGE, AND BE FIRMLY STAKED TO THE GROUND. PRIOR TO INSTALLATION, REMOVE ALL GRASS AND WEEDS WITHIN THE BARRIER. ADD MULCH TO REDUCE MAINTENANCE NEEDS. AN OPTIONAL 2-FOOT HIGH BAND OF CHICKEN WIRE CAN BE ADDED TO THE BOTTOM TO EXCLUDE SMALL HERBIVORES, IF NEEDED.

**NATIVE EMERGENT BUFFER ENHANCEMENT PLANT SCHEDULE**

Common Name	Scientific Name	Size/Condition	Spacing	Quantity <sup>3</sup>
<b>Shrubs</b>				
Red-osier dogwood	<i>Cornus sericea</i>	2-Gallon Container	12-ft O.C.	10
Salmonberry	<i>Rubus spectabilis</i>	2-Gallon Container		10
<b>Emergents/Groundcover</b>				
Slough sedge	<i>Carex obnupta</i>	1-Gallon Container	4-ft O.C.	45
Dagger-leaf rush	<i>Juncus ensifolius</i>	1-Gallon Container		45
Sawbeak sedge	<i>Carex stipata</i>	3-Gallon Container		45
Coastal strawberry	<i>Fragaria chiloensis</i>	4" pot		45

1 Place in random, natural clusters (see Typical). Spacing is cumulative on center (O.C.) spacing.

2 Quantities based on a total planting area of 2,941 square feet.

Juanita Beach Park Property  
Kirkland, Washington

**WETLAND BUFFER MITIGATION  
PLAN SHEET**

January 2019

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WETLAND AND ENVIRONMENTAL CONSULTANTS

**FIG. 9**  
SHEET 2 OF 2

**APPENDIX A**

**JUANITA PARK SIDEWALK CAPITAL IMPROVEMENT PROJECT  
WETLAND AND LAKESHORE DELINEATION REPORT  
(THE WATERSHED COMPANY, 2016)**





May 13, 2016

David Barnes  
City of Kirkland Planning Department  
123 5<sup>th</sup> Avenue  
Kirkland, WA 98033

**Re: Juanita Park Sidewalk CIP Project, Wetland and Lakeshore  
Delineation Report**

The Watershed Company Reference Number: 140622.64

Dear David:

On April 4 and May 4, 2016, I visited the 98<sup>th</sup> Street NW right-of-way near Juanita Park to conduct a wetland delineation and subsequent lakeshore delineation study. The study is required as part of the proposed sidewalk improvements for the above-referenced project. This letter summarizes the findings of this study and details applicable federal, state, and local regulations. The following attachments are included:

- Wetland Delineation Sketch
- Wetland Determination Data Forms
- Wetland Rating Form

**Methods**

Public-domain information on the subject property was reviewed for this delineation study. These sources include USDA Natural Resources Conservation Service Soil maps, U.S. Fish and Wildlife Service National Wetland Inventory maps, Washington Department of Fish and Wildlife interactive mapping programs (PHS on the Web), and King County's GIS mapping website (iMAP).

The study area was evaluated for wetlands using methodology from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (Regional Supplement) (US Army Corps of Engineers [Corps] May 2010). The wetland boundary was determined on the basis of an examination of vegetation, soils, and hydrology. Areas meeting the criteria set forth in the Regional Supplement were determined to be wetland. Soil, vegetation, and hydrologic parameters were sampled at several locations along the wetland boundary to make the determination. Data points on-site are marked with yellow- and black-striped flags. Data were recorded at two of these locations.

Delineated wetlands were classified using the City of Kirkland's *Wetland Field Data Form* (Rating System). On-site portions of Wetland A is marked with six pink- and black-striped flags. Wetland areas outside of the right-of-way were not delineated but were approximated on the attached Wetland Delineation Sketch.

