Appendix A
Select Boring Logs

Project: MARALCO	Project Number:	Boring No. DPT-3	CRETE CONSULTING, INC.
Location: 7730 S 202nd St., Kent WA		Client: Bridge	Sheet 1 of 1
Logged By: R. Jones	Date Started: 5.24.21 ~1100	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fenner	Date Completed: 5.24.21 ~1125		Borehole Diameter:
USA Ticket Number:	Date Backfilled: Holeplug / Cutting		Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 10

Depth (feet)	Recovery	Sample Depth	PID (ppm) MiniRAE 3000	Sample ID, Depth, Time	Lithology/Notes
					Plastic cover @ surface
0	~40"	24"		DPT-3 2.5/3' @1115	0-2.5' Mixed sand-sized grains and weakly-cemented c.g. cake gravel fg-c.g., dk grais, sl. moist-moist
					@ 2.5-3' SAND, fg, dk gray, consistent litho., sl. moist, med. cons.
		38"	5-4.5' 0.3	DPT-3 4.5' @1120	@~4.5' SAND, fg-med., mixed grain colors (gray-brown), sl. moist
5					2" slough
	~42"		5-6.5' 0.3	DPT-3 6.5' @1125	Stiff 6.5' - SAA, SAND, med, moist-wet, dk gray-dk brown (11")
					@~6.5-10' - SILTY CLAY, wet, dark gray, Fe-oxide staining, soft, mod. plastic (~11+ to 42")
10'					

Project: MARALCO	Project Number:	Boring No. DPT-4	CRETE CONSULTING, INC.
Location: 7730 S. 202nd St. Kent WA		Client: Bridge	Sheet 1 of 1
Logged By: R Jones	Date Started: 5.24.21 ~1130	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fehner	Date Completed: 5.24.21 ~1150		Borehole Diameter:
USA Ticket Number:	Backfilled: Bentonite/Cuttings		Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 10

Depth (feet)	Recovery	Sample Depth	PID (ppm) Minirae 3000	Sample ID, Depth, Time	Lithology/Notes
					Plastic cover @ surface
0	36"	11-15"	0-1.5' 1.5-2.0	DPT-4 ~1.5' @ 1140	0-0.8' (0-6") Brown, med.-c.g SAND, trace roots 0.8-1.5 (6-11") Gray med-c.g. SAND w/ DROSS, wet salts, some roots,
			1.5-5' 45-49.3	DPT-4 ~5' @ 1145	1.5-5' (11-36") SAND, fine-med., moist-wet, brown, FILL or native SAND (mix grain colors) below DROSS, no ROOTS
5	43"	10-14"	5.0-7.6	DPT-4 ~6.5' @ 1150	5-6/6.5' (0-10") SAA 6.5-10' (10-43") Native SILTY CLAY, wet saturated, med. gray-dk gray @ 24" Inc. fg-med SAND @ 27" More SAND than CLAY, saturated, dk gray-black, native
			6.5-8' 0.2		
10					

Project: MARALCO	Project Number:	Boring No. DPT-5	CRETE CONSULTING, INC
Location: 7730 S. 202nd St., Kent WA		Client: Bridge	Sheet 1 of 1
Logged By: R Jones	Date Started: 5.24.21 ~1150	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fehner	Date Completed: 5.24.21 ~1200		Borehole Diameter:
USA Ticket Number:	Date Backfilled: Holeplug / Cuttings		Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 5

Depth (feet)	Recovery	Sample Depth	PID (ppm) MiniRAE 3000	Sample ID, Depth, Time	Lithology/Notes
					No plastic cover ~~at surface~~ in core PT but plastic cover observed @ surface
0	34"		0-4' 0.3-0.9 2-6"	DPT-5 ~0.5' 1205	0-2" Peat/wood debris, mulch/organics, soft, wet
					2-26" SAND, fg-med, med. brown - dk brown, mixed grain colors (fill), likely FILL moist
			3.8-4.2' 26-29"	DPT-5 ~4' 1210	26-29" SANDY CLAY, fg, w/ SILT, wet, Fe-staining, layering feature/seams, NATIVE
5'			4.2-5' 29-34"	DPT-5 ~4.5' @1215	29-34" SILTY SAND w/ some CLAY, fg, gray - dk gray, wet - sat. Native

Project: MARALCO	Project Number:	Boring No. DPT-6	CRETE CONSULTING, INC.
Location: 9730 S. 202nd St. Kent, WA		Client: Bridge	Sheet 1 of 1
Logged By: R. Jones	Date Started: 5.24.21 ~1225	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fehner	Completed: 5.24.21		Borehole Diameter:
USA Ticket Number:	Backfilled: Hdeplug/Cutting		Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): ~~10~~ 5

Depth (feet)	Recovery	Sample Depth	PID (ppm) Minirae 3000	Sample ID, Depth, Time	Lithology/Notes
					No plastic in core
0	30"	9-12"	1.5-2' 2.6-3.1' ~~Tub 8.1~~	DPT-6 9" 1235	thin moss layer @ surface 0-9" DROSS, dk gray, fg, soft, wet SALT in pockets
		16-19"		DPT-6 16" @1240	9-16" SILTY SAND, fg, dk brown, minor Rd gravel (≤1.5 cm), trace-minor ROOTS, sl. moist
5		26-30"	4.3-5'	DPT-6 26" @1245	16-30" SAND, fg-med, med. brown - dk brown, moist @23" wet

Project: MARALCO	Project Number:	Boring No. DPT-7	CRETE CONSULTING, INC.
Location: 7730 S. 202nd St., Kent, WA		Client: Bridge	Sheet 1 of 1
Logged By: R. Jones	Date Started: 5.24.21 ~1250	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fehner	Completed: 5.24.21 ~1305		Borehole Diameter:
USA Ticket Number:	Backfilled: Holeplug / Cuttings	with Sand catcher	Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 15

Depth (feet)	Recovery	Sample Depth	PID (ppm)	Sample ID, Depth, Time	Lithology/Notes
					On top of South dross stock-pile No plastic cover in core. Moss at surface
0					0-5' push easy (voids, unconsolidated) 0-10' Not core (solid dip → displacement) 0-10' ALL DROSS
10	31.5"	11-14"		DPT-7 11.7-12.2' @1305	10-11.7' DROSS, white minerals in pockets/seams, dark gray SAND (0-8") fg-cg, moist to wet
					11.2-11.7' Mixed DROSS and SAND from litho. below (8-11") disturbed interface, SILTY SAND
		27-31"		DPT-7 14.3-15' @1310	11.7-15' SAND, vfg-fg moist, dk brown (11-31.5") coarsening downward (SILT/vfg to fg) @29" moist to wet
					~~DRY~~

Project: MARALCO	Project Number:	Boring No. DPT-8	CRETE CONSULTING, INC.
Location: 7730 S. 202nd St, Kent, WA		Client: MacroCore	Sheet 1 of 1
Logged By: R. Jones	Date Started: 5.24.21 ~1305	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fehrer	Date Completed: 5-24-21 1320		Borehole Diameter:
USA Ticket Number:	Date Backfilled: Holeplug / Cuttings		Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 15

Depth (feet)	Recovery	Sample Depth	PID (ppm)	Sample ID, Depth, Time
0				
5'	36"	23-35"	8.2-8.4'	DPT-8 23-25" @1325
		32-36"	9.4-10'	DPT-8 32-36" @1330
10'		45"	11.7-12.1'	DPT-8 16-20" @1335
15'				

Lithology/Notes

Far SW corner, South dross pile

0-5' Not cored (center rod)
All DROSS

5'-10' → 36" Recovery

0-23" DROSS, gray SANDy minerals, fg-cg, and some blue, soft salt XLs
@ 23' thin subrd-rd gravel interface
23-27" SANDY SILT, vfg, minor small ROCK, dk brown, sl. moist-moist
UNDISTURBED, likely native
27-31" coarsening downward sequence SILT/vfg SAND to fg-med. SAND
abundant organic fines, SAND, vfg-fg, minor seams of organics
NATIVE
31-36" fg SAND, dk brown-black, moist, NATIVE

minor slough
6-29" SAND, fg-med. moist-wet, dk gray-black

29-45" SANDY CLAY, wet, soft, mod.-high plastic, gray
@ 30" small seam of wood

Project: MARALCO	Project Number:	Boring No. DPT-9	CRETE CONSULTING, INC.
Location: 7730 S. 202nd St. Kent WA		Client: Bridge	Sheet 1 of 1
Logged By: R. Jones	Date Started: 5.24.21 1335	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fenner	Date Completed: 5.24.21 1353	core liners	Borehole Diameter:
USA Ticket Number:	Backfilled: Holeplug chips		Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 15

Depth (feet)	Recovery	Sample Depth	PID (ppm) MiniRAE 3000	Sample ID, Depth, Time	Lithology/Notes
0	N/A				0-5' push/core not collected for observation Assume all DROSS
5'	35"		5-10' 0.7		5-10' → 35" recovery → All DROSS Mixed minerals and colors, salts, packets of zinc and green salts, oxides, smelt minerals
10'	42"	27-32"	13.2-13.8' 182.8	DPT-9 27-32" @1400	10-15' push → 42" recovery 0-27" DROSS, mostly gray c.g. sandy minerals w/ minor yellowish white seams, generally soft & friable, moist to wet (22") @12" plastic (from surface? from below? plastic under/mid layer?)
		39-42"	14.5-15' 9.5-10	DPT-9 39-42" @1405	27-38" SAND, fg-med., black, wet, likely native (former wetland) 38-42" SILTY clay, tan to brown w/ Fe-oxide staining, native some vfg SAND
15'					Ceased coring @ 15' below stockpile surface @ location

Project: MARALCO	Project Number:	Boring No. DPT-10	CRETE CONSULTING, INC. Sheet 1 of 1
Location: 7730 S. 202nd St., Kent WA		Client: Bridge	
Logged By: R. Jones	Date Started: 5.24.21 1355	Tooling: Macro Core	Drilling Contractor: Holt Services
Drill Crew: Louie Fehner	Date Completed: 5.24-21 1445	Core liners	Borehole Diameter:
USA Ticket Number:	Backfilled: Holeplug chips		Drill Rig Type: Geoprobe 7822 DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 15

Depth (feet)		Sample Depth	PID (ppm)	Sample ID, Depth, Time	Lithology/Notes
					Location is on very top of dross stock, or within ~2 ft of large stock pile summit No remaining plastic on very top of dross stockpile
0				NO SAMPLES COLLECTED	0-10' No core recovery (center rod or solid tip) 10-15' Begin core collection w/ core barrel @ 12' Per driller, something hard Pushed 12-15' hard DPT push Rods came up bent (ruined), unable to remove line In core barrel tip → white salt, large chunks Refusal @ 15', damaged equipment, cease efforts @ location
10'					
12'					
15'					

Project: MARALCO	Project Number:	Boring No. DPT-11	CRETE CONSULTING, INC.
Location: 7730 S. 202nd St, Kent WA		Client: Bridge	Sheet 1 of 1
Logged By: R. Jones	Date Started: 5.24.21 1450	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fehner	Completed: 5.24.21 1500		Borehole Diameter:
USA Ticket Number:	Backfilled: Holeplug chips/cuttings		Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 5

Depth (feet)	Recovery	Sample Depth	PID (ppm)	Sample ID, Depth, Time	Lithology/Notes
					Plastic cover @ surface
0	40"	17-25"		DPT-11 2.1-3' @1500	0-2.1' (0-17") DROSS, gray, med-c.g. sand w/ white SALTS, moist
					2.1-5' (17") GRAVELLY SAND, disturbed FILL/grading ops, fg-cg sl. moist fan, subrd gravel (up to 2.5 cm observed)
		36-40"		DPT-11 4.5-5' @1505	
5					

Project: MARALCO	Project Number:	Boring No. DPT-12	CRETE CONSULTING, INC.
Location: 7730 S. 202nd St. Kent WA		Client: Bridge	Sheet 1 of 1
Logged By: R. Jones	Date Started: 5.24.21 1508	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fehner	Completed: 5.24.21 1520		Borehole Diameter:
USA Ticket Number:	Backfilled: Holeplug/Cuttings		Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 10

Depth (feet)	Recovery	Sample Depth	PID (ppm)	Sample ID, Depth, Time	Lithology/Notes
0	13"	25-29"		DPT-12 14.2 ft DPT-12 8.6-9.2' @ 1525	0-5' → 13" Recovery All DROSS, moist @ bottom
5	34"				5-10' → 34" Recovery 5-8.6 (0-29") DROSS, gray, tan w/ pink & white salts, soft minerals (wet) 8.6-10 (29-34") GRAVELLY SAND, subrd Gravel, reddish tan
10					

Project: MARALCO	Project Number:	Boring No. DPT-13	CRETE CONSULTING, INC.
Location: 7730 S. 202nd St, Kent WA		Client: Bridge	Sheet 1 of 1
Logged By: R. Jones	Date Started: 5.24.21 1535	Tooling: MacroCore	Drilling Contractor: Holt Services
Drill Crew: Louie Fehner	Date Completed: 5.24.21 1548		Borehole Diameter:
USA Ticket Number:	Date Backfilled: Holeplug/Cuttings		Drill Rig Type: Geoprobe 7822DT
	Groundwater Depth (ft bgs):		Total Depth of Boring (ft bgs): 10'

Depth (feet)	Recovery	Sample Depth	PID (ppm)	Sample ID, Depth, Time	Lithology/Notes
0	36"	15-21"		DPT-13 7.2-8.2' @1550	0-5 → 36" recovery All DROSS, dark gray, moist, some pocket white-green minerals more fines, almost clay-like
5'	33"	29-33"		DPT-13 9.3-10' @1555	5-10' → 33" recovery ~~10~~ 5-6.5 DROSS SAA 6.5-7.4 (10-15") Mixed DROSS and below GRAVELLY SAND, disturbed interface 7.4-9.2' (~~15-21"~~) (15"-28") GRAVELLY SAND, fg-med, tan, rd-subrd gravel (≤2cm) moist 9.2-10' (28-33") SAND, no GRAVEL, wet, dk gray/black sand w/ tan (organics) fg-med (old wetland surface)
10'					

Appendix B
Permit Documents

BIOLOGICAL EVALUATION

MARALCO

JULY 2022

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

BIOLOGICAL EVALUATION

MARALCO

JULY 13, 2022

PROJECT LOCATION
7730 SOUTH 202ND STREET
KENT, WASHINGTON 98032

PREPARED FOR
KYLE SIEKAWITCH
BRIDGE DEVELOPMENT PARTNERS, LLC
10655 NORTHEAST 4TH STREET, SUITE 500
BELLEVUE, WASHINGTON 98004

PREPARED BY
SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE, SUITE D
GIG HARBOR, WASHINGTON 98335
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Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

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Appendices

Chapter 1. Introduction

Soundview Consultants LLC (SVC) has been assisting Bridge Development Partners LLC (Applicant) with a wetland and fish and wildlife habitat assessment and conceptual mitigation plan for a proposed industrial redevelopment of a 12.05-acre site located at 7730 South 202nd Street in the City of Kent, Washington. The subject property consists of one tax parcel situated in the Southeast ¼ of Section 1, Township 22 North, Range 04 East, W.M. (King County Tax Parcel Number 631500-0300).

SVC investigated the subject property for potentially-regulated wetlands, waterbodies, fish and wildlife habitat, and/or priority species in November of 2020, with a follow-up investigation completed in January of 2022. Using current methodology, the site investigations identified and delineated one potentially-regulated wetland (Wetland A) onsite. Two drainages (collectively referred to as Stream Z) were observed bisecting Wetland A. Although Stream Z does not appear to meet the definition of a potentially regulated stream, the Applicant agrees to treat Stream Z as a Type 3 stream. Additionally, three potentially-regulated wetlands (offsite Wetlands B-D) were identified offsite within 275 feet of the subject property. Wetland A and Offsite Wetlands B and C are classified as Category III depressional wetlands and subject to standard 75-foot buffers per Kent City Code (KCC) 11.06.600.B.1. Offsite Wetland D is classified as a Category IV depressional wetland and subject to a standard 50-foot buffer per KCC 11.06.600.B.1. Offsite Wetland D is not anticipated to project a buffer onto the site given its distance from the site. Additionally, the buffer from Offsite Wetland C projects onto the site, however the presence of paved parking lot onsite effectively disrupts the buffer and any potential functions; as a result, the buffer should terminate at the edge of the paved parking lot. Stream Z is subject to standard 50-foot buffer per KCC 11.06.680.C. A 15-foot building setback is required from the outer edge of all critical area buffers per KCC 11.06.600.K. In addition, a majority of the site is located within the Federal Emergency Management Agency (FEMA) designated 100-year floodplain. No other potentially regulated wetlands, waterbodies, fish or wildlife habitat, and/or priority species were identified within 275 feet of the subject property.

The Applicant proposes industrial redevelopment of the subject property to include an industrial warehouse and associated infrastructure including parking, internal site access and space for truck maneuvering / turnaround, stormwater infrastructure, and utilities. The proposed project has been carefully designed to avoid and minimize impacts to the identified wetlands by utilizing the existing developed and / or disturbed upland areas onsite to the greatest extent feasible. However, development feasibility of the warehouse and associated infrastructure is restricted by the encumbrance of Wetland A and the associated buffer on the eastern half of the site. To avoid and minimize impacts to Wetland A, the project will utilize administrative buffer reduction for Wetland A from 75 feet to 60 feet per the minimization measures outlined under KCC 11.06.600.C.2; however, buffer reduction does not allow enough space for the proposed warehouse or required parking. Site design alternations to avoid and reduce impacts include shifting the proposed warehouse further west and thus reducing the building size to less than 180,000 square feet to accommodate the diagonal parcel boundary, eliminating parking stalls within the center of the site near Wetland A, and reducing the building scope to a single-loaded warehouse. Further, utilizing enhanced water quality treatment combined with an underground stormwater vault allows more space for above-ground development, thus minimizing additional critical area impacts. In addition to these avoidance and minimization measures, the project requires the necessary and unavoidable fill of a portion of Wetland A and a portion of Stream Z as permitted under KCC 11.06.690.C as part of the remediation and restoration actions associated with the environmental site clean-up associated with the black dross, as well as to

accommodate the purpose and need for the proposed industrial development. Additional indirect wetland impacts are also required due to the remaining wetland area abutting the proposed development.

Compensatory mitigation for direct impacts to the low-functioning Category III wetland (Wetland A) and Type 3 stream onsite will be provided by onsite, in-kind stream and wetland creation and enhancement on the northeast corner of the subject property. The deficit in onsite mitigation will be compensated through the purchase of in-lieu fee (ILF) credits from the King County Mitigation Reserves Program (KCMRP). The proposed stream and wetland mitigation has been designed to utilize the combination mitigation ratios for wetland creation (1:1) and wetland rehabilitation (2:1) to the extent practicable. The remainder of onsite mitigation will utilize 2:1 wetland creation for what equivalent wetland rehabilitation area cannot be provided. The proposed onsite, in-kind mitigation actions have been designed utilizing interagency guidance to ensure no net loss of ecological functions onsite of within the greater within the greater Duwamish-Green watershed (WRIA 9). In addition, the buffer will be restored from its current severely degraded condition to further improve ecological functions onsite. Impacts to the 100-year floodplain will be compensated at a 1:1 ratio to ensure no net rise.

SVC has prepared this Biological Evaluation (BE) on behalf of the Applicant in order to fulfill requirements of Section 7 of the Endangered Species Act (ESA), which requires that federal actions do not jeopardize ESA-listed species or adversely modify or destroy critical habitat. The remainder of this document contains project details such as description, location, discussion and analysis of the project, and potential effects to ESA-listed species and critical habitat. A summary of the proposed project effect determinations is listed in Table 1 below.

Table 1. ESA-Listed Species and Effects Determinations.

Species Name	Common Name	Determination of Effects[1]
Brachyramphus marmoratus	Marbled murrelet	No Effect
Coccyzus americanus	Yellow-billed cuckoo	No Effect
Eremophila alpestris strigata	Streaked horned lark	No Effect
Lynx canadensis	Canada lynx	No Effect
Oncorhynchus mykiss	Puget Sound steelhead trout	No Effect
Oncorhyncus tshawytscha	Puget Sound chinook salmon	No Effect
Orcinus orca	Southern resident killer whale	No Effect
Rana pretiosa	Oregon spotted frog	No Effect
Salvelinus confluentus	Bull trout	No Effect
Strix occidentalis	Northern spotted owl	No Effect
Ursus arctos horribilis	Grizzly bear	No Effect

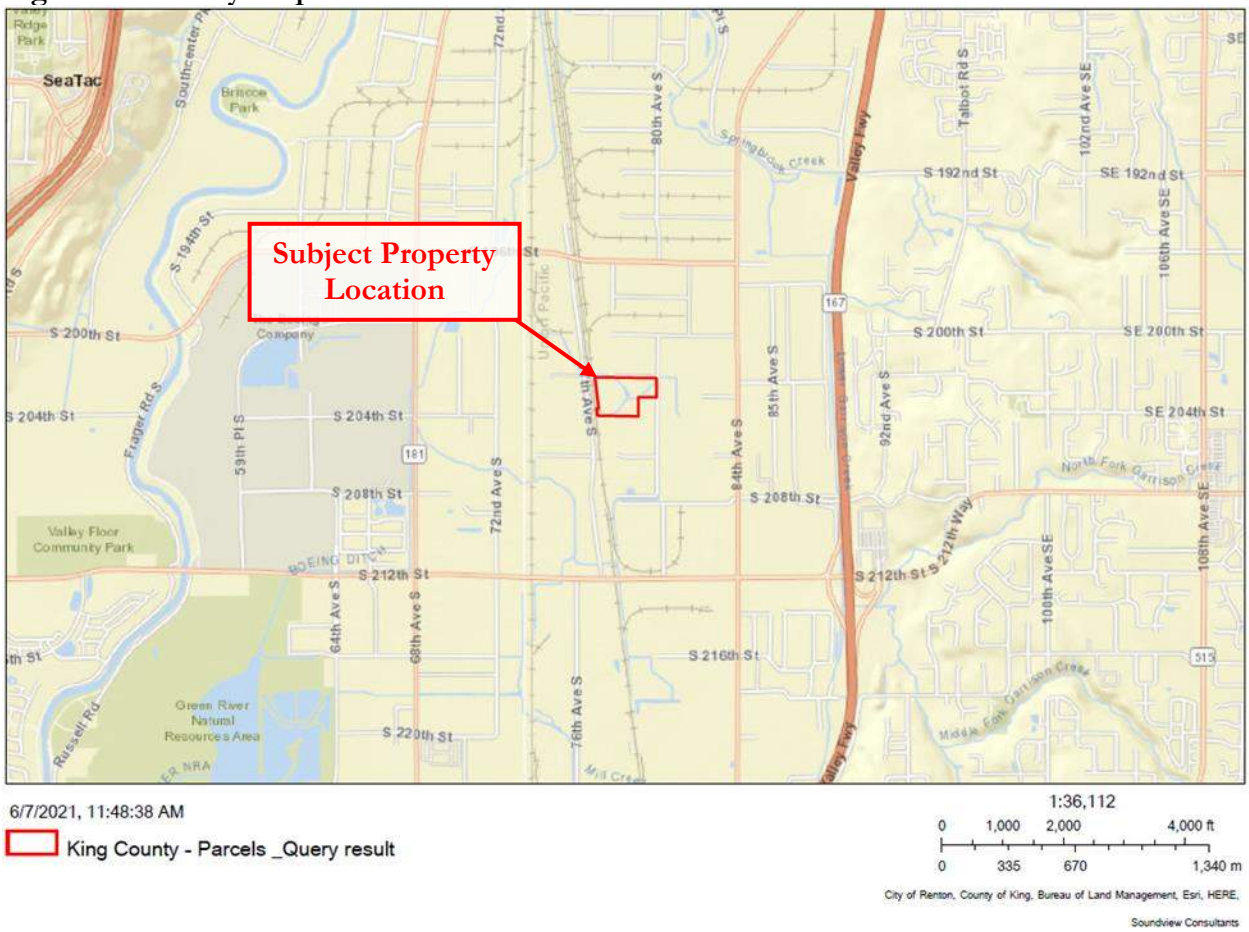
Chapter 2. Proposed Project

2.1 Project Location

The subject property consists of a 12.05-acre site located at 7730 South 202nd Street in the City of Kent, Washington (Figure 1). The subject property consists of one tax parcel situated in the Southeast ¼ of Section 1, Township 22 North, Range 04 East, W.M. (King County Tax Parcel Number 631500-0300).