The ordinary high water mark of Lake Washington was determined based on the definition provided by the Washington Department of Fish and Wildlife and WAC 220-110-020(69). The OHWM is located by examining the bed and bank physical characteristics and vegetation to ascertain the water elevation for mean annual floods. Areas meeting the definition were determined to be the OHWM and flagged. The distance from the OHWM to the project area was measured using a 100-foot field tape.

## Findings

The site is located adjacent to Juanita Bay on the west side of 98<sup>th</sup> Avenue NE. The study area extends from the parking lot on Parcel #179150031 south approximately 300 feet to the connection with the existing, widened sidewalk. The study area includes the fill slope along the western edge of the existing sidewalk, then transitions into a large wetland complex associated with Lake Washington. Non-wetland vegetation generally includes black cottonwood with an understory dominated by Himalayan blackberry.

### *Wetland A*

Wetland A is contiguous to Lake Washington, is well over 10-acres in size, and contains more than three Cowardin wetland classes. According NWI maps and field observations, those Cowardin classes include palustrine forested seasonally flooded, palustrine scrub-shrub seasonally flooded, palustrine scrub-shrub semi-permanently flooded, and palustrine emergent temporarily flooded. Areas in the vicinity of the study area are dominated by black cottonwood with a dense reed canarygrass monoculture and occasional patches of Douglas spirea comprising the understory. The soil was saturated at the surface, and the water table was present four inches below the surface at the time of the inspection. Hydrology is provided by the high groundwater, which is partially influenced by water levels in Lake Washington.

The boundary of Wetland A parallels the existing sidewalk at the southern end of the study area for approximately 100 feet, after which point, the boundary shifts towards the west and northwest, leaving the study area.

### *Lake Washington*

The Lake Washington shoreline encroaches to within approximately 35 feet of the project area at its closest point (near the southern extent of the proposed improvements). Much of Wetland A, as described above, is located below the OHWM of the lake. Lake Washington is classified as a shoreline of the state.

## Local Regulations

Wetlands associated with shorelines of the state are regulated under the Kirkland Shoreline Master Program (SMP). Under the SMP, wetlands are classified as one of four types based on the 2004 Ecology Western Washington Wetland Rating System or *“as amended.”* The 2004 Rating System has been replaced by an updated 2014 Rating System, which is now applied to all shoreline-associated wetlands in Kirkland. According to the 2014 Rating System, Wetland A received eight points for water quality functions, six points for hydrology functions, and seven points for wildlife habitat functions, for a total of 21 points. This score qualifies Wetland A as a Category II wetland. Wetland buffers under the SMP are determined based on a combination of the wetland category and the habitat score. Since the SMP references habitat scores based on the 2004 Rating System, the habitat scores must be converted using the conversion table provided by Ecology. A habitat score of five to seven points (2014 Rating System) is equivalent to a habitat score of 20-28 points (2004 Rating System). Based on this conversion, Wetland A is required to have a standard buffer width of 125 feet (KZC 83.500.4).

The proposed sidewalk improvements, which include widening the current five-foot sidewalk to ten feet, would necessitate wetland buffer impacts throughout most of the project area. Most of the area that would be impacted is dominated by invasive species, including Himalayan blackberry, reed canarygrass, and English holly. A few large black cottonwood trees are located in the vicinity of the project area, and it would be necessary to avoid those trees to the greatest extent feasible. Substantial opportunity exists for buffer mitigation in the wetland buffer areas west of the project area. Removal of the dense invasive species monocultures and replacement with native plants would provide a functional improvement for the wetland buffer areas. Appropriate native species for the wetland buffer areas include osoberry, snowberry, red elderberry, oceanspray, and baldhip rose. Shrubs would need to be planted densely (four feet on-center) to compete with re-emerging invasive species. Western red cedar could also be installed to add a coniferous component to the buffer.

Since the proposed sidewalk improvements are located within shoreline jurisdiction, the project must comply with the regulations of the Kirkland SMP.

## State and Federal Regulations

Wetlands are also regulated by the Corps under section 404 of the Clean Water Act. Any filling of Waters of the U.S., including wetlands (except isolated wetlands), would require notification and permits from the Corps. Note that a new Clean Water Rule for wetlands and other Waters of the U.S. went into effect in August 2015; however, the rule was recently “stayed” nationwide by the 6<sup>th</sup> Circuit Court due to pending litigation. Therefore, the prior rule is in effect until further notice. Wetland A is not isolated



because of surface water connections Lake Washington. Federally permitted actions that could affect endangered species (i.e. salmon or bull trout) may also require a biological assessment study and consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service. Application for Corps permits may also require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination from Ecology and a Cultural Resource Study in accordance with Section 106 of the National Historic Preservation Act.

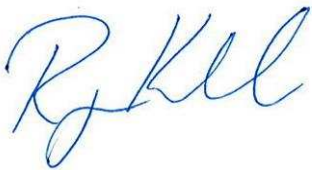
In general, neither the Corps nor Ecology regulates wetland buffers, unless direct impacts are proposed. When direct impacts are proposed, mitigated wetlands may be required to employ buffers based on Corps and Ecology joint regulatory guidance.

**Disclaimer**

The information contained in this letter or report is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the manuals and criteria outlined in the methods section. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available to us at the time the study was conducted. All work was completed within the constraints of budget, scope, and timing. The findings of this report are subject to verification and agreement by the appropriate local, State and Federal regulatory authorities. No other warranty, expressed or implied, is made.

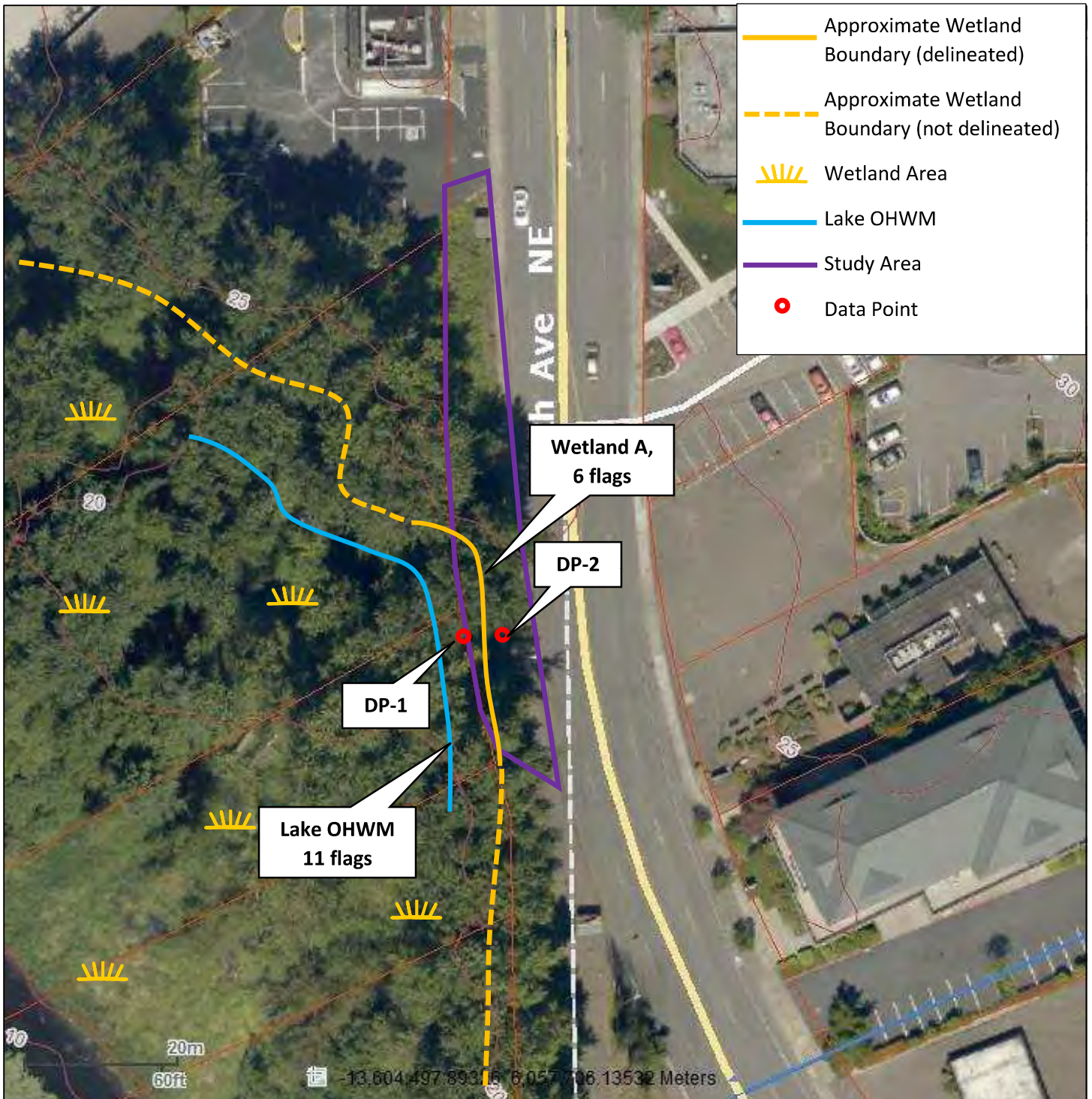
Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read "R. Kahlo".