To access the subject property from Interstate-5 North, take exit 142A and merge onto WA-18 East toward Auburn. Continue for 3 miles and take the exit onto WA-167 North toward Kent/Renton. Continue for 8.2 miles and take the South 212th Street exit. After 0.3 mile, use the left two lanes to turn left onto South 212th Street. Continue for 0.4 mile and turn right onto 84th Avenue South. After 0.7 mile, turn left onto South 200th Street. Continue for 0.2 mile and turn left onto 80th Avenue South. After 0.1 mile, turn left onto South 202nd Street and continue for 0.1 mile where the subject property will be located on the left.

Figure 1. Vicinity Map.



2.2 Proposed Project

The Applicant proposes industrial redevelopment of the subject property to include an industrial warehouse and associated infrastructure including parking, internal site access and space for truck maneuvering / turnaround, stormwater infrastructure, and utilities. Due to the encumbrance of critical areas on the east-central portion of the subject property, the partial fill of Wetland A and Stream Z is necessary and unavoidable to allow for reasonable site development. All appropriate best management practices (BMPs) and temporary erosion and sediment control (TESC) measures will be implemented throughout the course of construction to minimize construction impacts. Lastly, the project proposes to develop within portions of the 100-year floodplain areas onsite; detailed floodplain impacts and compensation are outlined within this Biological Evaluation.

Mitigation for direct and indirect impacts to Wetland A and direct impacts to Stream Z will be compensated for through onsite, in-kind wetland creation and rehabilitation on the northeast portion of the subject property, with the balance of mitigation provided through the purchase of in-lieu fee (ILF) credits from the King County Mitigation Reserves Program (KCMRP). Additionally, buffer enhancement is proposed as these areas are degraded. Wetland A and Stream Z are currently degraded by the presence of non-native invasive species and debris waste piles associated with the existing aluminum processing facility adjacent to the critical areas. Such degradations will be removed, and the mitigation areas will be planted with native trees, shrubs, and groundcover. As such, the proposed compensatory and non-compensatory mitigation actions will provide a net lift in wetland and stream functions when compared to the existing degraded conditions onsite.

2.3 Construction Techniques

Equipment used will be typical for land clearing and grading activities and will be kept in good working conditions and free of leaks. Equipment to be used will likely include a concrete pump truck, excavator, and dozer. Project staging should occur in an area that will create the least impact to traffic. The area will be kept free of spills and/or hazardous materials following methods outlined in a Spill Prevention, Control, and Countermeasure Plan prepared and implemented by the contractor. Temporary erosion and sediment control (TESC) measures consisting of a construction entrance, silt fencing and seeding of disturbed soils will be installed using Best Management Practices (BMPs) outlined in the Stormwater Pollution Prevention Plan (SWPPP) and TESC Plan prepared by the Project Engineer. Hand tools will be used for finish grading and vegetation planting within the mitigation areas to the maximum extent practicable. For further details, please see the Wetland and Fish and Wildlife Assessment and Conceptual Mitigation Plan prepared for the Maralco project by Soundview Consultants LLC (Soundview, 2021) for detailed site plans of the proposed project.

2.4 Action Area

The "Action Area" for evaluation of potential impacts to ESA-listed species encompasses the locations where project activities will occur plus areas that may be directly or indirectly affected by the proposed project either through physical, chemical, or biological mechanisms. The geographic limits of the Action Area were defined by considering the potential spatial extent of mechanisms that may lead to impacts on listed species. A mechanism identified as having a potential for impacting ESA-listed species or species habitat includes noise from construction equipment; water quality impacts are expected to be de minimis and have no negative impacts to ESA-listed species. The Action Area for this potential impact mechanism is depicted in Appendix A.

2.4.1 Terrestrial Noise

In order to define the Action Area, this assessment discusses the project actions potentially generating noise levels above normal daily noise levels found in the vicinity of the project area. At certain levels, noise from project activities can adversely affect wildlife with various behavioral and/or health-related consequences (WSDOT, 2020). Terrestrial noise (transmitted through air) is measured in decibels (dBA) on an "A"-weighted logarithmic scale. Project activities will necessitate the use of the following three pieces of equipment with the loudest noise levels for grading and construction: a concrete pump truck, excavator, and dozer. The use of construction equipment in this area will potentially lead to a higher noise level than traffic noise and ambient sound levels during portions of the project actions. The Washington State Department of Transportation (WSDOT) Biological Assessment Preparation Advanced Training Manual, Version 2020, lists average noise levels for typical construction equipment; average ambient sound levels based on population density of the surrounding area as well as the general landscape setting; and noise levels for automobile traffic given certain speeds. According to WSDOT, the average decibel level at 50 feet from an excavator is 87 dBA. The average decibel level at 50 feet from a concrete pump truck is 89 dBA. The average decibel level at 50 feet from a dozer is 86 dBA. Using decibel addition, 93 dBA was calculated to be the loudest projected noise level that will be heard at a 50-foot radius from where the construction actions will be performed.

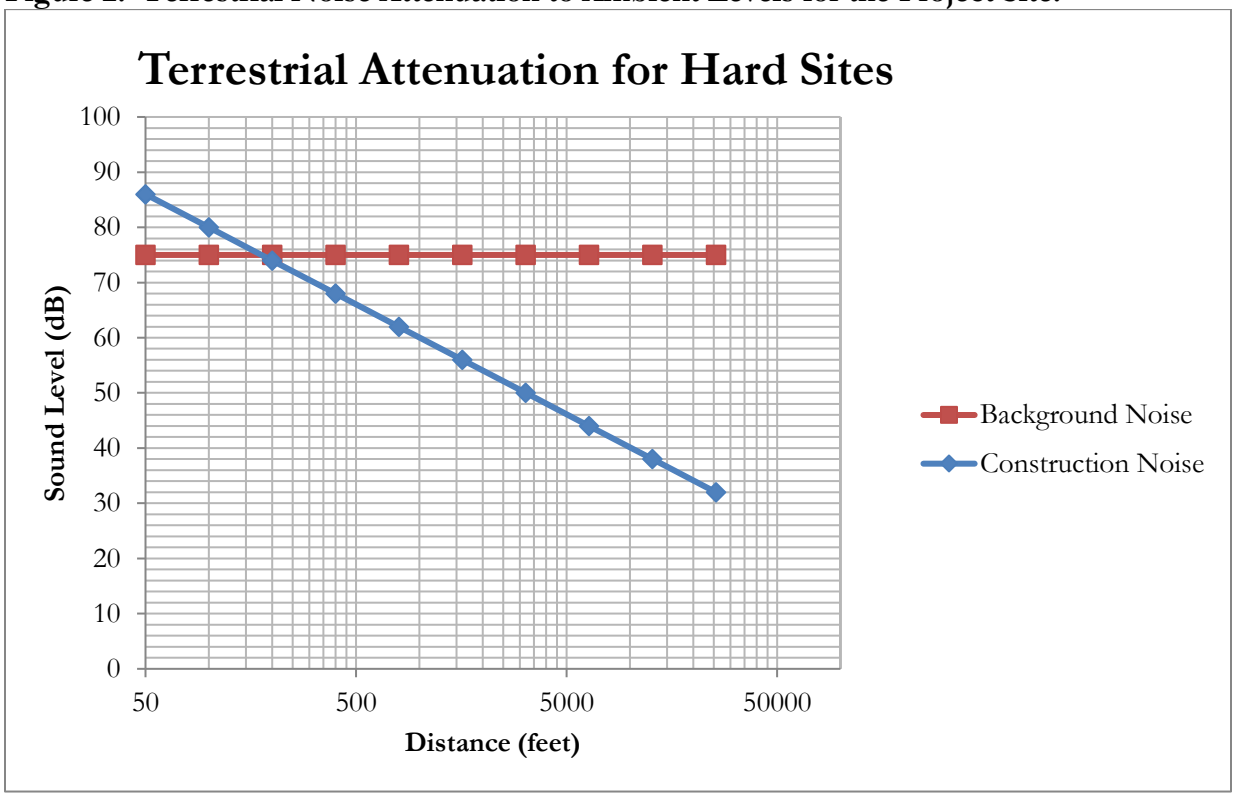
According to the 2021 U.S. Census estimates, population density in the vicinity of the subject property is 143 people per square mile. The background sound level associated with this population density is 40 dBA (WSDOT, 2020). The subject property is located in a general urban setting surrounded by a mix of commercial and industrial properties, roadways, and natural areas; urban areas have a noise level that ranges from 60-65 dBA. Considering the highly developed setting adjacent to the site, a background sound level of 65 dBA would be the most appropriate. The proposed Project Area is located adjacent to South 202nd Street, 80th Avenue South, and the Burlington Northern Santa Fe (BNSF) Railroad. In addition, Highway 181 is approximately 0.58-mile to the west and Highway 167 is approximately 0.57-mile to the east. No traffic data is provided for South 202nd Street or 80th Avenue South. The speed limit along Highway 181 in this vicinity is 50 mph, and the associated traffic noise level is approximately 74.7 dBA. The speed limit along Highway 167 in this vicinity is 60 mph, and the associated traffic noise level is approximately 84.5 dBA (WSDOT, 2020). Traffic noise levels attenuate to be approximately 54.2 dBA after 0.58-mile from Highway 181 and 64 dBA after 0.57-mile from Highway 167. The Federal Transit Administration provides a general noise assessment for railway systems based on an average train volume of 5 to 10 trains per day at 30-40 miles per hour and the distance from the source (FDA, 2018). The BNSF Railroad equates to a noise level of 75 dBA. Urban noise levels are lower than background noise associated with the BNSF Railroad and therefore, 75 dBA was used as the ambient noise level for determining the terrestrial noise impact.

Construction noise levels will be elevated above normal ambient noise but will not reach levels that are likely to significantly impact terrestrial species. Sound impacts on ESA-listed species are discussed in Chapter 7. For terrestrial noise, standard attenuation is about 6-7.5 dBA per doubling of distance from the source of noise, depending on whether the site is classified as hard or soft (WSDOT, 2020). The adjacent land use is urbanized and consist of hard surfaces, including impervious surfaces, and would be considered a hard site. Using an ambient noise level of 75 dBA based on background noise associated with the BNSF Railroad and normal attenuation of 6 dBA per doubling for a hard site, the construction noise will attenuate to background levels (75 dBA) at approximately 177 feet from the project area (Table 2 and Figure 3). Therefore, the Action Area for noise has an approximate 177-foot radius of the proposed project activities. The following tables and graphs present the estimated construction noise attenuation distances. Refer to Appendix A for the Action Area maps.

Table 2. Terrestrial Noise Attenuation Calculations for the Project Site.

Terrestrial Noise Attenuation Table (Hard Sites)			
Distance from Source		Construction Noise	Background Noise
(Feet)	(Miles)	(dBA)	(dBA)
50	0.009469697	86	75
100	0.018939394	80	75
200	0.037878788	74	75
400	0.075757576	68	75
800	0.151515152	62	75
1600	0.303030303	56	75
3200	0.606060606	50	75
6400	1.212121212	44	75
12800	2.424242424	38	75
25600	4.848484848	32	75

Figure 2. Terrestrial Noise Attenuation to Ambient Levels for the Project Site.



2.4.2 Water Quality

Two ditches, collectively known as Stream Z, were observed traversing through Wetland A. Hydrology for Stream Z originates via a culvert beneath 80th Avenue South northeast of the subject property as well as a stormwater culvert located southwest of the subject property. Stream Z flows onsite for approximately 861 feet before continuing northwest, and offsite. Stream Z is primarily stormwater-fed and is likely part of a larger stormwater drainage system developed for industrial use. These construction activities may temporarily suspend sediment materials in these waters. The Washington

Administrative Code (WAC) makes allowances for temporary turbidity due to construction activities in WAC 173-201A-200(1)(e). Temporary mixing is subject to constraints of WAC 173-201A-400(4) and (6). No discharge measurements for Stream Z available; however, Stream Z is primarily stormwater-fed and has an estimated average flow rate below 10 cubic feet per second (cfs). Therefore, the point of compliance per WAC 173-201A-200(1)(e) shall be 100-feet downstream from the construction activity. Any turbidity impacts are expected to be temporary due to the conservation measures and BMPs that will be in place for the project.

In addition, the new impervious areas may have an effect on local hydrologic and water quality function within the watershed; however, the proposed stormwater infrastructure associated with the industrial development is anticipated to adequately address the changes in land cover proposed by the project and provide greater stormwater treatment than the existing ditch system, collectively known as Stream Z, so that no detrimental effects to downgradient areas occur. The use of new stormwater infrastructure (including infiltration) will provide treatment of surface water runoff and will be adequately sized to minimize downstream impacts to the Duwamish-Green watershed. Additionally, the existing wetland is highly degraded and dominated by non-native invasive species. Wetland creation and enhancement is included in the mitigation strategy for the project. These actions are anticipated improve water quality functions by increasing retention of sediments and pollution assimilation.

As no further mechanisms for project impacts are anticipated, the overall Action Area is characterized by the 177 linear foot terrestrial radius surrounding the Project Area for noise impacts and the 100-foot downstream zone of Stream Z for temporary increased turbidity and/or sedimentation from the project actions.

Chapter 3. Environmental Baseline

3.1 Existing Environmental Conditions

3.1.1 Landscape Setting and Topography

The subject property is located in an urban industrial setting within the City of Kent and is partially developed with a dilapidated industrial facility to the west that has been maintained as pipe storage for the property to the north, and a large ash waste pile exists adjacent to the facility; remaining portions of the subject property to the east are undeveloped. The property abuts a mix of industrial developments and associated paved parking areas to the north, east, and south, and is bound by the Burlington Northern Santa Fe Railroad, with 77th Avenue South and continuing industrial developments beyond. Topography onsite has been modified by prior industrial development activities, and is generally flat with a large mound (ash waste pile) in the center. Elevations onsite range from 50 feet above mean sea level (amsl) on the center of the subject property to 25 feet amsl throughout the majority of the rest of the subject property. The property is located within Water Resource Inventory Area (WRIA) 9 – Duwamish-Green River watershed.

3.1.2 Soils

The NRCS Soil Survey of King County, Washington identifies three soil series present on the subject property: Newberg silt loam (Ng), Renton silt loam (Re), and Pilchuck fine sandy loam (Pk). Below is a detailed description of the soil profiles.

Newberg Silt Loam (Ng)
According to the survey, the Newberg soil series has well-drained soils that typically located in areas with 0-2 percent slopes. The Newberg silt loam series contains an A horizon that ranges from a dark brown to dark grayish brown. The C horizon typically includes variable layers of silt loam, find sandy loam, loamy sand, and sand. Between depths of 30 to 40 inches, mottling can occur. These soils have moderate permeability, and the seasonal water table is typically at a depth of three to four feet, making these areas prime farmland. Newberg silt loam is listed as non-hydric on the King County Hyric Soils List, but as much as 25 percent of areas mapped as Newberg silt loam may contain inclusions of hydric Puget, Briscot, Oridia, and Woodinville soils (NRCS, n.d).

Renton Silt Loam (Re)
According to the survey, Renton silt loam has a gently slope, moderately rapid permeability, and a seasonally high-water table at about 1 to2 feet. The A horizon soil layer is typically a very dark grayish-brown. The B horizon from 6 to 16 inches in depth is generally a very fine sandy loam that is mottled dark gray and brown. Beyond a depth of 16 inches to 60 inches is sandy, mottled, and very dark. Renton silt loam is listed as hydric on the King County Hydric Soils List (NRCS, n.d).

Pilchuck Fine Sandy Loam (Pk)
According to the survey, the Pilchuck series is made up of excessively drained soils that formed in alluvium on low stream terraces, under a cover of hardwood and conifers. In a typical profile, the first 38 inches of soil consists of very dark gray, dark grayish brown, and dark-gray fine sand and loamy fine sand. From 38 inches to a depth of 60 inches or more, soils consist of black gravelly sand. Pilchuck fine sandy loam is typically found adjacent to streams in long, narrow areas that range from

4 to 150 acres in size. The surface layer is typically 8 to 14 inches thick and ranges from very dark grayish brown to very dark gray in color. Pilchuck fine sandy loam is listed as non-hydric on the King County Hydric Soils List, but as much as 10 percent of areas mapped as Pilchuck fine sandy loam may contain inclusions of hydric Briscot and Oridia soils (NRCS, n.d). (NRCS, n.d.)

3.1.3 Vegetation

The western portion of the subject property is entirely developed with an industrial facility and associated parking areas, and is further disturbed by the presence of a large ash-waste pile. The eastern portion of the subject property consists of unmaintained areas dominated by a shrubby overstory of beaked hazelnut (*Corylus cornuta*), snowberry (*Symphocarpus albus*), and non-native invasive Himalayan blackberry (*Rubus armeniacus*), with an understory of common ladyfern (*Athyrium cyclosorum*), hairy brackenfern (*Pteridium aquilinum*), colonial bentgrass (*Agrostis capillaris*), and non-native invasives Canada thistle (*Cirsium arvense*) and poison hemlock (*Conium maculatum*).

3.1.4 FEMA Floodplain

The Federal Emergency Management Agency (FEMA) floodplain map indicates the presence of 100-year floodplain that appears to be associated with the onsite wetland and drainages. The majority of the property has a reduced flood risk due to levees. The subject property has been previously developed and is impacted by previous development, providing minimal ecological function. Compensatory flood storage will be provided at a 1:1 ratio to offset the floodplain fill.

3.1.4 Wetlands

The site investigation in the fall of 2020 identified and delineated one potentially-regulated wetland (Wetland A) on the subject property. One potentially-regulated stream (Stream Z) was identified on the subject property, traversing through Wetland A. Additionally, three potentially-regulated wetlands (Offsite Wetlands B - D) were identified offsite within 275 feet of the subject property. The identified wetland contained indicators of hydric soils (presumed offsite), wetland hydrology (presumed offsite), and a predominance of hydrophytic vegetation according to current wetland delineation methodology. Table 3 summarizes Wetland A, identified adjacent to the subject property.

Table 3. Wetland Summary

Wetland	Predominant Wetland Classification / Rating				Wetland Size Onsite (square feet)	Standard Buffer Width (feet)[5]
	Cowardin[1]	HGM[2]	WSDOE[3]	City of Kent[4]		
A	PFO/EMBC	Depressional	III	III	34,360	75
Offsite B	PSS/EMB	Depressional	III	III	N/A – offsite	75
Offsite C	PEMAB	Depressional	III	III	N/A – offsite	75
Offsite D	PEMAB	Depressional	IV	IV	N/A – offsite	50

Notes:
1. Cowardin et al. (1979) and Federal Geographic Data Committee (2013) or NWI Class based on vegetation: PFO = Palustrine Forested, PSS = Palustrine Scrub-shrub, PEM = Palustrine Emergent; Modifiers for water regime: A = Temporarily Flooded, B = Seasonally Saturated, C = Seasonally Flooded.
2. Brinson, M. M. (1993).
3. Current WSDOE Washington State Wetland Rating System for Western Washington (Hruby, 2014).
4. KCC 11.06.580 wetland definitions.
5. KCC 11.06.600.B.1 buffer width standards.

Wetland A
Wetland A is 34,360 square feet (0.79 acre) in size and is located on the central and eastern portions of the subject property. Wetland A is bisected by Stream Z that receives hydrology from offsite Wetland D. Hydrology for Wetland A is provided by direct precipitation, a seasonally high groundwater table, surface sheet flow from adjacent uplands, stormwater discharges from adjacent uplands, and seasonal outflow from the offsite Wetland D northeast of the subject property. Wetland vegetation is dominated by a canopy of black cottonwood (*Populus balsamifera*) with an understory of redosier dogwood (*Cornus alba*), non-native invasive Himalayan blackberry, Canada thistle, and non-native invasive reed canarygrass (*Phalaris arundinacea*). Wetland A is a Palustrine Forested/Emergent Seasonally Saturated and Seasonally Flooded (PFO/EMBC) wetland. Per KCC 11.06.580, Wetland A is a Category III depressional wetland. Table 3 provides a detailed summary of Wetland A.

Offsite Wetland B
Wetland B is located offsite approximately 108 feet south of the subject property, south of Wetland A, and is approximately 55,983 square feet (1.28 acres) in size. Hydrology for Wetland B is provided by direct precipitation, a seasonally high groundwater table, and surface sheet flow from adjacent uplands. Wetland vegetation is dominated by an overstory of black cottonwood and Pacific willow (*Salix lucida*), with an understory of hardhack (*Spiraea douglasii*), and creeping buttercup (*Ranunculus repens*). Wetland B is a Palustrine Scrub-Shrub, Emergent, Seasonally Saturated (PSS/EMB) wetland. Per KCC 11.06.580, Wetland B is a Category III depressional wetland. Due to the wetland's offsite location, no detailed summary is provided.

Offsite Wetland C
Wetland C is located offsite approximately 10 feet north of the northwest corner of the subject property, northwest of Wetland A, and is approximately 11,177 square feet (0.26 acre) in size. Hydrology for Wetland C is provided by direct precipitation, a seasonally high groundwater table, surface sheet flow from adjacent uplands, and seasonally outflow from Wetland A to the southeast. Wetland vegetation is dominated by non-native invasive reed canarygrass, with patches of black cottonwood and non-native invasive Himalayan blackberry rooted along the wetland boundary. Wetland C is a Palustrine Emergent, Temporarily Flooded and Seasonally Saturated (PEMAB) wetland. Per KCC 11.06.580, Wetland C is a Category III depressional wetland. Due to the wetland's offsite location, no detailed summary is provided.

Offsite Wetland D
Wetland D is located offsite approximately 145 feet northeast of the subject property, northeast of Wetland A, and is approximately 2,332 square feet (0.05 acre) in size. Wetland D appears to be associated with mitigation activities on the site northeast of the subject property due the presence of a stormwater pond immediately north of the wetland and observed excavation activities that appeared to have modified the edge of the wetland. Additionally, Wetland D conveys drainage south to a ditch that conveys flow through a culvert on the northeast corner of the subject property to Stream Z, that runs through Wetland A. Hydrology for Wetland D is provided by direct precipitation, a seasonally high groundwater table, and surface sheet flow from adjacent uplands. Wetland vegetation is dominated by non-native invasive reed canarygrass. Wetland D is a Palustrine Emergent, Temporarily Flooded and Seasonally Saturated (PEMAB) wetland. Per KCC 11.06.580, Wetland D is a Category IV depressional wetland. Due to the wetland's offsite location, no detailed summary is provided.

3.1.5 Stream Z

Two ditches, collectively known as Stream Z, were observed traversing through Wetland A. Hydrology for Stream Z originates via a culvert beneath 80th Avenue South northeast of the subject property as well as a stormwater culvert located southwest of the subject property. Stream Z flows onsite for approximately 861 feet before continuing northwest, and offsite. Stream Z is approximately 2 to 3 feet wide on average with steep, artificial banks. Substrate within the stream primarily consists of silt and ash that is likely sourced from an adjacent ash-waste pile located on the central portion of the subject property. Due to the presence of multiple features along the stream that indicate manmade conditions (plastic lining, steep cut banks, and multiple stormwater discharges), Stream Z does not appear to meet the definition of a potentially-regulated stream. Additionally, Stream Z is not identified by the City of Kent, DNR, or WDFW. Despite these findings, the Applicant has agreed to treat Stream Z as a Type 3 stream per the City of Kent approval to expedite the permitting process.

3.2 Species Information

SVC staff reviewed data obtained from the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service, U.S. Fish and Wildlife Service (USFWS), and Washington Department of Fish and Wildlife (WDFW's) PHS and SalmonScape data in order to determine species listed under the ESA that may be found in King County and near the proposed project.

There are two federally listed species considered for impacts by the proposed project (Table 4), the Puget Sound steelhead trout and Puget Sound chinook salmon. While the proposed project will likely result in a No Effect determination for these species, a full analysis of effects is provided as a conservative measure (Section 4.4.2).

Table 4. ESA-Listed Species Potentially Found in King County.

Species Name	Common Name	Federal Listing Status	Potential for Impacts
Brachyramphus marmoratus	Marbled Murrelet	Threatened	None
Coccyzus americanus	Yellow-billed Cuckoo	Threatened	None
Eremophila alpestris strigata	Streaked Horned Lark	Threatened	None
Lynx canadensis	Canada Lynx	Threatened	None
Oncorhynchus mykiss	Puget Sound Steelhead Trout	Threatened	None
Oncorhyncus tshawytscha	Puget Sound Chinook Salmon	Threatened	None
Orcinus orca	Southern Resident Orca Whale	Threatened	None
Rana pretiosa	Oregon Spotted Frog	Threatened	None
Salvelinus confluentus	Bull Trout	Threatened	None
Strix occidentalis	Northern Spotted Owl	Threatened	None
Ursus arctos horribilis	Grizzly Bear	Threatened	None

1. NLAA = Not Likely to Adversely Affect

3.2.1 Species Not Likely Present

The majority of ESA-listed species listed in Table 5 will not be found on or near the vicinity of the Action Area and will not be addressed in the Project Effects discussions in Chapter 4 of this document. The project site consists of developed industrial land that provides little to no natural terrestrial habitat. Even though several of the species in Table 5 may occur in King County, it is highly unlikely that

these animals will be found in the vicinity of the project area or will be affected by the proposed project actions. The ESA-listed species clearly not affected due to project location and surrounding environment conditions include marbled murrelet, yellow-billed cuckoo, streaked horned lark, Canada lynx, southern resident killer whale, Oregon spotted frog, bull trout, northern spotted owl, and grizzly bear.

- Marbled Murrelet (*Brachyramphus marmoratus*) are members of the Alcidae family of seabirds such as puffins, murres, and auklets. In the state of Washington, they are year-round residents on coastal waters. They primarily feed in waters within 500 feet of the shore out to 1.2 miles from shore at depths of less than one hundred feet. Preferred prey includes small fish and crustaceans; nestlings may be fed larger fish. Nests and roosts are found in mature and old growth forests of western Washington. Nesting typically occurs from April to September (WDFW, 1991). Nest trees are typically greater than thirty-two inches diameter at breast height, with nesting preference on large flat conifer branches, often covered with moss (WDFW, 1991) and found in old growth forests. Marbled Murrelets have been found in the largest numbers in marine waters near the coastal waters surrounding the Olympic Peninsula (Pearson & Lance, 2010). Marbled Murrelet are more sparsely distributed elsewhere in this region. Prey species (sand lance (*Ammodytes hexapterus*), surf smelt (*Hypomesus pretiosus*), and Pacific herring (*Clupea harengus pallasi*) are important forage fish for marbled murrelets. Habitat requirements for this species are not present within the vicinity of the Action Area; therefore, the project will have **No Effect on Marbled Murrelet**. No critical habitat has been designated in the Action Area so project impacts will have **No Effect on Marbled Murrelet Critical Habitat**.

- Yellow-billed cuckoo (*Coccyzus americanus*) are migratory birds and historically ranged from British Columbia to northern Mexico. Yellow-billed cuckoo habitat consists of low to mid-level riparian forests dominated by cottonwoods and willows. Additional riparian habitat species may include ash, walnut, mesquite, and tamarisk. Breeding cuckoos prefer larger and wider patches of riparian habitat. Habitat assessments of yellow-billed cuckoo from California indicate that optimal habitat is greater than approximately 198 acres and wider than 600 meters; suitable habitat is approximately 100 to 198 acres and wider than 200 meters; marginal habitat is approximately 20 to 100 acres and 100 to 200 meters wide; and unsuitable habitat is smaller than approximately 37 acres and less than 100 meters wide (Wiles & Kalasz, 2017). Twenty sightings of the yellow-billed cuckoo have been confirmed in in Washington between the 1950s and 2017; none of these sightings were of breeding birds. Sixteen of these 20 confirmed sightings were east of the Cascades; and the sighted birds were likely vagrants or migrants (Wiles & Kalasz, 2017). The development site is undeveloped and vegetated but is not within a riparian area and is less than 10 acres in size and surrounded by urban development, with no documented occurrences of yellow-billed cuckoo. There are also no known documented occurrences of yellow-billed cuckoo in the area. Due to a lack of suitable habitat within the Action Area, the project will have **No Effect on Yellow-Billed Cuckoo**.

- Streaked horned lark (*Eremophila alpestris strigata*) are found primarily in prairie habitat or unvegetated to sparsely vegetated open habitats (Pearson & Anderson, 2015). The current range of the streaked horned lark includes the Puget lowlands, in which the project area is located; the largest known populations of streaked horned larks are found at the Corvallis Municipal Airport (Corvallis, Oregon), the Olympia Regional Airport (Olympia, Washington), and at Joint Base Lewis-McChord in Washington (USFWS, 2019). Streaked horned lark nests

are typically found on the ground in sparsely vegetated sites dominated by grasses and forbs, in a broad range of habitats including sparsely vegetated edges of grass fields. Wintering streaked horned larks use habitats similar to breeding habitats. However, studies conducted by the USFWS indicate that sites used by larks are generally found in open (i.e., flat, treeless) landscapes 300 acres or more in size such as airports (USFWS, 2013). Due to the lack of suitable habitat and no documented presence or observations in the Action Area or vicinity, there will be **No Effect on Streaked Horned Lark**. No Critical Habitat has been designated within the Action Area; therefore, the proposed project will have **No Effect on Streaked Horned Lark Critical Habitat.**

- The distribution of Canada Lynx (*Lynx canadensis*) in North America follows the distribution of boreal forest ecosystems and ranges the south up into the subalpine forest of the western U.S. as well as into the boreal/hardwood forests of the eastern U.S. Their populations persist in areas with deep snow and have a large population of snowshoe hares, which is the main prey of the lynx (USFWS, 2016). No habitat for this species is found in the Action Area; therefore, the project will have **No Effect on Canada Lynx.**

- Southern Resident Killer Whale (*Orcinus orca*) are marine mammals that feed primarily on chinook salmon. Due to the proposed project's inland location, the only potential impact to southern resident killer whale is the possibility of an indirect impact to the whale following impacts to chinook salmon. The nearest documented presence of Chinook salmon is in Mill Creek approximately 0.83-mile northwest of the project site. However, no water quality impacts from direct impacts to Wetland A are anticipated. In addition, proposed wetland creation and enhancement and onsite stormwater infrastructure will provide a significant improvement to water quality treatment when compared to the existing, degraded stormwater ditch system, collectively known as Stream Z. Due to the lack of a quantifiable impact to chinook salmon, the proposed project will not impact the food supply for southern resident killer whale. As such the proposed project will have **No Effect on Southern Resident Killer Whales**.

- Oregon spotted frog (*Rana pretiosa*) are endemic to the Pacific Northwest and spend the majority of life in water. They are almost always found near a perennial body of water that includes floating or emergent aquatic plants and zones of shallow water. Often the Oregon spotted frog can be found in emergent wetlands with shallow, standing water. Warm, marshy areas are preferable, with an abundance of emergent or floating vegetation, which is used for cover and forging (Watson et al., 2000). The Action Area lacks perennial bodies of water with aquatic bed plants, and no populations of Oregon spotted frog are identified in the vicinity; therefore, the project will have **No Effect on Oregon Spotted Frog.**

- Bull trout (*Salvelinus confluentus*) have the most specific habitat requirements of salmonids. They require colder water temperatures, clean stream substrates for spawning and rearing, complex habitats including streams with riffles and deep pools, undercut banks and large logs; and they also rely on river, lake and ocean habitats that connect to headwater streams for annual spawning and feeding migrations (USFWS, 2011). No documented or modeled presence of bull trout or associated critical habitat is identified by the WDFW SalmonScape or PHS maps until approximately 5.26 miles downgradient of the subject property, where the Black River discharges into the Green River. As such, the project will have **No Effect on Bull Trout**.

No designated Critical Habitat exists within the Action Area so project impacts will have **No Effect on Bull Trout Critical Habitat**.

- Northern spotted owl (*Strix occidentalis*) prefer large coniferous trees for nesting, typically associated with mature or old growth coniferous forests. Their habitat areas require platforms, cavities, or other structural features to provide protection from adverse weather conditions and predation. Suitable habitat typically includes areas for nesting, roosting, foraging, and dispersal habitats. Northern spotted owls forage on small nocturnal mammals near their roosting areas, including flying squirrels (*Glaucomys sabrinus*), snowshoe hare (*Lepus americanus*), bushy-tailed woodrats (*Neotoma cinerea*), and boreal red-backed voles (*Clethrionomys gapperi*) (Buchanan, 2016). Habitat requirements for this species are not found within or near the Action Area; therefore, the project will have **No Effect on Northern Spotted Owl**. No designated Critical Habitat exists within the Action Area so project impacts will have **No Effect on Northern Spotted Owl Critical Habitat**.

- Grizzly bears (*Ursus arctos horribilis*) require large territories, which range in size from 50 to 500 square miles depending on the sex of the animal. Grizzly bears prefer variable habitat near mountains with grasslands, meadows and forests to provide a range of foraging options. Grizzly bear populations in the North Cascade Mountains are thought to contain only 20 or so individuals (USFWS, 2007). Due to a lack of suitable habitat within the vicinity of the project area, the project will have **No Effect on Grizzly Bear.**

3.2.2 Species Potentially Present

A potential hydrologic connection from Stream Z and Wetland A to Mill Creek occurs approximately 0.83-mile northwest of the project site. through a series of drainage ditches and offsite wetlands. Wetland A outlets into Stream Z onsite. Stream Z originates on the northeast portion of the project site and converges with a ditch that originates from the southern portion of the project site, and continue northwest offsite into Offsite Wetland C, from there it flows into offsite wetlands to the west under the railroad tracks and highway. As Stream Z flows northwest, the channel expands and is approximately 10-12 feet wide on average. Stream Z appears to have been box cut to support hydrology, and was lined with thick plastic indicative of man-made conditions, eventually discharging into Mill Creek 0.83-mile from the project site. Due to the potential presence of the ESA-listed chinook and steelhead within Mill Creek, which may be hydrologically connected to Stream Z and Wetland A within the Action Area, these species are included as species potentially affected by the project actions. Life histories are discussed below for ESA-listed species considered for impacts from this project. Species determinations are presented in Section 4.4.

Puget Sound Steelhead Trout

Oncorhynchus mykiss - Threatened, listed May 11, 2007 - Critical Habitat designated February 24, 2016

Steelhead are an anadromous species with lifespans of up to 11 years. Steelhead can be iteroparous, but rates are highly variable between populations. In general, the females are more likely to be iteroparous (Keefer, 2008). Steelhead typically spend 2-3 years but can stay up to 7 years rearing in freshwater environments before migrating to marine ecosystems in late winter and spring to spend their adult lives in the ocean (USACE, 2007). They can remain at sea for up to 3 years before returning to spawn. Steelhead have winter and summer spawning runs. Winter runs are more typical of western Washington populations (USFWS, n.d.). Once the juveniles reach the Puget Sound, they occupy inshore waters very briefly, only staying for a couple of weeks before quickly moving offshore towards

the pelagic waters of the Gulf of Alaska where they remain for their first year at sea. In the following years, steelhead tend to move northwest out of the Puget Sound through the spring and summer and southeast during the fall and winter months. Post-spawning steelhead follow this same pattern but do not move as far west. This species tends to reside within 10 meters of the surface, but they sometimes move to greater depths (Light et al., 1989).

In freshwater habitats, steelhead prefer cool water but can tolerate temperatures up to 22 degrees Celsius. They need productive, well-oxygenated streams for spawning that have riffles, pools, overhanging vegetation, boulders and gravel to lay their eggs. Steelhead prefer fast water in small-to-large mainstem rivers, and medium-to-large tributaries. In streams with steep gradient and large substrate, they spawn between these steep areas, where the water is flatter and the substrate is small enough to dig into. Steelhead are sensitive to sedimentation and channel scouring. Juveniles tend to move throughout natal stream systems and prefer streams with protective cover and lower velocity as they can be swept away and killed (Behnke, 1992). Young steelhead feed on zooplankton and invertebrate larvae. The juveniles tend to wait near boulders in the middle of the water profile to catch drifting prey and conserve energy (Smith, 1991). Adults can eat a variety of foods in both freshwater and marine environments which can include fish eggs, aquatic and terrestrial insects, crustaceans, mollusks, and small fish (USFWS, n.d). WDFW identifies the documented presence of steelhead trout within Mill Creek, approximately 0.83-mile northwest of the subject property.

Puget Sound Chinook Salmon ESU

Oncorhynchus tshawytscha

Threatened, listed (reaffirmed) June 28, 2005 - Critical Habitat designated September 2, 2005

Chinook salmon are a semelparous species that returns to natal streams to spawn during the summer and fall months, with abundance peaking in October. Adult chinook tend to move quickly through the Puget Sound when returning to natal streams to spawn. Chinook bury their eggs in gravel substrate, and the alevins emerge 3 months later between December to April. There are two main kinds of life history strategies for this species: stream type and the ocean type chinook. The stream type migrates upstream earlier to spawn, from late spring to summer. After emergence they delay estuary migration to the following spring, overwintering in the river (Healy, 1998). Once they reach the Puget Sound, they spend little time there before moving out into deeper marine waters. There are two varieties of ocean type chinook: the delta fry remain in their natal delta for weeks to a few months before entering the estuary to rear, while parr migrants remain in freshwater to rear for up to 6 months before entering the natal estuary between May and July (Groot, 1991). Time spent in the Puget Sound is dependent on several factors including size, fry typically remain in estuarine nurseries until they reach about 70mm in fork length before moving seaward which usually occurs in under 2 months. Juvenile chinook abundance in the Puget Sound peaks around June and July, but they can still be found through October (Fresh, 2006). Once in marine waters, chinook salmon disperse widely, moving both northward and southward and will spend 2 to 4 years in the ocean. First ocean year stream type salmon prefer outer coasts while ocean type chinook utilize more sheltered waters (Groot, 1991). Fall Chinook populations in the Central and South Puget Sound regions are primarily sustained through hatchery production; indigenous populations have diminished from habitat degradation, over-fishing, and the use of hatchery fish in the ecosystem. Chinook are highly valued by the commercial fishery.

Chinook range from Kotzebue Sound, Alaska down to Santa Barbara, California (PSMFC, 2012). Many of the rivers located within their range are used for Chinook spawning and rearing. In freshwater, spawning chinook require deep, coarse gravel with adequate irrigation to build their redds. Water temperatures must not exceed 14 degrees Celsius and as chinook are larger salmon, they are able to spawn in faster flowing rivers compared to other species. Chinook will spawn in a variety of habitats from small, shallow tributaries to the main stem of a large river. Most redds are built at the head of a riffle or in pools below log jams where the rate of sub gravel flow was increased (Groot, 1991).

Adults have been documented to eat other salmon eggs during their upstream migration; the proportion of chinook showing this trait varies across rivers (Garner, 2009). Juvenile chinook feed first on plankton and then as they grow larger eat dipteran larvae, beetle larvae, stonefly nymphs and leaf hoppers. Bank cover is important for juveniles as it provides shade and protection from predators as well as increased prey. In estuaries chinook are opportunistic feeders and their diet varies from place to place within the estuary, in general they prefer larval and adult insects as well as amphipods (Hammerson, 2010). Eelgrass habitat is especially important to juvenile chinook and it has been documented that a majority of their diet consists of prey associated with eelgrass habitats (Kennedy, 2018). During high tide, juvenile chinook can be found in surface waters at the edges of the shoreline and move into tidal channels and creeks when the tide lowers. Smaller chinook are not able to perform osmoregulation at the same capacity as larger salmon and prefer lower salinity waters. Pocket estuaries are essential for juvenile chinook and they are found in greater abundance in these areas than offshore and nearshore sites. A majority of the chinook found in pocket estuaries are a rearing population as these habitats provide refuge from predators (Beamer, 2003). WDFW identifies the documented

presence of Chinook salmon within Mill Creek approximately 0.83-mile northwest of the subject property.

Chapter 4. Project Effects and Effects Determinations

This chapter presents an analysis of project effects to potential ESA-listed species in the vicinity of the project. Potential project impacts were evaluated based upon specific habitat components that would be altered or removed and the degree to which the alteration may occur; the distribution and population levels of the species (if known); and the possibility of direct or indirect impacts to the species and/or habitat.

4.1 Direct and Short-Term Effects

The proposed project actions have two mechanisms for direct and short-term impacts to the project site and Action Area: a temporary increase in terrestrial noise and temporary turbidity increases from upstream wetland and stream fill activities. Terrestrial noise is expected to be present throughout the duration of the project construction. Impacts to the local environment from project noise may occur within a 177-foot terrestrial radius. The proposed project will require the partial fill of Wetland A on the central portion of the subject property. In addition, the proposed project will require the partial fill of Stream Z and will construct new onsite stormwater infrastructure. Stream Z is an ephemeral, stormwater-fed drainage system that will be filled when dry. Potential erosion issues and increased turbidity downgradient must be considered, however, due to the proposed implementation of all appropriate BMPs and TESC measures, no sedimentation or turbidity impacts are anticipated within Stream Z, however normal temporary turbidity impacts are conservatively being assumed. In addition, proposed stormwater infrastructure and wetland creation and enhancement is anticipated to significantly improve ecological functions and screening of Wetland A and improve water quality downgradient of the project area. Further, the proposed project will not adversely affect any ESA-listed species.

4.1.1 Terrestrial Noise

Construction activities will cause a temporary increase in terrestrial noise levels above ambient levels. Construction equipment may produce noise levels as high as 93 dBA at fifty (50) feet from the activity, and construction noise will attenuate to background levels at approximately 177 feet away from the project area. Construction noise levels will be elevated above normal ambient noise but will not reach levels that are likely to significantly impact terrestrial species. Any anticipated short-term effects are anticipated to be brief in time and space and not likely to negatively affect any local ESA-listed species; however, it is highly unlikely that terrestrial ESA-listed species are located in the Action Area. Terrestrial noise associated with the project actions are not expected to have any effect on fish species.

4.1.2 Increased Turbidity

Proposed construction activities will result in approximately 19,283 square feet of wetland fill. In-water work is proposed for the fill of approximately 807 linear feet of Stream Z. Stream Z is entirely stormwater fed and fill will take place during dry conditions during the work window. State rules makes allowances for temporary turbidity due to construction activities in WAC 173-201A-200(1)(e). Temporary mixing is subject to constraints of WAC 173-201A-400(4) and (6). A 100-foot temporary plume limit is being included in the Action Area to account for possible increases in turbidity per WAC 173-201A-200(1)(e). Any turbidity impacts are expected to be temporary due to the conservation measures and BMPs that will be in place for the project. As fill of Stream Z will occur in the dry, no in-water work is proposed. Possible temporary increases in turbidity during construction

actions are not anticipated to have any adverse effect on ESA-listed species. Furthermore, no ESA-listed species are expected to be present within the Action Area.

4.2 Indirect and Long-Term Effects

The proposed industrial redevelopment activities will result in a net increase in impervious surfaces compared to the present conditions, which consist primarily of industrial development and undeveloped land. The project's proposal will not likely have a measurable impact on the watershed or ESA-listed species. However, on a watershed scale, cumulative actions that increase impervious surfaces can also have an overall negative impact on hydrology. Changes in hydrology from increases in impervious surfaces can reduce water infiltration and dilution. In addition, changes in hydrology can increase frequency and severity of flooding and accelerate channel erosion and streambed substrate disturbance (NOAA, 2003). Urban runoff and discharges can increase loading of nutrients, bacteria, metals, pesticides, and other toxicants to streams (NOAA, 2003). During project construction, TESC measures and BMPs designed to control site runoff will minimize potential immediate effects to hydrology and water quality. Existing onsite stormwater treatment is outdated and degraded. The project proposes updated stormwater infrastructure for water quality treatment and will significantly improve water quality and hydrologic functions onsite. In addition, buffer enhancement is anticipated to significantly improve ecological functions and screening of onsite wetlands. As such, the proposed project is expected to not affect any ESA-listed species through these changes in impervious surfaces or hydrology.

The proposed industrial redevelopment is not anticipated to significantly change ecological functions onsite. Long-term effects of the proposed project on habitat and species are expected to be de minimis due to the existing degraded conditions of the site, the lack of existing functional habitat, and the fact that the project is located in an urban industrial area; therefore, no habitat isolation is expected.

The mitigation plan proposes an increase in vertical and horizontal canopy structure by planting a variety of native tree, shrub, and groundcover species appropriately located to match existing species wetland indicator statuses and local topography. The mitigation areas are anticipated to provide greater functions when compared to the existing degraded conditions of Wetland A and the associated buffer. The wetland creation areas will be excavated to provide necessary depressions to hold sufficient hydrology to generate wetland conditions. The wetland creation areas will be excavated to the existing groundwater table if possible. Organic topsoil, likely from an offsite supplier but potentially sourced onsite, will then be placed to provide a suitable substrate for the proposed native plantings. In addition to the proposed wetland creation area, the remaining portions of Wetland A and the associated buffer onsite will be enhanced through the removal of non-native invasive species and replanting of disturbed areas with native trees, shrubs, and groundcover. The proposed enhancement actions will further increase ecological functions onsite and help ensure the success of the wetland creation area by removing non-native invasive species that could encroach upon and overtake the mitigation site. The increased plant structure and diversity has the potential to improve water quality and hydrology for water leaving the site by improving filtration and providing plant structure that can adequately slow floods. Additionally, native plantings and the addition of special habitat features that are currently limited onsite will provide browse, cover, and nesting for small mammals which in turn provide prey for raptors and other mammals. The wetland creation actions will provide a net lift in ecological functions onsite, and additional wetland and buffer enhancement actions will provide improved protection to Wetland A from the proposed development.