Ryan Kahlo, PWS  
Ecologist

Enclosures



Note: Areas depicted have not been surveyed. All locations are approximate and not to scale.

Wetland and Lakeshore Delineation Study  
Juanita Park 100<sup>th</sup> Avenue NE Sidewalk Improvements  
Prepared for David Barnes, City of Kirkland  
April 8, 2016, revised May 5, 2016  
TWC Project #140622.64

Wetland boundary is marked with pink- and black-striped flags.  
Data points are marked with yellow-and black-striped flags

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Project Site: <b>Juanita Sidewalk Improvements 98th Ave NE</b>		Sampling Date: <b>4/4/2016</b>
Applicant/Owner: <b>City of Kirkland</b>		Sampling Point: <b>DP- 1</b>
Investigator: <b>Kahlo, R</b>		City/County: <b>Kirkland / King Co.</b>
Sect., Township, Range: <b>S 31 T 26N R 5E</b>		State: <b>WA</b>
Landform (hillslope, terrace, etc): <b>Lake fringe</b>	Slope (%): <b>1</b>	Local relief (concave, convex, none): <b>concave</b>
Subregion (LRR): <b>A</b>	Lat:	Long:
Soil Map Unit Name: <b>Indianola loamy sand, 0-5% slopes</b>		NWI classification: <b>PSSC</b>
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.)
Are "Normal Circumstances" present on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic		
(If needed, explain any answers in Remarks.)		

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Point within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: <a href="#">Click here to enter text.</a>					

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet	
1. <b>Populus balsamifera</b>	<b>100</b>	<b>Yes</b>	<b>FAC</b>	Number of Dominant Species that are OBL, FACW, or FAC:	<b>2</b> (A)
2.				Total Number of Dominant Species Across All Strata:	<b>3</b> (B)
3.				Percent of Dominant Species that are OBL, FACW, or FAC:	<b>67</b> (A/B)
4.					
				= Total Cover	
<b>Sapling/Shrub Stratum (Plot size: 3m diam.)</b>					
1. <b>Phalaris arundinacea</b>	<b>100</b>	<b>Yes</b>	<b>FACW</b>	<b>Prevalence Index Worksheet</b>	
2.				Total % Cover of	
3.				Multiply by	
4.				OBL species	x 1 =
5.				FACW species	x 2 =
				FAC species	x 3 =
				FACU species	x 4 =
				UPL species	x 5 =
				Column totals	(A) (B)
				Prevalence Index = B / A =	
<b>Herb Stratum (Plot size: 1m diam.)</b>					
1.				<b>Hydrophytic Vegetation Indicators</b>	
2.				<input checked="" type="checkbox"/> Dominance test is > 50%	
3.				<input type="checkbox"/> Prevalence test is ≤ 3.0 *	
4.				Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)	
5.				<input type="checkbox"/> Wetland Non-Vascular Plants *	
6.				<input type="checkbox"/> Problematic Hydrophytic Vegetation * (explain)	
7.					
8.					
9.					
10.					
11.					
				= Total Cover	
<b>Woody Vine Stratum (Plot size: )</b>					
1. <b>Rubus armeniacus</b>	<b>10</b>	<b>Yes</b>	<b>FACU</b>	<b>Hydrophytic Vegetation Present?</b>	
2.				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
				= Total Cover	
% Bare Ground in Herb Stratum:					
Remarks:					



SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR 2/2	98	10YR 3/4	2	C	M	Silt clay loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains      <sup>2</sup>Loc: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1)  
☐ Sandy Gleyed Matrix (S4)

☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils<sup>3</sup>**

☐ 2cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Other (explain in remarks)  
☐

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present): Type: _____ Depth (inches): _____	<b>Hydric soil present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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**Remarks:**      **Percent RMF does not satisfy F6, but aquic moisture regime is present. Very high water table well into the growing season.**

HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b>  <i>Primary Indicators (minimum of one required: check all that apply):</i></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface water (A1)  <input checked="" type="checkbox"/> High Water Table (A2)  <input checked="" type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Surface Soil Cracks (B6)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)         </div> <div style="width: 50%;"> <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)  <input type="checkbox"/> Water-Stained Leaves <b>(except MLRA 1, 2, 4A &amp; 4B)</b> (B9)  <input type="checkbox"/> Salt Crust (B11)  <input type="checkbox"/> Aquatic Invertebrates (B13)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Stunted or Stressed Plants (D1) <b>(LRR A)</b>  <input type="checkbox"/> Other (explain in remarks)         </div> </div>				<p><i>Secondary Indicators (2 or more required):</i></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Water-Stained Leaves (B9) <b>(MLRA 1, 2, 4A &amp; 4B)</b>  <input type="checkbox"/> Drainage Patterns (B10)  <input type="checkbox"/> Dry-Season Water Table (C2)  <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)  <input type="checkbox"/> Geomorphic Position (D2)  <input type="checkbox"/> Shallow Aquitard (D3)  <input type="checkbox"/> FAC-Neutral Test (D5)  <input type="checkbox"/> Raised Ant Mounds (D6) <b>(LRR A)</b>  <input type="checkbox"/> Frost-Heave Hummocks         </div> </div>			
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<p><b>Field Observations</b></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">           Surface Water Present?    Yes <input type="checkbox"/>    No <input checked="" type="checkbox"/>            Water Table Present?        Yes <input checked="" type="checkbox"/>    No <input type="checkbox"/>            Saturation Present?          Yes <input checked="" type="checkbox"/>    No <input type="checkbox"/>            (includes capillary fringe)         </div> <div style="width: 45%;">           Depth (in):            Depth (in):      <b>4</b>            Depth (in):      <b>0</b> </div> </div>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

**Remarks:**

Project Site: <b>Juanita Sidewalk Improvements 98th Ave NE</b>		Sampling Date: <b>4/4/2016</b>
Applicant/Owner: <b>City of Kirkland</b>		Sampling Point: <b>DP- Click here to enter text.</b>
Investigator: <b>Kahlo, R</b>		City/County: <b>Kirkland / King Co.</b>
Sect., Township, Range: <b>S 31 T 26N R 5E</b>		State: <b>WA</b>
Landform (hillslope, terrace, etc): <b>Lake fringe</b>	Slope (%): <b>20</b>	Local relief (concave, convex, none): <b>concave</b>
Subregion (LRR): <b>A</b>	Lat:	Long:
Soil Map Unit Name: <b>Indianola loamy sand, 0-5% slopes</b>		NWI classification: <b>PSSC</b>
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.)
Are "Normal Circumstances" present on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic		
(If needed, explain any answers in Remarks.)		

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soils Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: <b>Click here to enter text.</b>			

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet	
1. <b>Populus balsamifera</b>	<b>100</b>	<b>Yes</b>	<b>FAC</b>	Number of Dominant Species that are OBL, FACW, or FAC:	<b>2</b> (A)
2.				Total Number of Dominant Species Across All Strata:	<b>2</b> (B)
3.				Percent of Dominant Species that are OBL, FACW, or FAC:	<b>100</b> (A/B)
4.					
_____ = Total Cover					
<b>Sapling/Shrub Stratum (Plot size: 3m diam.)</b>					
1.				<b>Prevalence Index Worksheet</b>	
2.				Total % Cover of	
3.				Multiply by	
4.				OBL species	x 1 =
5.				FACW species	x 2 =
				FAC species	x 3 =
				FACU species	x 4 =
				UPL species	x 5 =
				Column totals	(A) (B)
_____ = Total Cover				Prevalence Index = B / A =	
<b>Herb Stratum (Plot size: 1m diam.)</b>					
1. <b>Phalaris arundinacea</b>	<b>100</b>	<b>Yes</b>	<b>FACW</b>	<b>Hydrophytic Vegetation Indicators</b>	
2.				<input checked="" type="checkbox"/> Dominance test is > 50%	
3.				<input type="checkbox"/> Prevalence test is ≤ 3.0 *	
4.				Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)	
5.				<input type="checkbox"/> Wetland Non-Vascular Plants *	
6.				<input type="checkbox"/> Problematic Hydrophytic Vegetation * (explain)	
7.					
8.					
9.					
10.					
11.					
_____ = Total Cover				* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
<b>Woody Vine Stratum (Plot size: )</b>					
1.				<b>Hydrophytic Vegetation Present?</b>	
2.				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
_____ = Total Cover					
% Bare Ground in Herb Stratum:					
Remarks:					

# SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	10YR 2/2	100					Sandy loam	
8-14	2.5Y 3/2	100					Loamy sand	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains      <sup>2</sup>Loc: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>except MLRA 1</b> )
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)

**Indicators for Problematic Hydric Soils<sup>3</sup>**

<input type="checkbox"/> 2cm Muck (A10)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (explain in remarks)
<input type="checkbox"/>

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present): Type: _____ Depth (inches): _____	<b>Hydric soil present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---	---

Remarks:

# HYDROLOGY

**Wetland Hydrology Indicators:**  
*Primary Indicators (minimum of one required: check all that apply):*

<input type="checkbox"/> Surface water (A1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves ( <b>except MLRA 1, 2, 4A &amp; 4B</b> ) (B9)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (explain in remarks)

*Secondary Indicators (2 or more required):*

<input type="checkbox"/> Water-Stained Leaves (B9) ( <b>MLRA 1, 2, 4A &amp; 4B</b> )
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Frost-Heave Hummocks

<b>Field Observations</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (in): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (in): _____ Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (in): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland name or number: Wetland A

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 2/10/2016Rated by: Kahlo, R Trained by Ecology? ☒ Y ☐ N Date of training: 8/2014HGM Class used for rating: DepressionalWetland has multiple HGM classes? ☒ Y ☐ N**NOTE: Form is not complete without the figures requested** (*figures can be combined*).Source of base aerial photo/map: [Click here to enter text.](#)

### OVERALL WETLAND CATEGORY (based on functions ☒ or special characteristics 1. Category of wetland based on FUNCTIONS

- ☐ **Category I** – Total score = 23 - 27
- ☒ **Category II** – Total score = 20 - 22
- ☒ **Category III** – Total score = 16 - 19
- ☐ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	H <u>M</u> L	H <u>M</u> L	<u>H</u> M L	
Landscape Potential	<u>H</u> M L	<u>H</u> M L	H M <u>L</u>	
Value	<u>H</u> M L	H M <u>L</u>	<u>H</u> M L	<b>TOTAL</b>
<b>Score Based on Ratings</b>	8	6	7	21