Stream channel creation will result in a net gain in stream length onsite due to the creation of multiple channels as off-channel habitat. The stream mitigation actions will provide cool, clean, and clear water from the dense native plantings which will provide stream shading, stormwater filtration, and wood recruitment as well as decreased streambank erosion; and a more complex system with natural channel sinuosity, pool and riffle structure, and large woody debris features for increased habitat suitability and complexity. Overall, these actions will improve water quality, hydrology, and habitat functions onsite by providing increased areas of seasonal ponding and improved plant structure to slow floods and filter pollutants, and by providing a diverse native plant community and increased habitat structures which will provide browse, nesting, and forage for small mammals which will in turn provide prey for raptors and other mammals. The proposed establishment of a new, higher functioning stream channel within an enhanced riparian corridor will increase habitat suitability and complexity for a wide range of fauna over time which will greatly benefit the local sub-basin and greater watershed.

Overall, the proposed industrial redevelopment is not anticipated to significantly change ecological functions onsite. Long-term effects of the proposed project on habitat and species are expected to be extremely minimal due to the existing degraded conditions of the site, the lack of existing functional habitat and the fact that the project is located in an urban industrial area; as such, no habitat isolation will occur. Given the extreme degradation of Stream Z and Wetland A, the proposed relocated channel and wetland creation will provide an ecological lift. Additionally, flood storage will be excavated within stream buffers to account for required floodplain fill. Due to the existing degraded conditions of the site and lack of functional habitat, no negative effect on functionality of the onsite floodplain area or on critical habitat or species will occur from the proposed project.

4.3 Conservation Measures

No in-water work is proposed, as fill of Stream Z will occur when the channel is dry. Project BMPs include TESC measures consisting of silt fencing, seeding of disturbed soils, and items outlined in the project's erosion and stormwater control plans, will be implemented by the Project Engineer for the duration of project activities as applicable. Once TESC measures are in place, the site will be graded and site construction will proceed.

Equipment used for construction activities will be typical for excavation and grading activities and will be kept in good working order free of leaks. All equipment staging and materials stockpiles will be kept away from the wetlands, and the areas will be kept free of spills and/or hazardous materials. All fill material will be sourced from areas onsite or from approved suppliers and will be free of pollutants and hazardous materials.

Once construction is complete, any disturbed, undeveloped upland areas will be replanted using appropriate native or ornamental plants determined by the development manager and landscape architect. These actions will take place to permanently stabilize the soils and reduce erosion and restore any disturbed native vegetation to maintain a no net loss of ecological function.

4.4 Determinations of Effect

4.4.1 Critical Habitat

Critical Habitat is defined in Section 3 of the ESA as: (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (a) essential to the conservation of the species and (b) which may

require special management considerations or protection, and (2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination such areas are essential for the conservation of the species. Past critical habitat designations have used the terms primary constituent element (PCE) or essential feature (EF) to identify important habitat qualities. The new critical habitat regulations (81 FR 7214) replace those terms with physical or biological features (PBF). As there are no implications of the terminology change on critical habitat analyses, this document uses the term PBF, as defined below, regardless of the term used in the applicable critical habitat designation.

Physical and Biological Features

In accordance with Section 3(5)(A)(i) of the ESA, and regulations at 50 CFR 424.12(b), to determine which were areas occupied at the time of listing (for Critical Habitat designation), we consider the PBFs essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to: (1) space for individual and population growth for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, or rearing (or development) of offspring; and (5) habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

PBFs required by salmon, including chinook salmon and steelhead trout, can be generally described to include the following: (1) juvenile rearing areas, (2) juvenile migration corridors, (3) areas for growth and development to adulthood, (4) adult migration corridors, and (5) spawning areas. Within these areas, essential features of critical habitat include adequate substrate, water quality, water quantity, water temperature, water velocity, cover, shelter, food, riparian vegetation, space, and safe passage conditions. The actual regulatory descriptions of critical habitat for each evolutionarily significant unit (ESU) of chinook salmon can be found in the Federal Register: Vol. 70, No. 170, Monday, September 2, 2005. The actual regulatory descriptions of critical habitat for each ESU of steelhead trout can be found in the Federal Register: Vol. 81, No. 36, Wednesday, February 24, 2016.

4.4.2 Impact Determinations

Table 5 below summarizes the determinations of effect for ESA-listed species identified in the vicinity of the Project Area, and the following paragraphs discuss the proposed project impact determinations on ESA-listed species and corresponding critical habitat.

Table 5. Species Determination Summary.

Species Name	Common Name	Federal Listing Status	Determination of Effect[1]
Oncorhynchus mykiss	Puget Sound Steelhead Trout	Threatened	No Effect
Oncorhyncus tshawytscha	Puget Sound Chinook Salmon	Threatened	No Effect

Puget Sound Steelhead ESU and Critical Habitat

Oncorhynchus mykiss

WDFW identifies the documented presence of steelhead trout within Mill Creek, approximately 0.83-mile northwest of the subject property. Temporary increases in terrestrial noise are not expected to have any effect on fish species. Minor turbidity downgradient of Wetland A and Stream Z may occur; however, fill will take place when the stream is dry and BMPs and TESC measures will be implemented throughout the course of construction. Before reaching Mill Creek, surface water from Wetland A

and Stream Z flows through multiple culvert crossings and wetlands. The offsite ditch is lined with thick plastic and does not provide suitable habitat for steelhead trout. Due to the degraded condition of Stream Z and fish passage blockages associated with offsite wetlands, steelhead trout are not anticipated to within downstream reaches of Wetland A or Stream Z. Any additional turbidity impacts that may occur outside of the 100-foot turbidity plume will be filtered through offsite wetlands before continuing downgradient towards Mill Creek. As such, no turbidity impacts to Puget Sound Steelhead are anticipated as turbidity impacts will be minor and the presence of steelhead trout are significantly outside the 100-foot downstream zone of Stream Z. Stream channel creation will result in a net gain in stream length onsite due to the creation of multiple channels as off-channel habitat. The stream mitigation actions will provide cool, clean, and clear water from the dense native plantings which will provide stream shading, stormwater filtration, and wood recruitment as well as decreased streambank erosion; and a more complex system with natural channel sinuosity, pool and riffle structure, and large woody debris features for increased habitat suitability and complexity. New stormwater infrastructure will also be provided which will increase water quality and hydrologic functions onsite compared to the existing, degraded stormwater ditch system, collectively known as Stream Z. Proposed stormwater infrastructure, wetland creation and enhancement, stream creation, and floodplain mitigation are anticipated to significantly improve ecological function onsite and in the sub-basin by providing additional sediment and pollutant filtration, increased habitat structure and complexity, and reducing flood water velocity which all indirectly benefit downgradient salmonids. Therefore, it is anticipated the proposed project actions will have **No Effect on Puget Sound Steelhead.**

Critical Puget Sound steelhead trout habitat is identified within Spring Brook Creek, approximately 0.23-mile southwest of the Project Area and within Mill Creek approximately 0.83-mile downgradient of Wetland A. All identified critical habitat is outside of the terrestrial action area and 100-foot turbidity plume. Therefore, the proposed activities will have **No Effect on Puget Sound Steelhead Critical Habitat.**

Puget Sound Chinook ESU and Critical Habitat

Oncorhynchus tshawytscha

WDFW identifies the documented presence of chinook salmon within Mill Creek, approximately 0.83-mile northwest of the subject property. Temporary increases in terrestrial noise are not expected to have any effect on fish species. Minor turbidity downgradient of Wetland A and Stream Z may occur; however, fill will take place when the stream is dry and BMPs and TESC measures will be implemented throughout the course of construction. Before reaching Mill Creek, surface water from Wetland A and Stream Z flows through multiple culvert crossings and wetlands. The offsite ditch is the ditch lined with thick plastic and does not provide suitable habitat for steelhead trout. Due to the degraded condition of Stream Z and fish passage blockages associated with offsite wetlands, chinook salmon are not anticipated to within downstream reaches of Wetland A or Stream Z. Any additional turbidity impacts that may occur outside of the 100-foot turbidity plume will be filtered through offsite wetlands before continuing downgradient towards Mill Creek. As such, no turbidity impacts to Puget Sound Chinook are anticipated as turbidity impacts will be minor and the presence of chinook salmon are significantly outside the 100-foot downstream zone of Stream Z. Stream channel creation will result in a net gain in stream length onsite due to the creation of multiple channels as off-channel habitat. The stream mitigation actions will provide cool, clean, and clear water from the dense native plantings which will provide stream shading, stormwater filtration, and wood recruitment as well as decreased streambank erosion; and a more complex system with natural channel sinuosity, pool and riffle structure, and large woody debris features for increased habitat suitability and complexity. New stormwater infrastructure will also be provided which will increase water quality and hydrologic

functions onsite compared to the existing, degraded stormwater ditch system, collectively known as Stream Z. Proposed stormwater infrastructure, wetland creation and enhancement, stream creation, and floodplain mitigation are anticipated to significantly improve ecological function onsite and in the sub-basin by providing additional sediment and pollutant filtration, increased habitat structure and complexity, and reducing flood water velocity which all indirectly benefit downgradient salmonids. Therefore, it is anticipated the proposed project actions will have **No Effect on Puget Sound Chinook Salmon.**

Critical Puget Sound chinook salmon habitat is identified within Spring Brook Creek, approximately 0.23-mile southwest of the Project Area and within Mill Creek approximately 0.83-mile downgradient of Wetland A. All identified critical habitat is outside of the terrestrial action area and 100-foot turbidity plume. Therefore, the proposed activities will have **No Effect on Puget Sound Chinook Salmon Critical Habitat.**

4.5 Essential Fish Habitat Analysis

The Magnuson-Stevens Fishery and Conservation Act (MSA) and the Sustainable Fisheries Act of 1996 (SFA)(Public Law 104-267) require Federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH). EFH is defined by the MSA in 50 CFR 600.905-930 as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

The object of this EFH assessment is to notify NMFS of the project and potential effects and determine whether or not the proposed actions "may adversely affect" designated EFH for relevant commercial, federally managed fisheries species within the proposed Action Area. It also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects to designated EFH resulting from the proposed action. The following EFH analysis is provided in conjunction with ESA consultation; some previous sections of the document may be referenced in order to reduce redundancies.

The proposed project actions are detailed in Section 2.2 of this BE. The effects of the actions (Chapter 4) will occur within the Action Area defined in Section 2.4 of this BE. Discussion of impacts to EFH for relevant species follows.

Salmon EFH

The proposed actions will not likely impact the salmon EFH. WDFW identifies a documented salmonid presence in Mill Creek approximately 0.83-mile northwest of the subject property. However, the site currently provides no suitable habitat as Stream Z is entirely stormwater fed and is degraded by excavated, steep cut banks and plastic lining within the channel. The majority of Stream Z between the Action Area and downstream modeled salmonid presence is ditched or piped. As Stream Z is ephemeral, non-water work is proposed, as fill of Stream Z will occur when the channel is dry. No turbidity impacts from the proposed construction activities are anticipated and will not reach the downgradient areas with presumed fish presence. The proposed actions are anticipated to result in a potential increase of impervious surfaces onsite, and runoff from these surfaces will be directed towards the new stormwater treatment system. Due to the lack of suitable salmonid habitat onsite, use of BMPs, and utilization of stormwater detention and enhanced treatment infrastructure, the proposed project **Will Not Adversely Affect Salmon EFH.**

Conclusions

Conservation measures that are incorporated into the project are expected to reduce the potential effects of this project as discussed in Section 4.3. Terrestrial noise will have no effect on ESA-listed fish habitat or species, no turbidity is expected in adjacent waterbodies, the proposed wetland buffer restoration will improve ecological functions. Project actions described in Section 2.2 and completion of the project will not adversely affect the EFH for salmonid species.

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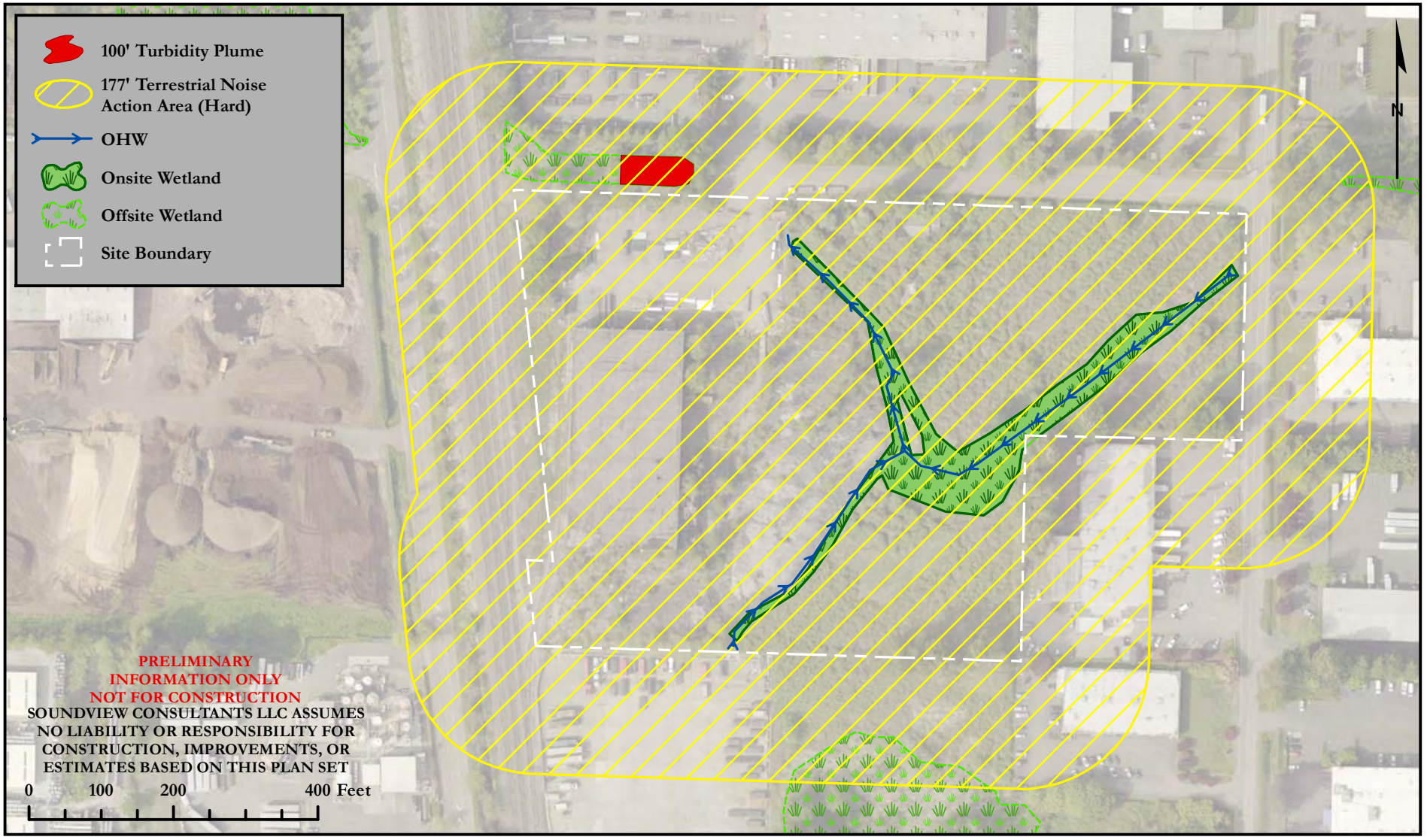
Appendix A — Action Area Map

MARALCO - ACTION AREA MAP



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KENT, WA 98032

KING COUNTY PARCEL NUMBERS:
631500-0300

DATE:	7/20/2022
JOB:	1582.0022
BY:	JML/DDS
SCALE:	1 " = 200 '
FIGURE NO.	1

Appendix B — Author Qualifications

Jon Pickett

Associate Principal
Professional Experience: 10+ years

Jon Pickett is an Associate Principal and Senior Scientist with a diverse background in environmental and shoreline compliance and permitting, wetland and stream ecology, fish and wildlife biology, mitigation compliance and design, and environmental planning and land use due diligence. Jon oversees a wide range of large-scale industrial, commercial, and multi-family residential projects throughout Western Washington, providing environmental permitting and regulatory compliance assistance for land use entitlement projects from feasibility through mitigation compliance. Jon performs wetland, stream, and shoreline delineations and fish & wildlife habitat assessments; conducts code and regulation analysis and review; prepares reports and permit applications and documents; provides environmental compliance recommendation; and provides restoration and mitigation design.

Jon earned a Bachelor of Science degree in Natural Resource Sciences from Washington State University and Bachelor of Science and Minor in Forestry from Washington State University. Jon has received 40-hour wetland delineation training (Western Mountains, Valleys, & Coast and Arid West Regional Supplements) and regularly performs wetland, stream, and shoreline delineations. Jon is a Whatcom County Qualified Wetland Specialist and Wildlife Biologist and is a Pierce County Qualified Wetland Specialist. He has been formally trained by WSDOE in the use of the Washington State Wetland Rating System 2014, How to Determine the Ordinary High-Water Mark (Freshwater and Marine), Using Field Indicators for Hydric Soils, and the Using the Credit-Debit Method for Estimating Mitigation Needs.

Lauren Templeton

Environmental Scientist
Professional Experience: 4 years

Lauren Templeton is an Environmental Scientist with three plus years of experience in conducting wetland delineations, biological surveys, and in-situ water quality monitoring. Lauren has a background in wetland and biological assessments in various states, most notably Washington, Montana, Oregon, and New Mexico. Her project experience includes residential land use and developments, transportation, and water resources projects, working for federal, state, tribal, and private agencies. Lauren has experience developing various environmental documentation including environmental assessments, biological evaluations, mitigation reports, and permit applications at the federal, state and tribal levels. Additionally, Lauren has experience utilizing desktop and remote GIS software and equipment to collect and process data, perform data analysis, and develop delineation exhibits. Lauren currently performs wetland delineations, conducts environmental code analysis, and prepares various environmental compliance documentation including fish and wildlife habitat assessments, biological evaluations, and permit applications.

Lauren graduated from Western Washington University with a Bachelor of Arts in Environmental Science and Policy where she gained hands-on experience associated with water quality, statistical analysis, CERCLA projects, and ecological biomonitoring. Lauren has completed Basic Wetland

Delineator Training with the Wetland Training Institute and received 40-hour USACE wetland delineation training. Lauren has been formally trained through the Washington State Department of Ecology, Coastal Training Program, How to Determine the Ordinary High Water Mark, Using the Washington State Wetland Rating System, and Using the Credit-Debit Method for Estimating Mitigation Needs. Additionally, Lauren has been trained through the Shipley Group on the National Environmental Policy Act, Endangered Species Act, National Historic Preservation Act, and Administrative Record.

Rachael Hyland, PWS, Certified Ecologist

Senior Environmental Scientist
Professional Experience: 9 years

Rachael Hyland is a Senior Environmental Scientist with extensive wetland and stream delineation and regulatory coordination experience. Rachael has a background in wetland and ecological habitat assessments in various states, most notably Washington, Connecticut, Massachusetts, Rhode Island, and Ohio. She has experience in assessing wetland, stream, riparian, and tidal systems, as well as complicated agricultural and disturbed sites. She currently performs wetland, stream, and shoreline delineations and fish and wildlife habitat assessments; conducts environmental code analysis; and prepares environmental assessment and mitigation reports, biological evaluations, and permit applications to support clients through the regulatory and planning process for various land use projects. She also has extensive knowledge of bats and their associated habitats and white nose syndrome (*Pseudogymnoascus destructans*), a fungal disease affecting bats which was recently documented in Washington.

Rachael earned a Bachelor of Science degree in Ecology and Evolutionary Biology from the University of Connecticut, with additional ecology studies at the graduate level. Rachael is a Professional Wetland Scientist (PWS #3480) through the Society of Wetland Scientists as well as a Certified Ecologist through the Ecological Society of America. She has completed 40-hour wetland delineation training for Western Mountains, Valleys, & Coast and Arid West Regional Supplement, in addition to formal training for the Northcentral and Northeast supplement, and experience with the Midwest, Eastern Mountains and Piedmont, and Atlantic and Gulf Coast supplements. She has also received formal training from the Washington State Department of Ecology in the Using the Revised 2014 Wetland Rating System for Western Washington, How to Determine the Ordinary High Water Mark, Navigating SEPA, Selecting Wetland Mitigation Sites Using a Watershed Approach, and Wetland Classification. Rachael has also received training from the Washington State Department of Transportation in Biological Assessment Preparation for Transportation Projects and is listed by WSDOT as a junior author for preparing Biological Assessments.

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) Form[1,2] [help]

US Army Corps of Engineers
Seattle District

USE BLACK OR BLUE INK TO ENTER ANSWERS IN THE WHITE SPACES BELOW.

AGENCY USE ONLY

Date received:

Agency reference #: _____

Tax Parcel #(s): _____

_____

Part 1–Project Identification

1. Project Name (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) [help]
Maralco

Part 2–Applicant

The person and/or organization responsible for the project. [help]

2a. Name (Last, First, Middle)			
Siekawitch, Kyle			
2b. Organization (If applicable)			
Bridge Development Partners, LLC			
2c. Mailing Address (Street or PO Box)			
10655 Northeast 4th Street, Suite 500			
2d. City, State, Zip			
Bellevue, WA, 98004			
2e. Phone (1)	**2f.** Phone (2)	**2g.** Fax	**2h.** E-mail
(425) 749-4325	(509) 969-5667		ksiekawitch@bridgedev.com

[1]Additional forms may be required for the following permits:
- If your project may qualify for Department of the Army authorization through a Regional General Permit (RGP), contact the U.S. Army Corps of Engineers for application information (206) 764-3495.
- Not all cities and counties accept the JARPA for their local Shoreline permits. If you need a Shoreline permit, contact the appropriate city or county government to make sure they accept the JARPA.

[2]To access an online JARPA form with [help] screens, go to http://www.epermitting.wa.gov/site/alias__resourcecenter/jarpa_jarpa_form/9984/jarpa_form.aspx.

For other help, contact the Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.

Part 3–Authorized Agent or Contact

Person authorized to represent the applicant about the project. (Note: Authorized agent(s) must sign 11b of this application.) [help]

3a. Name (Last, First, Middle)			
Picket, Jon			
3b. Organization (If applicable)			
Soundview Consultants LLC			
3c. Mailing Address (Street or PO Box)			
2907 Harborview Drive			
3d. City, State, Zip			
Gig Harbor, WA 98335			
3e. Phone (1)	**3f.** Phone (2)	**3g.** Fax	**3h.** E-mail
(253) 514-8952		(253) 514-8954	Jon@soundviewconsultants.com

Part 4–Property Owner(s)

Contact information for people or organizations owning the property(ies) where the project will occur. Consider both **upland and aquatic** ownership because the upland owners may not own the adjacent aquatic land. [help]

☐ Same as applicant. (Skip to Part 5.)

☐ Repair or maintenance activities on existing rights-of-way or easements. (Skip to Part 5.)

☐ There are multiple upland property owners. Complete the section below and fill out JARPA Attachment A for each additional property owner.

☐ Your project is on Department of Natural Resources (DNR)-managed aquatic lands. If you don't know, contact the DNR at (360) 902-1100 to determine aquatic land ownership. If yes, complete JARPA Attachment E to apply for the Aquatic Use Authorization.

4a. Name (Last, First, Middle)			
Lyon, John and Gloria Irrevocable Living Trust			
4b. Organization (If applicable)			
4c. Mailing Address (Street or PO Box)			
4025 Mariner Circle			
4d. City, State, Zip			
Westlake Village, CA 91361			
4e. Phone (1)	**4f.** Phone (2)	**4g.** Fax	**4h.** E-mail

Part 5–Project Location(s)

Identifying information about the property or properties where the project will occur. [help]

☐ There are multiple project locations (e.g. linear projects). Complete the section below and use JARPA Attachment B for each additional project location.