**Score for each  
function based  
on three  
ratings**  
(*order of ratings  
is not  
important*)

9 = H,H,H  
8 = H,H,M  
7 = H,H,L  
7 = H,M,M  
6 = H,M,L  
6 = M,M,M  
5 = H,L,L  
5 = M,M,L  
4 = M,L,L  
3 = L,L,L

#### 2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	<input checked="" type="checkbox"/>



Wetland name or number: Wetland A

## Maps and figures required to answer questions correctly for Western Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	2
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	NA
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	2
Map of the contributing basin	D 4.3, D 5.3	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	6

## HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☒ NO – go to 2

☐ YES – the wetland class is **Tidal Fringe** – go to 1.1

- 1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

**NO – Saltwater Tidal Fringe (Estuarine)**

**YES – Freshwater Tidal Fringe**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☒ NO – go to 3

☐ YES – The wetland class is **Flats**

*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;

☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ NO – go to 4

☐ YES – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

☐ The wetland is on a slope (*slope can be very gradual*),

☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,

☐ The water leaves the wetland **without being impounded**.

☒ NO – go to 5

☐ YES – The wetland class is **Slope**

**NOTE:** Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

☐ The overbank flooding occurs at least once every 2 years.

Wetland name or number: Wetland A

☒ NO – go to 6

☐ YES – The wetland class is **Riverine**

**NOTE:** The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☒ NO – go to 7

☐ YES – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☒ NO – go to 8

☐ YES – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT** (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

**NOTE:** Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*



**DEPRESSIONAL AND FLATS WETLANDS****Water Quality Functions - Indicators that the site functions to improve water quality****D 1.0. Does the site have the potential to improve water quality?****D 1.1. Characteristics of surface water outflows from the wetland:**

- ☐ Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3
- ☐ Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2
- ☒ Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing. points = 1
- ☐ Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1

1

**D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions). ☐ Yes = 4 ☒ No = 0**

0

**D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):**

- ☐ Wetland has persistent, ungrazed, plants > 95% of area points = 5
- ☒ Wetland has persistent, ungrazed, plants > 1/2 of area points = 3
- ☐ Wetland has persistent, ungrazed plants > 1/10 of area points = 1
- ☐ Wetland has persistent, ungrazed plants < 1/10 of area points = 0

3

**D 1.4. Characteristics of seasonal ponding or inundation:***This is the area that is ponded for at least 2 months. See description in manual.*

- ☐ Area seasonally ponded is > ½ total area of wetland points = 4
- ☒ Area seasonally ponded is > ¼ total area of wetland points = 2
- ☐ Area seasonally ponded is < ¼ total area of wetland points = 0

2

Total for D 1

Add the points in the boxes above

6

**Rating of Site Potential** If score is: ☐ 12-16 = H ☒ 6-11 = M ☐ 0-5 = L

Record the rating on the first page

**D 2.0. Does the landscape have the potential to support the water quality function of the site?****D 2.1. Does the wetland unit receive stormwater discharges?** ☒ Yes = 1 ☐ No = 0

1

**D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?** ☒ Yes = 1 ☐ No = 0

1

**D 2.3. Are there septic systems within 250 ft of the wetland?** ☐ Yes = 1 ☒ No = 0

0

**D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source: Concentrations of water fowl, boat traffic** ☒ Yes = 1 ☐ No = 0

1

Total for D 2

Add the points in the boxes above

3

**Rating of Landscape Potential** If score is: ☒ 3 or 4 = H ☐ 1 or 2 = M ☐ 0 = L

Record the rating on the first page

**D 3.0. Is the water quality improvement provided by the site valuable to society?****D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?** ☒ Yes = 1 ☐ No = 0

1

**D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?** ☒ Yes = 1 ☐ No = 0

1

**D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)?** ☒ Yes = 2 ☐ No = 0

2

Total for D 3

Add the points in the boxes above

4

**Rating of Value** If score is: ☒ 2-4 = H ☐ 1 = M ☐ 0 = L

Record the rating on the first page