5a. Indicate the type of ownership of the property. (Check all that apply.) [help]

☒ Private
☐ Federal
☐ Publicly owned (state, county, city, special districts like schools, ports, etc.)
☐ Tribal
☐ Department of Natural Resources (DNR) – managed aquatic lands (Complete JARPA Attachment E)

5b. Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5p.) [help]

7730 South 202nd Street

5c. City, State, Zip (If the project is not in a city or town, provide the name of the nearest city or town.) [help]

Kent, Washington, 98032

5d. County [help]

King County

5e. Provide the section, township, and range for the project location. [help]

¼ Section	Section	Township	Range
Southeast	01	22 North	04 East

5f. Provide the latitude and longitude of the project location. [help]

- Example: 47.03922 N lat. / -122.89142 W long. (Use decimal degrees - NAD 83)

47.420207 N lat. / -122.235521 W long.

5g. List the tax parcel number(s) for the project location. [help]

- The local county assessor's office can provide this information.

6315000300

5h. Contact information for all adjoining property owners. (If you need more space, use JARPA Attachment C.) [help]

Name	Mailing Address	Tax Parcel # (if known)
KYC LLC	20233 80th Ave S Kent, WA 98032	6315000301
Walman Optical Company	PO BOX 9440 Minneapolis MN 55440	6315000380
Knight Transportation Inc	20002 N 19th Ave Phoenix AZ 85027	6315000360
BNSF Railway Company	PO BOX 961089 Fort Worth TX 76161	0122049019

5i. List all wetlands on or adjacent to the project location. [help]

One onsite Category IV Wetland (Wetland A) and three offsite wetlands (Wetlands B-D) were identified.

5j. List all waterbodies (other than wetlands) on or adjacent to the project location. [help]

One stream (Stream Z) was identified onsite.

5k. Is any part of the project area within a 100-year floodplain? [help]

☒ Yes ☐ No ☐ Don't know

5l. Briefly describe the vegetation and habitat conditions on the property. [help]

The western portion of the site is entirely developed with an industrial facility and associated parking areas, and is further disturbed by the presence of a large ash-waste pile. The eastern portion of the site consists of unmaintained areas dominated by a shrubby overstory of beaked hazelnut (*Corylus cornuta*), snowberry (*Symphocarpus albus*), and non-native invasive Himalayan blackberry (*Rubus armeniacus*), with an understory of common ladyfern (*Athyrium cyclosorum*), hairy brackenfern (*Pteridium aquilinum*), colonial bentgrass (*Agrostis capillaris*), and non-native invasives Canada thistle (*Cirsium arvense*) and poison hemlock (*Conium maculatum*).

5m. Describe how the property is currently used. [help]

The site is partially developed with a dilapidated industrial facility to the west that has been maintained as pipe storage for the property to the north, and a large ash waste pile exists adjacent to the facility; remaining portions of the site to the east are undeveloped.

5n. Describe how the adjacent properties are currently used. [help]

The site is located in an urban industrial setting within the City of Kent. The property abuts a mix of industrial developments and associated paved parking areas to the north, east, and south, and is bound by the Burlington Northern Santa Fe Railroad, with 77th Avenue South and continuing industrial developments beyond.

5o. Describe the structures (above and below ground) on the property, including their purpose(s) and current condition. [help]

The site is currently partially developed with a dilapidated industrial facility to the west that has been maintained as pipe storage for the property to the north, and a large ash waste pile exists adjacent to the facility.

5p. Provide driving directions from the closest highway to the project location, and attach a map. [help]

To access the subject property from Interstate-5 North, take exit 142A and merge onto WA-18 East toward Auburn. Continue for 3 miles and take the exit onto WA-167 North toward Kent/Renton. Continue for 8.2 miles and take the South 212th Street exit. After 0.3 mile, use the left two lanes to turn left onto South 212th Street. Continue for 0.4 mile and turn right onto 84th Avenue South. After 0.7 mile, turn left onto South 200th Street. Continue for 0.2 mile and turn left onto 80th Avenue South. After 0.1 mile, turn left onto South 202nd Street and continue for 0.1 mile where the subject property will be located on the left.

Part 6–Project Description

6a. Briefly summarize the overall project. You can provide more detail in 6b. [help]

The Applicant proposes industrial redevelopment of the site that will include clearing and grading, construction of a large warehouse, a stormwater facility, utilities, and landscaping.

6b. Describe the purpose of the project and why you want or need to perform it. [help]

The purpose of the proposed project is to provide industrial development and associated infrastructure within the City of Kent to expand the local economy by providing new jobs and new services to the area. Due to the encumbrance of critical areas and associated buffers on the central portion of the site, direct wetland and stream impacts are necessary and unavoidable to meet the goals for reasonable site development.

6c. Indicate the project category. (Check all that apply) [help]

☒ Commercial ☐ Residential ☐ Institutional ☐ Transportation ☐ Recreational

☐ Maintenance ☐ Environmental Enhancement

6d. Indicate the major elements of your project. (Check all that apply) [help]

☐ Aquaculture	☐ Culvert	☐ Float	☐ Retaining Wall (upland)
☐ Bank Stabilization	☐ Dam / Weir	☐ Floating Home	☒ Road
☐ Boat House	☐ Dike / Levee / Jetty	☐ Geotechnical Survey	☐ Scientific Measurement Device
☐ Boat Launch	☐ Ditch	☒ Land Clearing	☐ Stairs
☐ Boat Lift	☐ Dock / Pier	☐ Marina / Moorage	☒ Stormwater facility
☐ Bridge	☐ Dredging	☐ Mining	☐ Swimming Pool
☐ Bulkhead	☐ Fence	☐ Outfall Structure	☒ Utility Line
☐ Buoy	☐ Ferry Terminal	☐ Piling/Dolphin	
☐ Channel Modification	☐ Fishway	☐ Raft	

☒ Other: impervious surfaces, wetland fill, stream relocation, and building construction.

6e. Describe how you plan to construct each project element checked in 6d. Include specific construction methods and equipment to be used. [help]

- Identify where each element will occur in relation to the nearest waterbody.
- Indicate which activities are within the 100-year floodplain.

The onsite mitigation actions will occur concurrently with the development of the project. A pre-construction meeting will be held between the Applicant, general contractor, and the consulting Scientist to discuss the project and limitations specifically related to protection of critical areas and implementation of mitigation actions.

Equipment used will be typical for land clearing, grading, and excavation activities and will be kept in good working conditions and free of leaks. Equipment to be used will likely include excavators, backhoes, bulldozers, dump trucks, graders, et cetera. All equipment staging and materials stockpiles will be kept out of wetlands and regulated buffers, and the area will be kept free of spills and/or hazardous materials. All clean fill material will be sourced from upland areas onsite or from approved suppliers and will be free of pollutants and hazardous materials.

All appropriate BMPs and TESC measures, including dedicated construction entrance(s), silt fencing, and brush barriers, will be installed prior to and maintained throughout construction in order to minimize potential temporary impacts to Wetland A. As no work windows are expected to limit the construction schedule, this schedule is flexible, and site work will likely commence as soon as permits are issued and the site is able to support heavy equipment.

Additionally, a majority of the subject property is within the FEMA designated 100-year floodplain and will require floodplain fill which will be mitigated at a 1:1 ratio.

6f. What are the anticipated start and end dates for project construction? (Month/Year) [help]

- If the project will be constructed in phases or stages, use JARPA Attachment D to list the start and end dates of each phase or stage.

Start Date: Spring of 2023 End Date: Summer of 2024 ☐ See JARPA Attachment D

6g. Fair market value of the project, including materials, labor, machine rentals, etc. [help]

$2,000,000 (estimated)

6h. Will any portion of the project receive federal funding? [help]

- **If yes**, list each agency providing funds.

☐ Yes ☒ No ☐ Don't know

Part 7–Wetlands: Impacts and Mitigation

☒ Check here if there are wetlands or wetland buffers on or adjacent to the project area.
(If there are none, skip to Part 8.) [help]

7a. Describe how the project has been designed to avoid and minimize adverse impacts to wetlands. [help]

☐ Not applicable

The Applicant proposes industrial redevelopment of the subject property to include an industrial warehouse and associated infrastructure including parking, internal site access and space for truck maneuvering / turnaround, stormwater infrastructure, and utilities. The proposed project has been carefully designed to avoid and minimize impacts to the identified wetlands by utilizing the existing developed and / or disturbed upland areas onsite to the greatest extent feasible. However, development feasibility of the warehouse and associated infrastructure is restricted by the encumbrance of Wetland A and the associated buffer on the eastern half of the site. To avoid and minimize impacts to Wetland A, the project will utilize administrative buffer reduction for Wetland A from 75 feet to 60 feet per the minimization measures outlined under KCC 11.06.600.C.2; however, buffer reduction does not allow enough space for the proposed warehouse or required parking. Site design alternations to avoid and reduce impacts include shifting the proposed warehouse further west and thus reducing the building size to less than 180,000 square feet to accommodate the diagonal parcel boundary, eliminating parking stalls within the center of the site near Wetland A, and reducing the building scope to a single-loaded warehouse. Further, utilizing enhanced water quality treatment combined with an underground stormwater vault allows more space for above-ground development, thus minimizing additional critical area impacts. In addition to these avoidance and minimization measures, the project requires the necessary and unavoidable fill of a portion of Wetland A and a portion of Stream Z as permitted under KCC 11.06.690.C as part of the remediation and restoration actions associated with the environmental site clean-up associated with the black dross, as well as to accommodate the purpose and need for the proposed industrial development. Additional indirect wetland impacts are also required due to the remaining wetland area abutting the proposed development.

7b. Will the project impact wetlands? [help]

☒ Yes ☐ No ☐ Don't know

7c. Will the project impact wetland buffers? [help]

☒ Yes ☐ No ☐ Don't know

7d. Has a wetland delineation report been prepared? [help]

- **If Yes**, submit the report, including data sheets, with the JARPA package.

☒ Yes ☐ No

7e. Have the wetlands been rated using the Western Washington or Eastern Washington Wetland Rating System? [help]

- **If Yes**, submit the wetland rating forms and figures with the JARPA package.

☒ Yes ☐ No ☐ Don't know

7f. Have you prepared a mitigation plan to compensate for any adverse impacts to wetlands? [help]

- **If Yes**, submit the plan with the JARPA package and answer 7g.
- **If No, or Not applicable**, explain below why a mitigation plan should not be required.

☒ Yes ☐ No ☐ Don't know

7g. Summarize what the mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan. [help]

Compensatory mitigation for direct impacts to the low-functioning Category III wetland (Wetland A) and Type 3 stream onsite will be provided by onsite, in-kind stream and wetland creation and enhancement on the northeast corner of the subject property. The deficit in onsite mitigation will be compensated through the purchase of in-lieu fee (ILF) credits from the King County Mitigation Reserves Program (KCMRP). The proposed stream and wetland mitigation has been designed to utilize the combination mitigation ratios for wetland creation (1:1) and wetland rehabilitation (2:1) to the extent practicable. The remainder of onsite mitigation will utilize 2:1 wetland creation for what equivalent wetland rehabilitation area cannot be provided. The proposed onsite, in-kind mitigation actions have been designed utilizing interagency guidance to ensure no net loss of ecological functions onsite of within the greater within the greater Duwamish-Green watershed (WRIA 9). In addition, the buffer will be restored from its current severely degraded condition to further improve ecological functions onsite. Impacts to the 100-year floodplain will be compensated at a 1:1 ratio to ensure no net rise.

The proposed wetland mitigation has been designed to utilize the combination mitigation ratios for wetland creation (1:1) and wetland rehabilitation (2:1) outlined by the interagency guidance (WSDOE et al., 2021) to the extent practicable; the remainder of onsite mitigation will utilize the standard mitigation ratios. However, KCC 11.06.600.D only specifies combined mitigation for wetland creation (1:1) with enhancement (2:1). Given that rehabilitation is preferred over enhancement and is generally required at a lower ratio as discussed in WSDOE et al. (2021), the project will utilize the 2:1 ratio for wetland rehabilitation along with wetland creation to meet mitigation needs that will satisfy local, state, and federal requirements. It should be noted that the site has the opportunity to provide nearly double the required amount of wetland creation, which will be utilized to account for the shortfall in wetland rehabilitation as it is the more preferred type of mitigation.

Wetland creation actions are proposed adjacent to Wetland A and Stream Z. A combination mitigation ratio of 1:1 is required when rehabilitation and/or enhancement is also proposed. The project will utilize the combination mitigation ratios to the extent practicable; the remainder of onsite mitigation will utilize 2:1 wetland creation. Refer to Table 6 below for a summary of the proposed mitigation calculations; the mitigation deficit accounts for a portion of the indirect impact area. Depressional wetland areas will be created along Stream Z to compensate for the Category III wetland impacts. These areas are conducive to wetland creation given that they are at similar elevation adjacent to the existing wetland and located in the valley floor. Soils will be excavated to provide necessary depressions to hold sufficient hydrology to generate wetland conditions, and areas will be excavated to the existing groundwater table if possible. Organic topsoil, likely from an offsite supplier but potentially sourced onsite, will then be placed to provide suitable substrate for the proposed native plantings. In addition to the native plantings, special habitat features including LWD and snags will be installed to increase habitat complexity. The mitigation plan proposes an increase in vertical and horizontal canopy structure by planting a variety of native tree, shrub, and groundcover species appropriately located to match existing species wetland indicator statuses and local topography.

In addition to the proposed wetland creation area, the portions of Wetland A within the creation area will be rehabilitated. The existing wetland area is degraded due to the presence of trash and debris, black dross associated with the aluminum processing facility onsite, dominance of non-native invasive species, and old fill material and compacted soils. Therefore, such degradations will be removed, the ground surface will be decompacted, soil amendments will be added as needed, and native plantings will be installed to increase vertical and horizontal structure and increase species diversity and habitat complexity. The associated buffer areas onsite will be also be restored through similar measures and planted with plant species suitable for drier areas. The proposed restoration actions will further increase ecological functions onsite and help ensure the success of the wetland creation area by removing non-native invasive species that could encroach upon and overtake the mitigation site. The increased plant structure and diversity has the potential to improve water quality and hydrology for water leaving the site by improving filtration and providing plant structure that can adequately slow floods.

Through careful design and utilization of best available science, the proposed mitigation plan has a high probability of success and persistence. By following the site preparation specifications outlined herein (e.g., excavation, topsoil installation, and plantings) the wetland creation area will maintain wetland hydrology during the growing season in most years to match the existing, functional, seasonally flooded/saturated wetland. The

proposed native species have been carefully selected to ensure the plants take root and thrive in the newly created and existing wetland environments: selection criteria included indicator status and those species that are currently thriving onsite in both wetland and non-wetland areas. With construction of the mitigation site, establishment of the protective buffers, installation of permanent fencing and signage around the entire conservation easement, and implementation of the required monitoring and maintenance actions, the mitigation area is projected to be a highly functional, persistent, and successful mitigation site.

7h. Use the table below to list the type and rating of each wetland impacted, the extent and duration of the impact, and the type and amount of mitigation proposed. Or if you are submitting a mitigation plan with a similar table, you can state (below) where we can find this information in the plan. [help]

Activity (fill, drain, excavate, flood, etc.)	Wetland Name[1]	Wetland type and rating category[2]	Impact area (sq. ft. or Acres)	Duration of impact[3]	Proposed mitigation type[4]	Wetland mitigation area (sq. ft. or acres)
Direct fill	Wetland A	III	20,507 sq. ft.	Permanent	B, C, E	Total: C: 37,529 sq. ft. E: 7,442 sq. ft.
Indirect impacts	Wetland A	III	4,776 sq. ft.	Permanent	B, C, E	Total: C: 37,529 sq. ft. E: 7,442 sq. ft.

[1] If no official name for the wetland exists, create a unique name (such as "Wetland 1"). The name should be consistent with other project documents, such as a wetland delineation report.
[2] Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package.
[3] Indicate the days, months or years the wetland will be measurably impacted by the activity. Enter "permanent" if applicable.
[4] Creation (C), Re-establishment/Rehabilitation (R), Enhancement (E), Preservation (P), Mitigation Bank/In-lieu fee (B)

Page number(s) for similar information in the mitigation plan, if available: Pages 12-27 of the Conceptual Mitigation Plan (SVC, 2022).

7i. For all filling activities identified in 7h, describe the source and nature of the fill material, the amount in cubic yards that will be used, and how and where it will be placed into the wetland. [help]

All fill material and road surfacing will be sourced from upland areas onsite or from approved suppliers and will need to be free of pollutants and hazardous materials. The total fill quantities will be determined by the Project Engineer during the final mitigation plan.

7j. For all excavating activities identified in 7h, describe the excavation method, type and amount of material in cubic yards you will remove, and where the material will be disposed. [help]

N/A – No excavation activities are proposed within the onsite wetlands.

Part 8–Waterbodies (other than wetlands): Impacts and Mitigation

In Part 8, "waterbodies" refers to non-wetland waterbodies. (See Part 7 for information related to wetlands.) [help]

☒ Check here if there are waterbodies on or adjacent to the project area. (If there are none, skip to Part 9.)

8a. Describe how the project is designed to avoid and minimize adverse impacts to the aquatic environment. [help]

☐ Not applicable

The Applicant proposes industrial redevelopment of the subject property to include an industrial warehouse and associated infrastructure including parking, internal site access and space for truck maneuvering / turnaround, stormwater infrastructure, and utilities. The proposed project has been carefully designed to avoid and minimize impacts to the identified wetlands by utilizing the existing developed and / or disturbed upland areas onsite to the greatest extent feasible. However, development feasibility of the warehouse and associated infrastructure is restricted by the encumbrance of Wetland A and the associated buffer on the eastern half of the site. To avoid and minimize impacts to Wetland A, the project will utilize administrative buffer reduction for Wetland A from 75 feet to 60 feet per the minimization measures outlined under KCC 11.06.600.C.2; however, buffer reduction does not allow enough space for the proposed warehouse or required parking. In addition to these avoidance and minimization measures, the project requires the necessary and unavoidable impacts to portions of Wetland A and a portion of Stream Z for the environmental remediation actions associated with prior land use of the site as permitted under KCC 11.06.690.C. Site design alternations to avoid and reduce impacts include shifting the proposed warehouse further west and thus reducing the building size to less than 180,000 square feet to accommodate the diagonal parcel boundary, eliminating parking stalls within the center of the site near Wetland A, and reducing the building scope to a single-loaded warehouse. Further, utilizing enhanced water quality treatment combined with an underground stormwater vault allows more space for above-ground development, thus minimizing additional critical area impacts. Additional indirect wetland impacts are also required due to the remaining wetland area abutting the proposed development.

8b. Will your project impact a waterbody or the area around a waterbody? [help]

☒ Yes ☐ No

8c. Have you prepared a mitigation plan to compensate for the project's adverse impacts to non-wetland waterbodies? [help]

- **If Yes**, submit the plan with the JARPA package and answer 8d.
- **If No, or Not applicable,** explain below why a mitigation plan should not be required.

☒ Yes ☐ No ☐ Don't know

8d. Summarize what the mitigation plan is meant to accomplish. Describe how a watershed approach was used to design the plan.

- If you already completed 7g you do not need to restate your answer here. [help]

The existing Stream Z channel acts as a stormwater conveyance system that is severely degraded due to the plastic lining, steep cut banks, and lack of sinuosity. Stream channel creation will result in a net gain in stream length onsite due to the creation of multiple channels as off-channel habitat. The stream mitigation actions will provide cool, clean, and clear water from the dense native plantings which will provide stream shading, stormwater filtration, and wood recruitment as well as decreased streambank erosion, and large woody debris features for increased habitat suitability and complexity. Overall, these actions will improve water quality, hydrology, and habitat functions onsite by providing increased plant structure to slow floods and filter pollutants, and by providing a diverse native plant community and increased habitat structures which will provide browse, nesting, and forage for small mammals which will in turn provide prey for raptors and other mammals. The proposed establishment of a new, higher functioning stream channel within an enhanced riparian corridor will increase habitat suitability and complexity for a wide range of fauna over time which will greatly benefit the local sub-basin and greater watershed.

8e. Summarize impact(s) to each waterbody in the table below. [help]

Activity (clear, dredge, fill, pile drive, etc.)	Waterbody name[1]	Impact location[2]	Duration of impact[3]	Amount of material (cubic yards) to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
Fill / Realignment	Stream Z	In	Permanent	270 cubic yards	807 linear feet

[1] If no official name for the waterbody exists, create a unique name (such as "Stream 1") The name should be consistent with other documents provided.
[2] Indicate whether the impact will occur in or adjacent to the waterbody. If adjacent, provide the distance between the impact and the waterbody and indicate whether the impact will occur within the 100-year flood plain.
[3] Indicate the days, months or years the waterbody will be measurably impacted by the work. Enter "permanent" if applicable.

8f. For all activities identified in 8e, describe the source and nature of the fill material, amount (in cubic yards) you will use, and how and where it will be placed into the waterbody. [help]

The fill material will be comprised of native soils from onsite sources excavated during the creation of the onsite mitigation area or from a clean source offsite. An estimated 270 cubic yards of fill are proposed within Stream Z.

8g. For all excavating or dredging activities identified in 8e, describe the method for excavating or dredging, type and amount of material you will remove, and where the material will be disposed. [help]

No dredging activities are proposed.

Part 9–Additional Information

Any additional information you can provide helps the reviewer(s) understand your project. Complete as much of this section as you can. It is ok if you cannot answer a question.

9a. If you have already worked with any government agencies on this project, list them below. [help]

Agency Name	Contact Name	Phone	Most Recent Date of Contact

9b. Are any of the wetlands or waterbodies identified in Part 7 or Part 8 of this JARPA on the Washington Department of Ecology's 303(d) List? [help]

- **If Yes,** list the parameter(s) below.
- If you don't know, use Washington Department of Ecology's Water Quality Assessment tools at: https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d.

☐ Yes ☒ No

9c. What U.S. Geological Survey Hydrological Unit Code (HUC) is the project in? [help]

- Go to http://cfpub.epa.gov/surf/locate/index.cfm to help identify the HUC.

1711001303 – Lower Green River

9d. What Water Resource Inventory Area Number (WRIA #) is the project in? [help]

- Go to https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up to find the WRIA #.

9 - Duwamish – Green

9e. Will the in-water construction work comply with the State of Washington water quality standards for turbidity? [help]

- Go to https://ecology.wa.gov/Water-Shorelines/Water-quality/Freshwater/Surface-water-quality-standards/Criteria for the standards.

☐ Yes ☐ No ☒ Not applicable

9f. If the project is within the jurisdiction of the Shoreline Management Act, what is the local shoreline environment designation? [help]

- If you don't know, contact the local planning department.
- For more information, go to: https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Shoreline-laws-rules-and-cases.

☐ Urban ☐ Natural ☐ Aquatic ☐ Conservancy ☐ Other: _____

9g. What is the Washington Department of Natural Resources Water Type? [help]

- Go to http://www.dnr.wa.gov/forest-practices-water-typing for the Forest Practices Water Typing System.

☐ Shoreline ☐ Fish ☐ Non-Fish Perennial ☐ Non-Fish Seasonal

9h. Will this project be designed to meet the Washington Department of Ecology's most current stormwater manual? [help]

- **If No**, provide the name of the manual your project is designed to meet.

☒ Yes ☐ No

Name of manual: _____

9i. Does the project site have known contaminated sediment? [help]

- **If Yes**, please describe below.

☒ Yes ☐ No

One active cleanup site (Cleanup Site ID 5055) was listed as occurring on the subject property. The site was listed as having contaminated soils and groundwater for metals and petroleum-gasoline, and contaminated surface water for metals. The site has historically been part of the Voluntary Cleanup Program (VCP); however, while cleanup has not been completed, there is no current VCP or active institutional controls for the site. .

9j. If you know what the property was used for in the past, describe below. [help]

As far back as 1936, the subject property has consisted primarily of maintained agricultural fields and associated structures. Between 1969 and 1980, the site transitioned to the existing industrial use including an industrial facility and associated infrastructure to the west and undeveloped areas to the east.

9k. Has a cultural resource (archaeological) survey been performed on the project area? [help]

- **If Yes**, attach it to your JARPA package.

☐ Yes ☒ No

9l. Name each species listed under the federal Endangered Species Act that occurs in the vicinity of the project area or might be affected by the proposed work. [help]
No ESA listed species have been identified on or in the vicinity of the subject property. Chinook salmon (*Oncorhynchus tshawytscha*) and Steelhead trout (*Ocorhynchus mykiss*) are mapped by WDFW in Spring Brook Creek, 0.23-mile west of the subject property. A Biological Evaluation (SVC, 2021) determined the proposed project will have no effect on chinook salmon and Steelhead trout.
9m. Name each species or habitat on the Washington Department of Fish and Wildlife's Priority Habitats and Species List that might be affected by the proposed work. [help]
The WDFW PHS identifies the potential presence of one freshwater emergent wetland habitat on the east-central portion of the subject property, following a similar boundary as the delineated Wetland A. No other species or priority habitats were identified within the vicinity of the proposed project.

Part 10–SEPA Compliance and Permits

Use the resources and checklist below to identify the permits you are applying for.

- Online Project Questionnaire at http://apps.oria.wa.gov/opas/.
- Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.
- For a list of addresses to send your JARPA to, click on agency addresses for completed JARPA.

10a. Compliance with the State Environmental Policy Act (SEPA). (Check all that apply.) [help] • For more information about SEPA, go to **Error! Hyperlink reference not valid.**https://ecology.wa.gov/regulations-permits/SEPA-environmental-review.
☐ A copy of the SEPA determination or letter of exemption is included with this application.
☒ A SEPA determination is pending with City of Kent (lead agency). The expected decision date is winter 2022/2023.
☐ I am applying for a Fish Habitat Enhancement Exemption. (Check the box below in 10b.) [help]
☐ This project is exempt (choose type of exemption below). ☐ Categorical Exemption. Under what section of the SEPA administrative code (WAC) is it exempt? _____ ☐ Other: _____

☐ SEPA is pre-empted by federal law.

10b. Indicate the permits you are applying for. (Check all that apply.) [help]

LOCAL GOVERNMENT

Local Government Shoreline permits:

☐ Substantial Development ☐ Conditional Use ☐ Variance

☐ Shoreline Exemption Type (explain): _____

Other City/County permits:

☒ Floodplain Development Permit ☒ Critical Areas Ordinance

STATE GOVERNMENT

Washington Department of Fish and Wildlife:

☒ Hydraulic Project Approval (HPA) ☐ Fish Habitat Enhancement Exemption – Attach Exemption Form

Washington Department of Natural Resources:

☐ Aquatic Use Authorization

Complete JARPA Attachment E and submit a check for $25 payable to the Washington Department of Natural Resources. **Do not send cash.**

Washington Department of Ecology:

☒ Section 401 Water Quality Certification ☐ Non-Federally Regulated Waters

FEDERAL AND TRIBAL GOVERNMENT

United States Department of the Army (U.S. Army Corps of Engineers):

☒ Section 404 (discharges into waters of the U.S.) ☐ Section 10 (work in navigable waters)

United States Coast Guard:

For projects or bridges over waters of the United States, contact the U.S. Coast Guard at: d13-pf-d13bridges@uscg.mil

☐ Bridge Permit ☐ Private Aids to Navigation (or other non-bridge permits)

United States Environmental Protection Agency:

☐ Section 401 Water Quality Certification (discharges into waters of the U.S.) on tribal lands where tribes do not have treatment as a state (TAS)

Tribal Permits: (Check with the tribe to see if there are other tribal permits, e.g., Tribal Environmental Protection Act, Shoreline Permits, Hydraulic Project Permits, or other in addition to CWA Section 401 WQC)

☐ Section 401 Water Quality Certification (discharges into waters of the U.S.) where the tribe has treatment as a state (TAS).

Part 11–Authorizing Signatures

Signatures are required before submitting the JARPA package. The JARPA package includes the JARPA form, project plans, photos, etc. [help]

11a. Applicant Signature (required) [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities, and I agree to start work only after I have received all necessary permits.

I hereby authorize the agent named in Part 3 of this application to act on my behalf in matters related to this application. K.S. (initial)

By initialing here, I state that I have the authority to grant access to the property. I also give my consent to the permitting agencies entering the property where the project is located to inspect the project site or any work related to the project. K.S. (initial)

Kyle Siekawitch		7/5/22
Applicant Printed Name	Applicant Signature	Date

11b. Authorized Agent Signature [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities and I agree to start work only after all necessary permits have been issued.

Jon Pickett		July 5, 2022
Authorized Agent Printed Name	Authorized Agent Signature	Date

11c. Property Owner Signature (if not applicant) [help]

Not required if project is on existing rights-of-way or easements (provide copy of easement with JARPA).

I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.

John and Gloria Lyon Irrevocable Living Trust		July 6, 2022
Property Owner Printed Name	Property Owner Signature (Trustee)	Date

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ORIA-16-011 rev. 07/2017

WETLAND AND FISH AND WILDLIFE HABITAT ASSESSMENT REPORT

MARALCO

REVISED MARCH 2022

JULY 2021

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

WETLAND AND FISH AND WILDLIFE HABITAT ASSESSMENT REPORT

MARALCO

REVISED MARCH 18, 2022

JULY 26, 2021

PROJECT LOCATION
7730 SOUTH 202ND STREET
KENT, WASHINGTON 98032

PREPARED FOR
BRIDGE DEVELOPMENT PARTNERS, LLC
10655 NORTHEAST 4TH STREET, SUITE 500
BELLEVUE, WASHINGTON 98004

PREPARED BY
SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE
GIG HARBOR, WASHINGTON 98335
(253) 514-8952

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

Executive Summary

Soundview Consultants LLC (SVC) has been assisting Bridge Development Partners LLC (Applicant) with a wetland and fish and wildlife habitat assessment for a proposed industrial redevelopment of a 12.05-acre site located at 7730 South 202nd Street in the City of Kent, Washington. The subject property consists of one tax parcel situated in the Southeast ¼ of Section 1, Township 22 North, Range 04 East, W.M. (King County Tax Parcel Number 631500-0300).

SVC investigated the subject property for potentially-regulated wetlands, waterbodies, fish and wildlife habitat, and/or priority species in November of 2020. Using current methodology, the site investigation identified and delineated one potentially-regulated wetland (Wetland A) onsite. Two drainages (collectively referred to as Stream Z) were observed bisecting Wetland A. Although Stream Z does not appear to meet the definition of a potentially regulated stream, the Applicant agrees to treat Stream Z as a Type 3 stream. Additionally, three potentially-regulated wetlands (offsite Wetlands B-D) were identified offsite within 275 feet of the subject property. Wetland A and Offsite Wetlands B and C are classified as Category III depressional wetlands and subject to standard 75-foot buffers per Kent City Code (KCC) 11.06.600.B.1. Offsite Wetland D is classified as a Category IV depressional wetland and subject to a standard 50-foot buffer per KCC 11.06.600.B.1. Offsite Wetland D is not anticipated to project a buffer onto the site given its distance from the site. Additionally, the buffer from Offsite Wetland C projects onto the site, however the presence of paved parking lot onsite effectively disrupts the buffer and any potential functions; as a result, the buffer should terminate at the edge of the paved parking lot. Stream Z is subject to standard 50-foot buffer per KCC 11.06.680.C. A 15-foot building setback is required from the outer edge of all critical area buffers per KCC 11.06.600.K. In addition, a majority of the site is located within the Federal Emergency Management Agency (FEMA) designated 100-year floodplain. No other potentially regulated wetlands, waterbodies, fish or wildlife habitat, and/or priority species were identified within 275 feet of the subject property.

The Applicant proposes industrial redevelopment of the subject property. A majority of the subject property is currently developed with a dilapidated industrial facility and associated infrastructure on the western portion of the site, and the remainder of the site is undeveloped. A full project description and necessary code analytics will be provided in a Conceptual Mitigation Plan under separate cover once the Applicant has received critical areas approval by the City of Kent. Due to the presence of 100-year floodplain areas on the subject property, a Biological Evaluation will also be prepared under separate cover to document proposed project effects on ESA-listed species and designated critical habitat.

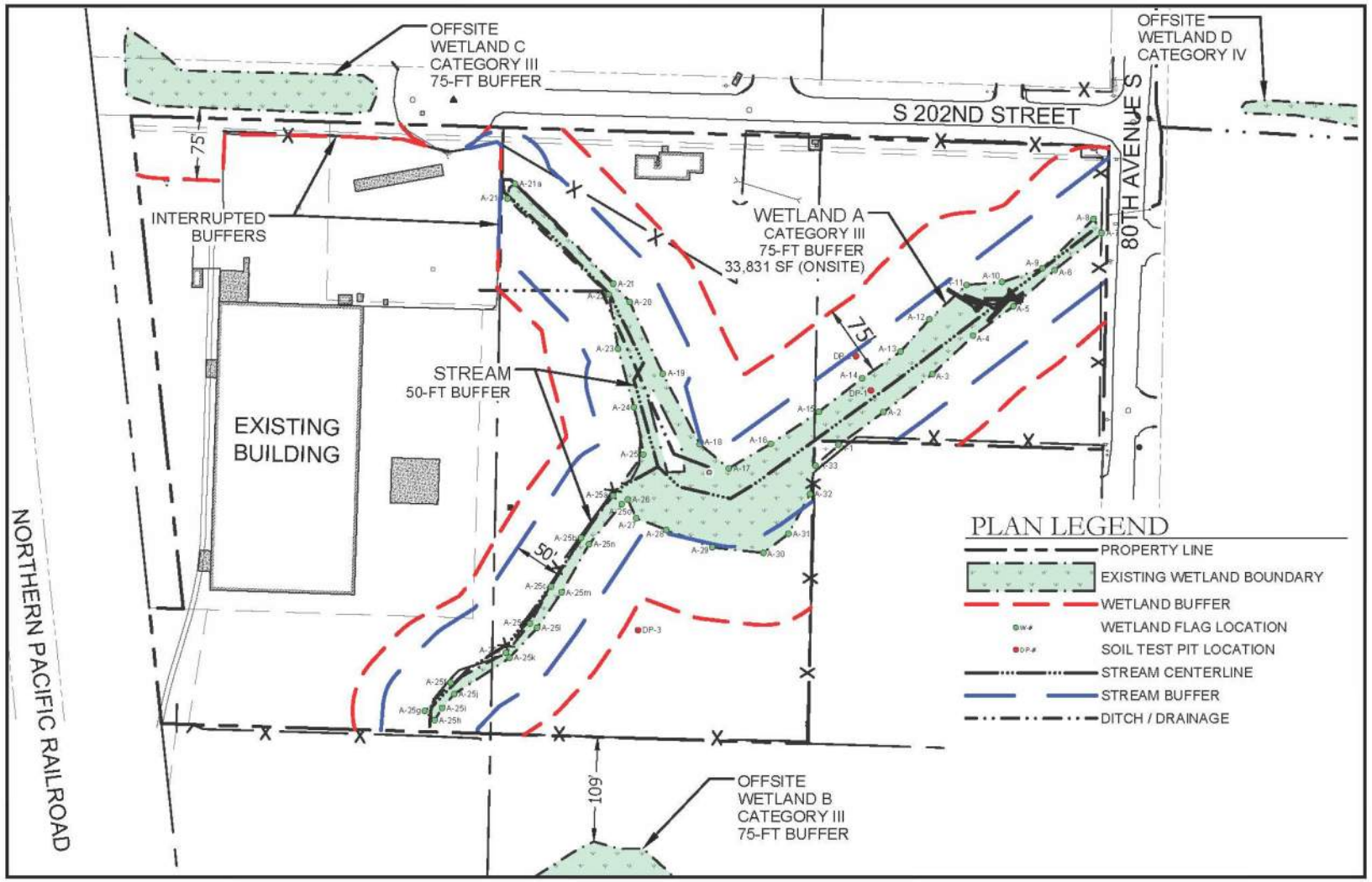
SVC has revised this report to address review comments provided on March 2, 2022 by the City of Kent's (City) third-party reviewer (Dusek, 2022). The report revisions include re-delineated wetland boundaries associated with Wetland A, revised wetland rating forms and Existing Conditions Exhibit.

The summary table below summarizes the identified critical areas and the potential regulatory status by different agencies.

Feature Name Name	Size Onsite (square feet)	Category/Type[1]	Regulated Under KCC Chapter 11.06	Regulated Under RCW 90.48	Regulated Under Section 404 of the Clean Water Act
Wetland A	34,360	III	**Yes**	**Yes**	**Likely**
Offsite Wetland B	N/A	III	**Yes**	**Yes**	**Likely**
Offsite Wetland C	N/A	III	**Yes**	**Yes**	**Likely**
Offsite Wetland D	N/A	IV	**Yes**	**Yes**	**Likely**
Stream Z	861	Type 3	**Yes**	**Yes**	**Likely**

1. Current Washington State Department of Ecology (WSDOE) rating system (Hruby, 2014) per KCC 11.06.580.A; stream typing classification per KCC 11.06.670.C.

Site Map


OFFSITE
WETLAND C
CATEGORY III
75-FT BUFFER
OFFSITE
WETLAND D
CATEGORY IV
S 202ND STREET
80TH AVENUE S
75'
INTERRUPTED
BUFFERS
WETLAND A
CATEGORY III
75-FT BUFFER
33,831 SF (ONSITE)
STREAM
50-FT BUFFER
EXISTING
BUILDING
NORTHERN PACIFIC RAILROAD
50'
100'
OFFSITE
WETLAND B
CATEGORY III
75-FT BUFFER
PLAN LEGEND
PROPERTY LINE
EXISTING WETLAND BOUNDARY
WETLAND BUFFER
WETLAND FLAG LOCATION
SOIL TEST PIT LOCATION
STREAM CENTERLINE
STREAM BUFFER
DITCH / DRAINAGE

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Appendices

Chapter 1. Introduction

Soundview Consultants LLC (SVC) has been assisting Bridge Development Partners (Applicant) with a wetland and fish and wildlife habitat assessment for the proposed commercial redevelopment of a 12.05-acre site located at 7730 South 202nd Street in the City of Kent, Washington. The subject property consists of one tax parcel situated in the Southeast ¼ of Section 1, Township 22 North, Range 04 East, W.M. (King County Tax Parcel Number 631500-0300).

The purpose of this wetland and fish and wildlife habitat assessment report is to identify the presence of potentially-regulated wetlands, waterbodies, fish and wildlife habitat, and/or priority species on or near the subject property. A full project description and necessary code analytics will be discussed and prepared in a Conceptual Mitigation Plan under separate cover once the Applicant has received critical areas approval by the City of Kent. Due to the presence of 100-year floodplain areas on the subject property, a Biological Evaluation will also be prepared under separate cover to document proposed project effects on ESA-listed species and designated critical habitat.

This report provides conclusions and recommendations regarding:

- Site description and area of assessment;
- Background research and identification of potentially-regulated critical areas within the vicinity of the proposed project;
- Identification and assessment of potentially-regulated wetlands and other hydrologic features;
- Identification and assessment of potentially-regulated fish and wildlife habitat;
- Existing site map detailing identified critical areas and associated buffers, and
- Supplemental information necessary for regulatory review.

Chapter 2. Project Location

2.1 Project Location

The subject property consists of a 12.05-acre site located at 7730 South 202nd Street in the City of Kent, Washington (Figure 1). The subject property consists of one tax parcel situated in the Southeast ¼ of Section 1, Township 22 North, Range 04 East, W.M. (King County Tax Parcel Number 631500-0300).

To access the subject property from Interstate-5 North, take exit 142A and merge onto WA-18 East toward Auburn. Continue for 3 miles and take the exit onto WA-167 North toward Kent/Renton. Continue for 8.2 miles and take the South 212th Street exit. After 0.3 mile, use the left two lanes to turn left onto South 212th Street. Continue for 0.4 mile and turn right onto 84th Avenue South. After 0.7 mile, turn left onto South 200th Street. Continue for 0.2 mile and turn left onto 80th Avenue South. After 0.1 mile, turn left onto South 202nd Street and continue for 0.1 mile where the subject property will be located on the left.

Figure 1. Vicinity Map.

Chapter 3. Methods

SVC investigated, assessed, and delineated potentially regulated wetlands, streams, and other fish and wildlife habitat on the subject property in November of 2020. A follow-up site investigation was conducted in January of 2022 to address comments received by the City's third-party reviewer (Dusek, 2022). All determinations were made using observable vegetation, hydrology, and soils in conjunction with data from the U.S. Geological Survey (USGS) topographic maps, National Resource Conservation Service (NRCS) soil survey, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), Washington State Department of Natural Resources (DNR) water typing system, Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) and SalmonScape mapping tools, King County iMap, City of Kent critical areas inventory, Federal Emergency Management Agency (FEMA) flood map service, and various orthophotographic resources. Appendix A contains further details for the methods and tools used to prepare this report.

Wetland boundaries were determined using the routine approach described in the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and modified according to the guidelines established in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE, 2010) and *Field Indicators of Hydric Soils in the United States* (NRCS, 2018). Qualified wetland scientists marked the boundary of the onsite wetland with orange surveyor's flagging labeled alpha-numerically and tied to 3-foot vegetation along the wetland boundary. Pink surveyor's flagging was labeled alpha-numerically and tied to 3-foot lath or vegetation at formal sampling locations to mark the points where detailed data was collected (DP-1 to DP-3). Additional tests pits were excavated at regular intervals inside and outside of the wetland boundary to further confirm the delineation. Wetland boundary flags and data plot locations were obtained by a professional land use survey.

Wetlands were classified using both the hydrogeomorphic (Brinson, 1993) and Cowardin (Cowardin, 1979; Federal Geographic Data Committee, 2013) classification systems. Following classification and assessment, all wetlands were rated and categorized using the updated Washington State Wetlands Rating System for Western Washington – Washington State Department of Ecology Publication No. 14-06-029, published October 2014 (Hruby, 2014) and guidelines established under Kent City Code (KCC) 11.06.580.

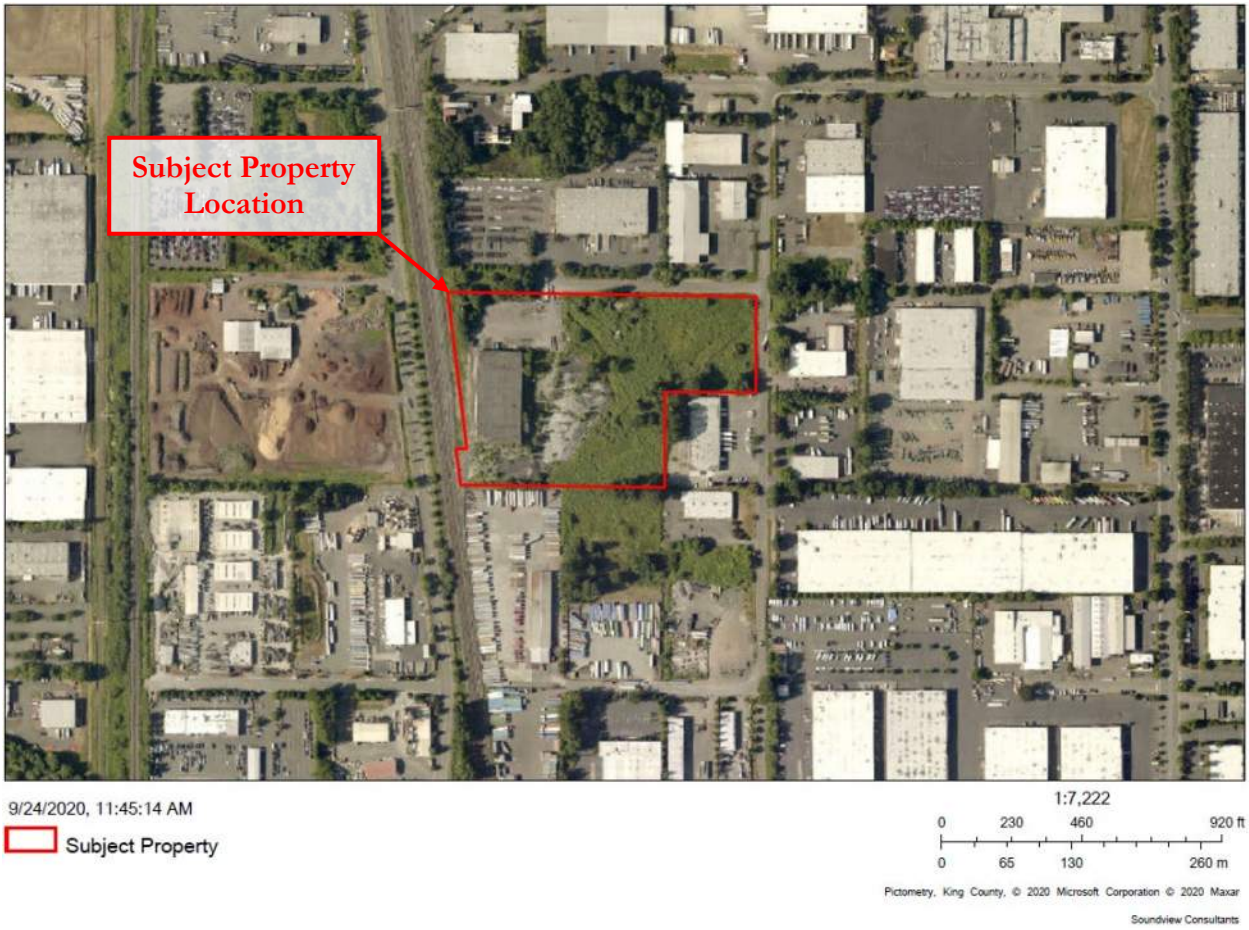
OHW mark determinations were estimated using Washington State Department of Ecology's (WSDOE's) method as detailed in *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Anderson et. al., 2016) and the definitions established in the Shoreline Management Act (Revised Code of Washington [RCW] 90.58.030(2)(b) and WAC 173-22-030(11). The centerline or banks of potentially regulated streams were not marked with flagging. Instead, GPS locations were collected using Eos Positioning Systems (Arrow 100) with global navigation satellite system (GNSS) receivers. These points are depicted on the Existing Conditions Exhibit in Appendix C.The fish and wildlife habitat assessment was conducted during the same site visits by qualified fish and wildlife biologists. The experienced biologists made visual observations using stationary and walking survey methods for both aquatic and upland habitats noting any special habitat features or signs of fish and wildlife activity.

Chapter 4. Existing Conditions

4.1 Landscape Setting

The subject property is located in an urban industrial setting within the City of Kent and is partially developed with a dilapidated industrial facility to the west that has been maintained as pipe storage for the property to the north, and a large ash waste pile exists adjacent to the facility; remaining portions of the subject property to the east are undeveloped (Figure 2). The property abuts a mix of industrial developments and associated paved parking areas to the north, east, and south, and is bound by the Burlington Northern Santa Fe Railroad, with 77th Avenue South and continuing industrial developments beyond. Topography onsite has been modified by prior industrial development activities, and is generally flat with a large mound (ash waste pile) in the center. Elevations onsite range from 50 feet above mean sea level (amsl) on the center of the subject property to 25 feet amsl throughout the majority of the rest of the subject property (Appendix B1). The property is located within Water Resource Inventory Area (WRIA) 9 – Duwamish-Green River watershed.

Figure 2. Aerial View of the Subject Property



4.2 Soils

The NRCS Soil Survey of King County, Washington identifies three soil series present on the subject property: Newberg silt loam (Ng), Renton silt loam (Re), and Pilchuck fine sandy loam (Pk) (Appendix B2). Below is a detailed description of the soil profiles.

Newberg Silt Loam (Ng)
According to the survey, the Newberg soil series has well-drained soils that typically located in areas with 0-2 percent slopes. The Newberg silt loam series contains an A horizon that ranges from a dark brown to dark grayish brown. The C horizon typically includes variable layers of silt loam, find sandy loam, loamy sand, and sand. Between depths of 30 to 40 inches, mottling can occur. These soils have moderate permeability, and the seasonal water table is typically at a depth of three to four feet, making these areas prime farmland. Newberg silt loam is listed as non-hydric on the King County Hyric Soils List, but as much as 25 percent of areas mapped as Newberg silt loam may contain inclusions of hydric Puget, Briscot, Oridia, and Woodinville soils (NRCS, n.d).

Renton Silt Loam (Re)
According to the survey, Renton silt loam has a gently slope, moderately rapid permeability, and a seasonally high-water table at about 1 to2 feet. The A horizon soil layer is typically a very dark grayish-brown. The B horizon from 6 to 16 inches in depth is generally a very fine sandy loam that is mottled dark gray and brown. Beyond a depth of 16 inches to 60 inches is sandy, mottled, and very dark. Renton silt loam is listed as hydric on the King County Hydric Soils List (NRCS, n.d).

Pilchuck Fine Sandy Loam (Pk)
According to the survey, the Pilchuck series is made up of excessively drained soils that formed in alluvium on low stream terraces, under a cover of hardwood and conifers. In a typical profile, the first 38 inches of soil consists of very dark gray, dark grayish brown, and dark-gray fine sand and loamy fine sand. From 38 inches to a depth of 60 inches or more, soils consist of black gravelly sand. Pilchuck fine sandy loam is typically found adjacent to streams in long, narrow areas that range from 4 to 150 acres in size. The surface layer is typically 8 to 14 inches thick and ranges from very dark grayish brown to very dark gray in color. Pilchuck fine sandy loam is listed as non-hydric on the King County Hydric Soils List, but as much as 10 percent of areas mapped as Pilchuck fine sandy loam may contain inclusions of hydric Briscot and Oridia soils (NRCS, n.d). (NRCS, n.d.)

4.3 Vegetation

The western portion of the subject property is entirely developed with an industrial facility and associated parking areas, and is further disturbed by the presence of a large ash-waste pile. The eastern portion of the subject property consists of unmaintained areas dominated by a shrubby overstory of beaked hazelnut (*Corylus cornuta*), snowberry (*Symphocarpus albus*), and non-native invasive Himalayan blackberry (*Rubus armeniacus*), with an understory of common ladyfern (*Athyrium cyclosorum*), hairy brackenfern (*Pteridium aquilinum*), colonial bentgrass (*Agrostis capillaris*), and non-native invasives Canada thistle (*Cirsium arvense*) and poison hemlock (*Conium maculatum*).

4.4 Critical Area Inventories

The King County sensitive areas map (Appendix B3) does not identify any potential wetlands on or in the vicinity of the subject property, but does identify two potential streams onsite, one originating

in the southwest portion of the site and one entering the site from the northeast. The two streams are shown converging in the northcentral portion of the site, and then flowing offsite to the northwest The map shows one stream originating in the southwest, crossing the northwest property boundary and flowing through the center of the subject property. The City of Kent stream and wetland inventory (Appendix B4) identifies one potential wetland on the northeast portion of the subject property, and identifies additional potential wetlands offsite to the north, east, south, and west within 275 feet of the site. The USFWS NWI map (Appendix B5) and WDFW PHS map (Appendix B6) identify one potential emergent wetland area on the central portion of the subject property, with a small, linear arm extending northeast across the site and continuing slightly offsite to the east; additional potential wetlands are also mapped to the east and south. The DNR stream typing map (Appendix B7) and WDFW Salmonscape map (Appendix B8) do not identify any potentially regulated streams or salmonid presence on or near the subject property. The King County FEMA floodplain map (Appendix B9) identifies a majority of the subject property as within the mapped 100-year floodplain. No other potentially regulated wetlands, streams, fish and wildlife habitat, or priority habitats or species are identified on or within 275 feet of the subject property.

4.5 Precipitation

Precipitation data was obtained from the National Oceanic and Atmospheric Administration (NOAA) station at Seattle Tacoma (SeaTac) International Airport in order to obtain percent of normal precipitation during and preceding the investigations. A summary of data collected is provided in Table 1 below.

Table 1. Precipitation Summary[1]

Date	Day of	Day Before	1 Week Prior	2 Weeks Prior	Last 30 Days (Observed/Normal)	Year to Date (Observed/Normal)[2]	Percent of Normal[3]
11/10/2020	0.04	0.06	1.51	1.57	3.08/4.97	4.09/5.90	62/69
1/21/2022	0.00	0.16	0.22	2.95	8.25/5.87	26.88/19.96	141/135

Notes:

1. Precipitation levels provided in inches. Data obtained from NOAA (http://w2.weather.gov/climate/xmacis.php?wfo=sew) for SeaTac airport. Precipitation data is missing for the following dates and may skew calculations for percent of normal: 12/18, 12/28, and 12/30.
2. Year-to-date precipitation for the November 2020 site investigation is for the 2020/2021 water year from October 1 to the onsite date; Year-to-date precipitation for the January 2022 site investigation is for 2021/2022 water year from October 1 to the onsite date
3. Percent of normal is shown for the last 30 days and water year to date data.

Precipitation levels during the November 2020 site investigation were slightly lower than the statistical normal range for both the 2020/2021 water year and the prior 30 days (69 and 62 percent of normal, respectively). This precipitation data suggests that hydrologic conditions encountered at the time of the November 2020 site investigation were likely slightly drier than normal. Precipitation levels during the January 2022 site investigation were above the statistical normal range for both the 2021/2022 water year and the prior 30 days (141 and 135 percent of normal, respectively). This precipitation data suggests that hydrologic conditions encountered at the time of the January 2022 site investigation were likely slightly wet to wetter than normal. Such conditions were considered in making professional wetland boundary determinations.

4.6 Site History

A series of artificially excavated stormwater ditches were identified on the subject property and are associated with prior remediation actions completed onsite. Ecology and Environment (1987) and the Washington State Department of Ecology (1991) provide an assessment of the subject property, explaining the history of the subject property as an aluminum processing facility, associated heavy metal contamination, and the Phase I plan to remediate such contaminants. Remediation actions completed in 1987, notably before implementation of the Growth Management Act (GMA), and according to Ecology "consisted of lining the ditch adjacent to the north end of the dross pile, and of re-routing the drainage ditch along a portion of the pile. However, surface water has continued to flow in the old channel adjacent to the dross pile and the southern end of the new lined channel is consistently dry" (WSDOE, 1991). The lining and rerouting of these channels resulted in artificially modified drainages that no longer contain a natural defined bed and bank. However, the Applicant has agreed to treat the ditches as a Type 3 stream (Stream Z) per the City of Kent approval to expedite the permitting process. Please refer to section 5.2 for further details.

Chapter 5. Results

The site investigations in the fall of 2020 and winter of 2022 identified and delineated one potentially-regulated wetland (Wetland A) on the subject property. One potentially-regulated stream (Stream Z) was identified on the subject property, traversing through Wetland A. Additionally, three potentially-regulated wetlands (Offsite Wetlands B-D) were identified offsite within 275 feet of the subject property. No other potentially-regulated wetlands, waterbodies, fish and wildlife habitat, or priority species were identified within 275 feet of the subject property during the site investigations.

5.1 Wetlands

5.1.1 Overview

One potentially-regulated wetland (Wetland A) was identified on the subject property. Additionally, three potentially-regulated wetlands (Wetlands B-D) were identified offsite within 275 feet of the subject property. The identified wetlands contained indicators of hydric soils, wetland hydrology, and a predominance of hydrophytic vegetation according to current wetland delineation methodology. Due to their offsite locations, Wetlands B-D were not formally delineated, and as such hydric soils were assumed. Wetland data forms are provided in Appendix D, wetland rating forms are provided in Appendix E, and wetland rating figures are provided in Appendix F. Table 2 summarizes the wetlands identified during the site investigations.

Table 2. Wetland Summary

Wetland	Predominant Wetland Classification / Rating				Wetland Size Onsite (square feet)	Standard Buffer Width (feet)[5]
	Cowardin[1]	HGM[2]	WSDOE[3]	City of Kent[4]		
A	PFO/EMBC	Depressional	III	III	34,360	75
Offsite B	PSS/EMB	Depressional	III	III	N/A – offsite	75
Offsite C	PEMAB	Depressional	III	III	N/A – offsite	75
Offsite D	PEMAB	Depressional	IV	IV	N/A – offsite	50

Notes:
1. Cowardin et al. (1979) and Federal Geographic Data Committee (2013) or NWI Class based on vegetation: PFO = Palustrine Forested, PSS = Palustrine Scrub-shrub, PEM = Palustrine Emergent; Modifiers for water regime: A = Temporarily Flooded, B = Seasonally Saturated, C = Seasonally Flooded.
2. Brinson, M. M. (1993).
3. Current WSDOE Washington State Wetland Rating System for Western Washington (Hruby, 2014).
4. KCC 11.06.580 wetland definitions.
5. KCC 11.06.600.B.1 buffer width standards.

Wetland A

Wetland A is 34,360 square feet (0.79 acre) in size and is located on the central and eastern portions of the subject property. Wetland A is bisected by a manmade ditch that receives hydrology from offsite Wetland D. Hydrology for Wetland A is provided by direct precipitation, a seasonally high groundwater table, surface sheet flow from adjacent uplands, stormwater discharges from adjacent uplands, and seasonal outflow from the offsite Wetland D northeast of the subject property. Wetland vegetation is dominated by a canopy of black cottonwood (*Populus balsamifera*) with an understory of redosier dogwood (*Cornus alba*), non-native invasive Himalayan blackberry, Canada thistle, and non-native invasive reed canarygrass (*Phalaris arundinacea*). Wetland A is a Palustrine Forested/Emergent

Seasonally Saturated and Seasonally Flooded (PFO/EMBC) wetland. Per KCC 11.06.580, Wetland A is a Category III depressional wetland. Table 3 provides a detailed summary of Wetland A.

Offsite Wetland B

Wetland B is located offsite approximately 108 feet south of the subject property, south of Wetland A, and is approximately 55,983 square feet (1.28 acres) in size. Hydrology for Wetland B is provided by direct precipitation, a seasonally high groundwater table, and surface sheet flow from adjacent uplands. Wetland vegetation is dominated by an overstory of black cottonwood and Pacific willow (*Salix lucida*), with an understory of hardhack (*Spiraea douglasii*), and creeping buttercup (*Ranunculus repens*). Wetland B is a Palustrine Scrub-Shrub, Emergent, Seasonally Saturated (PSS/EMB) wetland. Per KCC 11.06.580, Wetland B is a Category III depressional wetland. Due to the wetland's offsite location, no detailed summary is provided.

Offsite Wetland C

Wetland C is located offsite approximately 10 feet north of the northwest corner of the subject property, northwest of Wetland A, and is approximately 11,177 square feet (0.26 acre) in size. Hydrology for Wetland C is provided by direct precipitation, a seasonally high groundwater table, surface sheet flow from adjacent uplands, and seasonally outflow from Wetland A to the southeast. Wetland vegetation is dominated by non-native invasive reed canarygrass, with patches of black cottonwood and non-native invasive Himalayan blackberry rooted along the wetland boundary. Wetland C is a Palustrine Emergent, Temporarily Flooded and Seasonally Saturated (PEMAB) wetland. Per KCC 11.06.580, Wetland C is a Category III depressional wetland. Due to the wetland's offsite location, no detailed summary is provided.

Offsite Wetland D

Wetland D is located offsite approximately 145 feet northeast of the subject property, northeast of Wetland A, and is approximately 2,332 square feet (0.05 acre) in size. Wetland D appears to be associated with mitigation activities on the site northeast of the subject property due the presence of a stormwater pond immediately north of the wetland and observed excavation activities that appeared to have modified the edge of the wetland. Additionally, Wetland D conveys drainage south to a ditch that conveys flow through a culvert on the northeast corner of the subject property to an onsite ditch system that runs through Wetland A. Hydrology for Wetland D is provided by direct precipitation, a seasonally high groundwater table, and surface sheet flow from adjacent uplands. Wetland vegetation is dominated by non-native invasive reed canarygrass. Wetland D is a Palustrine Emergent, Temporarily Flooded and Seasonally Saturated (PEMAB) wetland. Per KCC 11.06.580, Wetland D is a Category IV depressional wetland. Due to the wetland's offsite location, no detailed summary is provided.

Table 3. Wetland A Summary

WETLAND A – INFORMATION SUMMARY			
Location:	Located on the central and eastern portions of the subject property.		
		**Local Jurisdiction**	Kent
		WRIA	9 – Duwamish – Green
		WSDOE Rating (Hruby, 2014)	III
		City of Kent Rating	III
		City Buffer Width	75 feet
		Building Setback	15 feet
		Wetland Size	~34,360
		Cowardin Classification	PFO/EMBC
		HGM Classification	Depressional
		Wetland Data Sheet(s)	DP-1
		Upland Data Sheet (s)	DP-2 and DP-3
		Boundary Flag color	Orange
Dominant Vegetation	Dominant vegetation in Wetland A includes black cottonwood, redosier dogwood, and non-native invasive Himalayan blackberry, Canadian thistle, and reed canarygrass.		
Soils	Hydric soil indicators A11 (Depleted Below Dark Surface) and F3 (Depleted Matrix) was observed.		
Hydrology	Hydrology for Wetland A is provided by direct precipitation, surface sheet flow, a seasonally high groundwater table, stormwater discharges from adjacent developments, and seasonal outflow from Wetland D northeast of the subject property.		
Rationale for Delineation	Wetland boundaries were determined by topographic drop and transition to a hydrophytic plant community.		
Rationale for Local Rating	Wetland A is rated according to WSDOE's current wetland rating system (Hruby, 2014) and the guidelines established in KCC 11.06.580.		
Wetland Functions Summary			
Water Quality	Wetland A has moderate potential to improve water quality due to the presence of an intermittent outlet, persistent, ungrazed vegetation in over half the unit, f seasonal ponding in over ¼ of the unit, presence of stormwater input, and land use that generates pollutants in proximity to the wetland. Additionally, Wetland A is located in a watershed where water quality is an issue. Wetland A's score for Water Quality Functions using the 2014 rating method is moderate (8).		
Hydrologic	Wetland A provides moderate hydrologic functions due to the presence of an intermittent outlet, the wetlands moderate size within the basin, the wetland's proximity to land use that generates excess runoff, presence of stormwater input, high intensity human land uses within the basin, and the presence of flooding issues down-gradient for the wetland. Wetland A's score for Hydrologic Functions using the 2014 rating method is moderate (6).		
Habitat	Wetland A has some potential to provide habitat due to the presence of two Cowardin classes and PHS habitats, three hydroperiods, moderate species richness, low interspersion and large downed woody debris in the wetland. However, the wetland is located in an urban industrial environment with very little accessible habitat. Additionally, the wetland is not located in proximity to any priority habitats. Wetland A's score for Habitat Functions using the 2014 rating method is low (5).		
Buffer Condition	The buffer of Wetland A onsite is largely degraded by surrounding industrial development and the presence of non-native invasive Himalayan blackberry, Canadian thistle, and poison hemlock.		

5.2 Stream Z

Two ditches, collectively known as Stream Z, were observed traversing through Wetland A. Hydrology for Stream Z originates via a culvert beneath 80th Avenue South northeast of the subject property as well as a stormwater culvert located southwest of the subject property. Stream Z flows onsite for approximately 861 feet before continuing northwest, and offsite. Stream Z is approximately 2 to 3 feet wide on average with steep, artificial banks. Substrate within the stream primarily consists of silt and ash that is likely sourced from an adjacent ash-waste pile located on the central portion of the subject property. Due to the presence of multiple features along the stream that indicate manmade conditions (plastic lining, steep cut banks, and multiple stormwater discharges), Stream Z does not appear to meet the definition of a potentially-regulated stream. Additionally, Stream Z is not identified by the City of Kent, DNR, or WDFW. Despite these findings, the Applicant has agreed to treat Stream Z as a Type 3 stream per the City of Kent approval to expedite the permitting process. A summary of Stream Z is provided in Table 4 below.

Table 4. Stream Z Summary

STREAM INFORMATION SUMMARY		
	**Feature Name**	Stream Z
	WRIA	9 – Duwamish — Green
	Local Jurisdiction	City of Kent
	DNR Stream Type	Type N
	Local Stream Rating	Type 3
	Buffer Width	50 feet
	Documented Fish Use	No documented fish use.
Location of Feature	Stream Z flows through Wetland A through the central and easter portions of the subject property.	
Connectivity	Stream Z originates offsite from a culvert beneath 80th Avenue South northeast of the subject property as well as a stormwater culvert located southwest of the subject property	
Riparian/Buffer Condition	The buffer is dominated by the non-native, invasive Himalayan blackberry and reed canary grass.	

Chapter 6. Regulatory Considerations

The site investigations in the fall of 2020 and winter of 2022 identified and delineated one potentially-regulated wetland (Wetland A) on the subject property. One potentially-regulated stream (Stream Z) was identified on the subject property, traversing through Wetland A. Additionally, three potentially-regulated wetlands (Wetlands C-D) were identified were identified offsite within 275 feet of the subject property. No other potentially-regulated wetlands, waterbodies, fish and wildlife habitat, or priority species were identified within 275 feet of the subject property during the site investigations.

6.1 Local Critical Area Requirements

KCC 11.06.580 has adopted the current wetland rating system for western Washington (Hruby, 2014). Category IV wetlands score less than 16 out of 27 points and generally provide low levels of function; they are typically more disturbed, smaller, and/or more isolated in the landscape than Category I, II, or III wetlands. Wetland A is classified as a Category III depressional wetland with a habitat score of 5 points. Current WSDOE guidance on habitat functions is accepted under KCC 11.06.020.B.1. As such, Wetland A and Offsite Wetlands B and C are subject to standard 75-foot buffers based on the low habitat function per KCC 11.06.600.B.1. Offsite Wetland D is classified as a Category IV wetland with a habitat score of 3 points each and are subject to standard 50-foot buffers based on their low habitat function. Offsite Wetland D is not anticipated to project a buffer onto the site given its distance from the site. Additionally, the buffer from Offsite Wetland C projects onto the site, however the presence of paved parking lot onsite effectively disrupts the buffer and any potential functions; as a result, the buffer should terminate at the edge of the paved parking lot. Stream Z is subject to standard 50-foot buffer per KCC 11.06.680.C. An additional 15-foot building setback is required from the edge of any wetland buffers per KCC 11.06.600.K.

Per KCC 11.06.600.B, the buffers of Category III and Category IV wetlands may be reduced to 60 and 40 feet, respectively, provided the minimization measures outlined under KCC 11.06.600.C.2 are implemented for the duration of the proposed project. These measures are outlined in Table 5 below.

Table 5. Wetland Mitigation Measures

Disturbance	Activities and Uses that Cause Disturbance	Minimization Measures
Lights	• Parking lots • Warehouses • Manufacturing • Residential	• Direct lights away from wetland
Noise	• Manufacturing • Residential	• Locate activity that generates noise away from wetland
Toxic runoff	• Parking lots • Roads • Manufacturing • Residential areas • Application of agricultural pesticides • Landscaping	• Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 feet of wetlands • Apply integrated pest management
Change in water regime	• Impermeable surfaces • Lawns • Tilling	• Infiltrate or treat, detain and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	• Residential areas	• Contain pets to prevent disturbance, i.e dog run, chicken coop, etc…
Dust	• Tilled fields	• Use best management practices to control dust

Due to the presence of 100-year floodplain areas on the subject property, a Biological Evaluation will likely also be prepared under separate cover to document proposed project effects on ESA-listed species and designated critical habitat.

6.2 State and Federal Considerations

The Federal Register published "The Navigable Waters Protection Rule: Definition of "Waters of the United States"" on April 21, 2020. The Navigable Waters Protection Rule is the second step in reviewing and revising the definition of Waters of the United States (WOTUS) as intended by the Executive Order "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States Rule." The Navigable Waters Protection Rule (NWPR) became effective June 22, 2020.

Under the final NWPR, the agencies interpret the term WOTUS to encompass: 1) the territorial seas and traditional navigable waters; 2) perennial and intermittent tributaries that contribute surface water flow to such waters; 3) certain lakes, ponds, and impoundments of jurisdictional waters; and 4) wetlands adjacent to other jurisdictional waters.

Under the final Navigable Waters Protection Rule, adjacent wetlands are subject to a different jurisdictional test than tributaries, lakes, ponds, and impoundments of jurisdictional wetlands. "Adjacent wetlands" are wetlands that: 1) abut a territorial seas or traditional navigable water, tributary, or a lake, pond, or impoundment of jurisdictional water; 2) are inundated from flooding from a territorial sea or traditional navigable water, or tributary, or from another jurisdictional lake, pond, or impoundment in a typical year; 3) are physically separated from a territorial seas, traditional navigable water, tributary, or a lake, pond, or impoundment of jurisdictional water only by a berm, bank, dune,

or similar natural feature; or 4) are physically separated from a territorial sea or traditional navigable water, a tributary, or a lake, pond or impoundment of a jurisdictional water only by an artificial dike, barrier, or similar artificial structure so long as that structure allows for a direct hydrological surface connection to the territorial seas or traditional navigable water, tributary, or lake, pond, or impoundment of a jurisdictional water in a typical year.

Wetland A, offsite Wetlands B-D, and Stream Z are likely regulated by the USACE as WOTUS through Category 4 above. The wetlands all drain northwest to the B-86 ditch west of the subject property, which drains to Mill Creek, a tributary to a traditionally navigable water. Additionally, the identified wetlands and stream are likely regulated by the WSDOE through the Revised Code of Washington (RCW) 90.48.

Chapter 7. Closure

The findings and conclusions documented in this assessment report have been prepared for specific application to the Maralco property. These findings and conclusions have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. The conclusions and recommendations presented in this assessment report are professional opinions based on an interpretation of information currently available to us and are made within the operation scope, budget, and schedule of this project. No warranty, expressed or implied, is made. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, our observations and conclusions applicable to this assessment may need to be revised wholly or in part in the future.

Wetland and OHW status and boundaries identified by SVC are based on conditions present at the time of the site visit and considered preliminary until the flagged wetland and OHW boundaries are validated by the jurisdictional agencies. Validation of the wetland and OHW boundaries and jurisdictional status of such features by the regulatory agencies provides a certification, usually written, that the wetland determination and boundaries verified are the units that will be regulated by the agencies until a specific date or until the regulations are modified. Only the regulatory agencies can provide this certification.

As wetlands and waterbodies are dynamic communities affected by both natural and human activities, changes in boundaries may be expected; therefore, delineations cannot remain valid for an indefinite period of time. Regulatory agencies typically recognize the validity of wetland and OHW delineations for a period of 5 years after completion of an assessment report. Development activities on a site five years after the completion of this assessment report may require reassessment of the wetland and OHW boundaries. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, our observations and conclusions applicable to this site may need to be revised wholly or in part.

Chapter 8. References

Anderson, P.S., S. Meyer, P. Olson, and E. Stockdale. 2016. *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State*. Publication No. 16-06-029. Final Review Draft. Shorelands and Environmental Assistance Program, Washington State Department of Ecology. Olympia, Washington.

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Appendix A – Methods and Tools

Table A1. Methods and tools used to prepare the report.

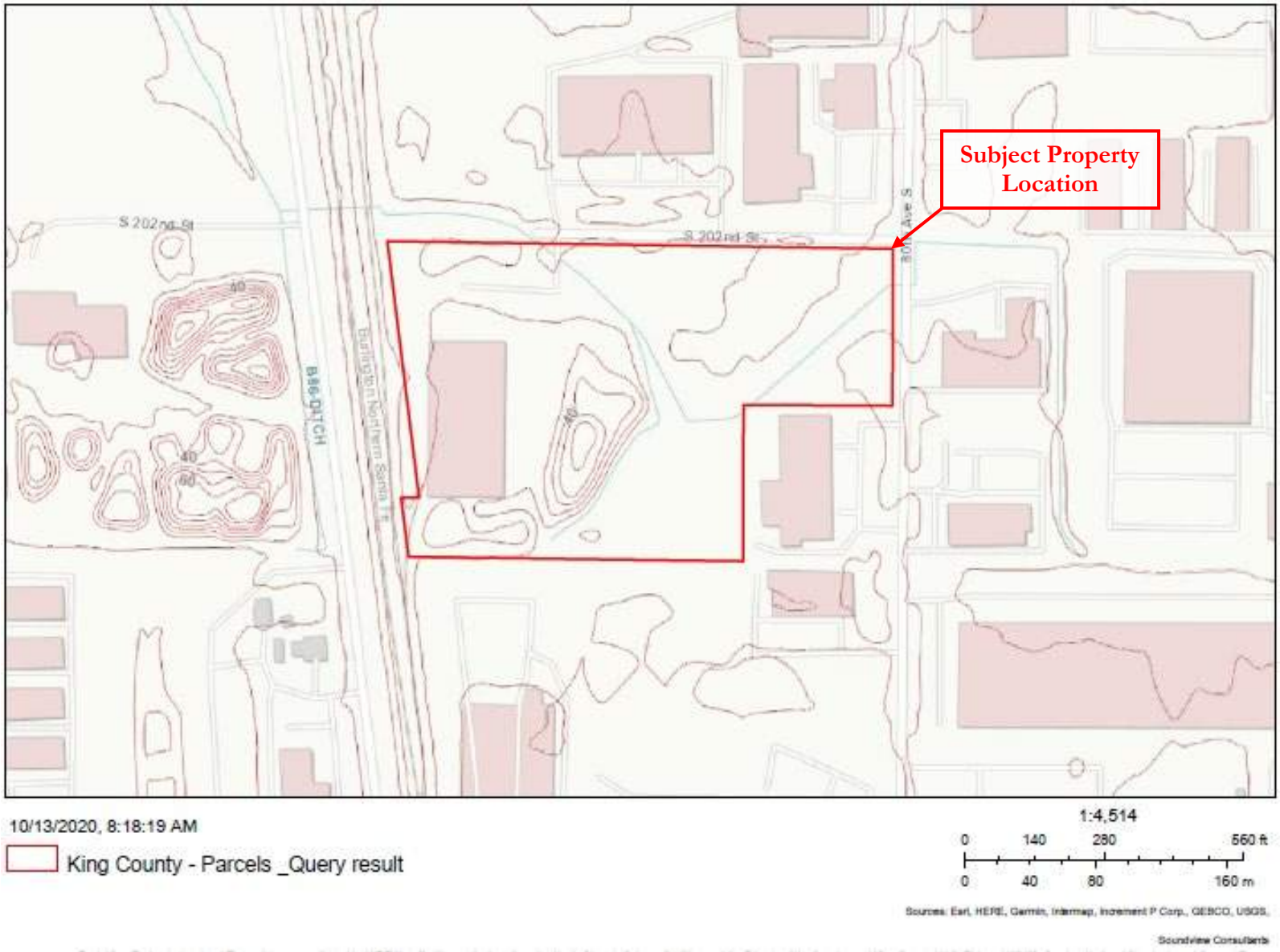
Parameter	Method or Tool	Website	Reference
Wetland Delineation	USACE 1987 Wetland Delineation Manual	http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf	**Environmental Laboratory.** 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
	Western Mountains, Valleys, and Coast Region Regional Supplement	http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp.pdf	**U.S. Army Corps of Engineers.** 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
Wetland Classification	USFWS / Cowardin Classification System	http://www.fws.gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf https://www.fgdc.gov/standards/projects/wetlands/nvcs-2013	**Cowardin**, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. Government Printing Office, Washington, D.C. **Federal Geographic Data Committee.** 2013. Classification of Wetlands and Deepwater Habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.
	Hydrogeomorphic Classification (HGM) System	http://el.erdc.usace.army.mil/wetlands/pdfs/wrpde4.pdf	**Brinson**, M. M. (1993). "A hydrogeomorphic classification for wetlands," Technical Report WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
Wetland Rating	Washington State Wetland Rating System	http://www.ecy.wa.gov/biblio/0406025.html	**Hruby, T**. 2014. Washington State Wetland Rating System for Western Washington – Revised. Publication # 04-06-029.
Wetland Indicator Status	2018 National Wetland Plant List	http://wetland-plants.usace.army.mil/	Website.
Stream Classification	Department of Natural Resources (DNR) Water Typing System	http://www.stage.dnr.wa.gov/forestpractices/watertyping/	Washington Administrative Code (WAC) 222-16-030. DNR Water typing system.
Stream Delineation	Determining the OHW	https://fortress.wa.gov/ecy/publications/documents/1606029.pdf	Anderson, P.S., S. Meyer, P. Olson, and E. Stockdale. 2016. Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State. Publication No. 16-06-029. Final Review Draft. Shorelands and Environmental Assistance Program, Washington State Department of Ecology. Olympia, Washington.
	USDA Plant Database	http://plants.usda.gov/	Website.

Parameter	Method or Tool	Website	Reference
Plant Names and Identification	Flora of the Pacific Northwest	http://www.pnwherbaria.org/florapnw.php	**Hitchcock**, C.L. & A. Cronquist, Ed. by D. Giblin, B. Ledger, P. Zika, and R. Olmstead. 2018. Flora of the Pacific Northwest, 2nd Edition. U.W. Press and Burke Museum. Seattle, Washington.
Soils Data	NRCS Soil Survey	http://websoilsurvey.nrcs.usda.gov/app/	**Snyder, Dale E., Philip S. Gale, Russell F. Pringle**. 1973. *Soil Survey of King County Area, Washington.* United States Department of Agriculture, Soil Conservation Service, in cooperation with the Washington Agricultural Experiment Station.
	Soil Color Charts		**Munsell®** Color. 2000. Munsell® Soil Color Charts. New Windsor, New York.
	Soil Data Access Hydric Soils List	https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316620.html	**Natural Resources Conservation Service.** N.d. Soil Data Access Hydric Soils List (Soil Data Access Live).
	Field Indicators of Hydric Soils	https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053171.pdf	**NRCS.** 2018. *Field Indictors of Hydric Soils in the United States, Version 8.2. L.M. Vasialas, G.W. Hurt, and C.V. Noble (eds.).* USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
Threatened and Endangered Species	Washington Natural Heritage Program	http://data-wadnr.opendata.arcgis.com/datasets/wnhp-current-element-occurrences	**Washington Natural Heritage Program**. Endangered, threatened, and sensitive plants of Washington. Washington State Department of Natural Resources, Washington Natural Heritage Program, Olympia, WA
	Washington Priority Habitats and Species	http://wdfw.wa.gov/hab/phspage.htm	**Priority Habitats and Species (PHS) Program** Map of priority habitats and species in project vicinity. Washington Department of Fish and Wildlife.
Species of Local Importance	WDFW GIS Data	http://wdfw.wa.gov/mapping/salmonscape/	Website
Report Preparation	Kent City Code	https://www.codepublishing.com/WA/Kent/	Title 11 – Environmental Management
	Historic Aerials	https://www.historicaerials.com/viewer	Website

Appendix B – Background Information

This Appendix includes a King County Contours Map (B1); NRCS Soil Survey Map (B2); King County Sensitive Areas Map (B3); City of Kent Stream and Wetland Inventory (B4); USFWS NWI Map (B5); WDFW PHS Map (B6); DNR Stream Typing Map (B7); WDFW Salmonscape Map (B8); King County FEMA Floodplain Map (B9).

Appendix B1. King County Contours Map



Appendix B2. NRCS Soil Survey Map

Appendix B3. King County Sensitive Areas Map

Appendix B4 – City of Kent Stream and Wetland Inventory

Appendix B5. USFWS NWI Map

Appendix B6. WDFW PHS Map

PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Generalized Location
Freshwater Emergent Wetland	N/A	N/A	No

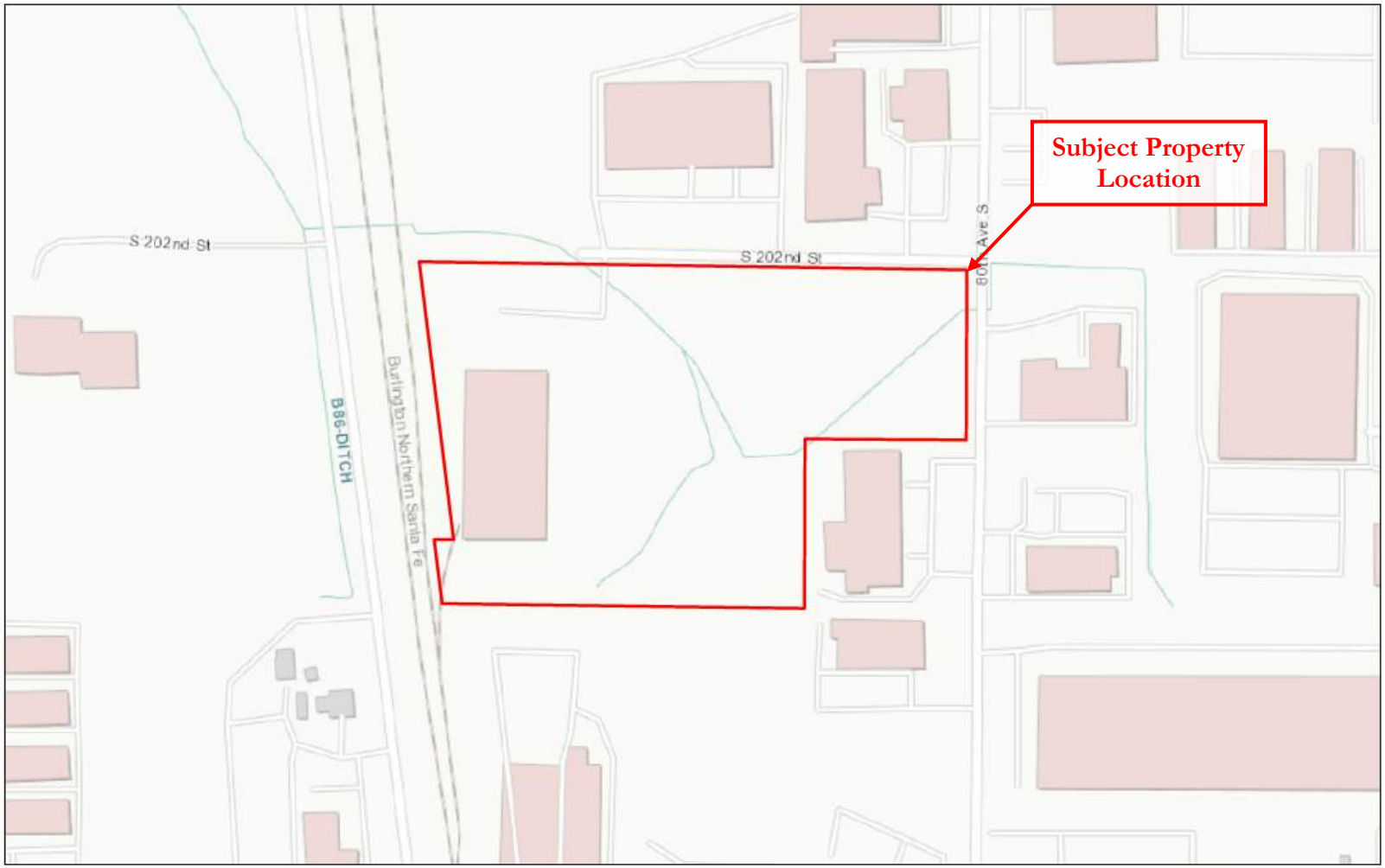
PHS Species/Habitats Details:

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: PALUSTRINE - NWI Code: PEMC
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

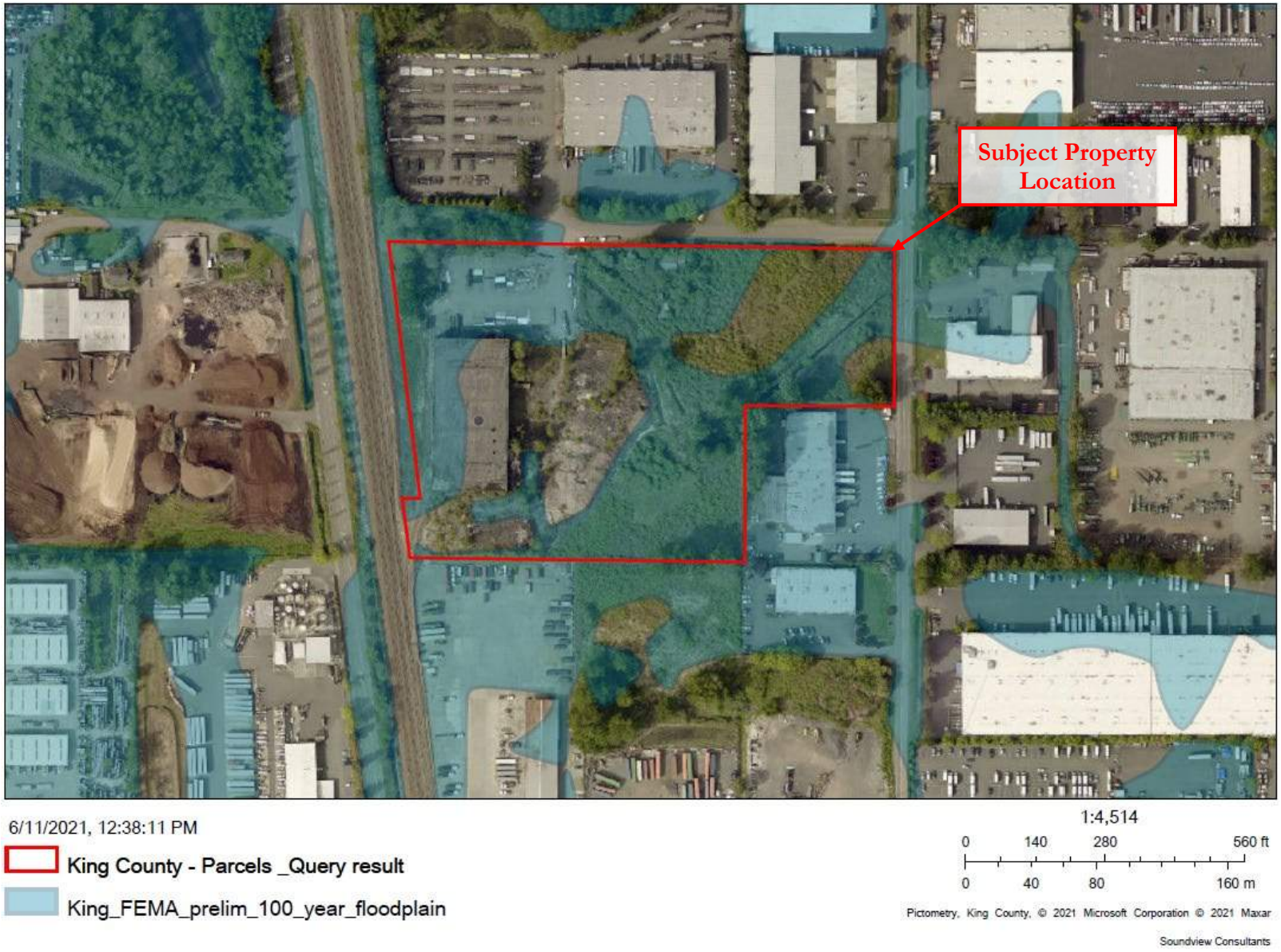
DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

Appendix B7. DNR Stream Typing Map

Appendix B8. WDFW Salmonscape Map

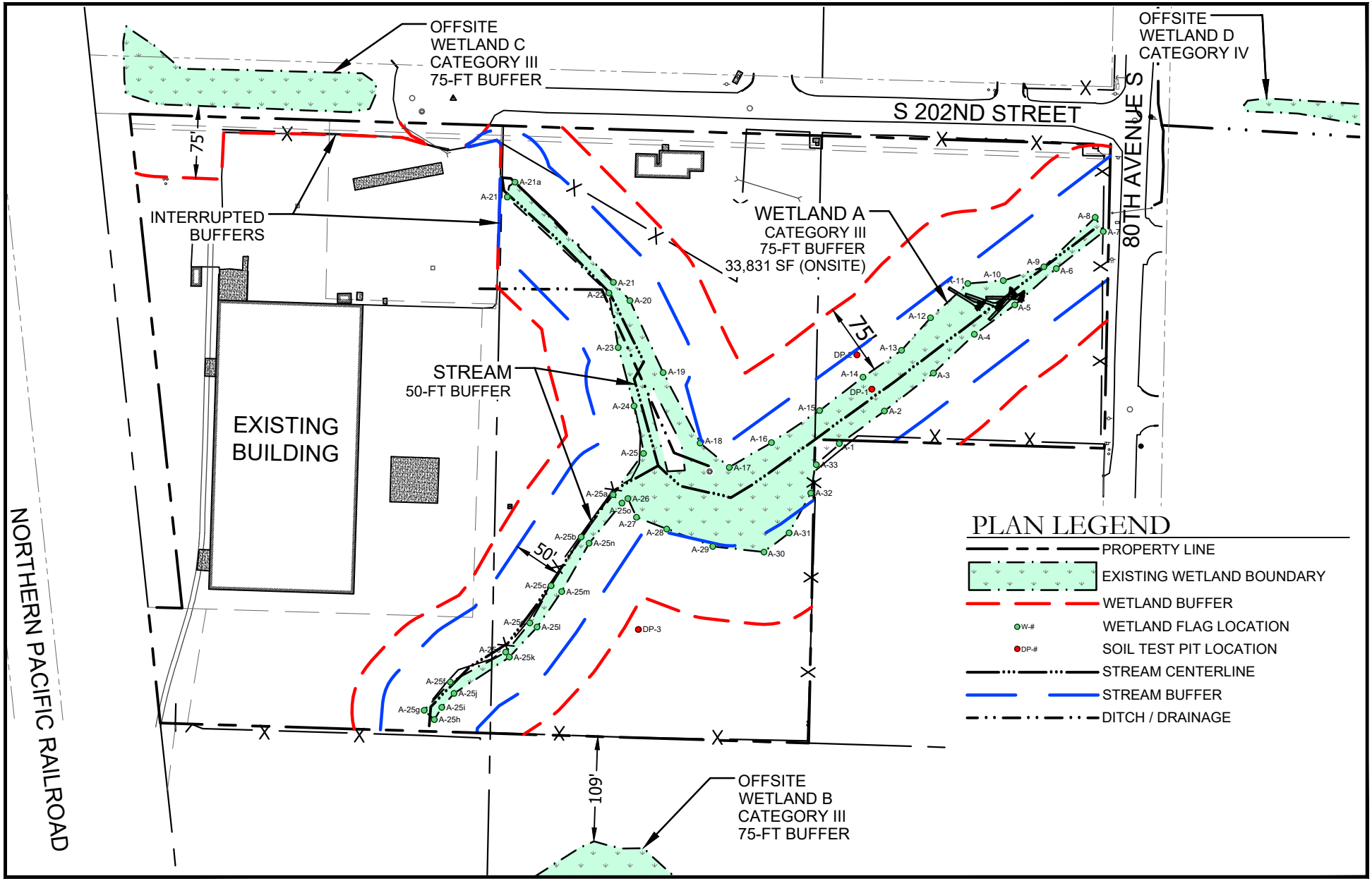


Appendix B9. King County FEMA Floodplain Map



Appendix C – Existing Conditions Exhibit

MARALCO - EXISTING CONDITIONS



0 70 140 280

GRAPHIC SCALE
1"= 140'

MARALCO
7730 202ND STREET
KENT, WA 98032

KING COUNTY
PARCEL NUMBER(S):
6315000300

Soundview Consultants LLC
Environmental Assessment • Planning • Land Use Solutions
2907 HARBORVIEW DRIVE, SUITE D
GIG HARBOR, WASHINGTON 98335
P. 253.514.8952
F. 253.514.8954
WWW.SOUNDVIEWCONSULTANTS.COM

DATE: 4/21/2022
JOB: 1582.0022
BY: MW
SCALE: AS SHOWN
SHEET: 2

S:\CURRENT\1582 Bridge Development\1582.0022 Maralco\Graphics & Maps\CAD\A - CURRENT SVC DRAWINGS\A - Current Base DWGs\1582.0022 (2022-04) base.dwg
Plotted April 21, 2022

Appendix D –Wetland Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1582.0022 - Maralco City/County: Kent / King Sampling Date: 11/10/2020

Applicant/Owner: Bridge Development Partners - Kyle Siekawitch State: WA Sampling Point: DP-1

Investigator(s): Ryan Krapp, Dustin Pringle Section, Township, Range: 1, 22 N, 4 E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): A2 Lat: 47.420323 Long: -122.23441262 Datum: WGS 84

Soil Map Unit Name: Newberg silt loam NWI classification: N / A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation _____, Soil _____, or Hydrology _____ 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 ☒ No ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks:
All three wetland criteria met. Data collected within a depressional swale in Wetland A.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30 ft)			
1. Populus balsamifera	5	Yes	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 10 ft)			
1. Phalaris arundinacea	90	Yes	FACW
2. Polygonum pensylvanicum	5	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:
Hydrophytic vegetation criteria met through the Dominance Test.

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 2/2	100	-	-	-	-	SaLo	Sandy loam
2 - 14	10YR 4/1	95	5YR 3/4	5	C	M	SaLo	Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): --

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through hydric soil indicators A11 and F3.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 13

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 11

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Wetland hydrology criteria met directly through primary indicator A3. It should be noted that standing water was observed in the lower portions of the ditch adjacent to DP-1 following precipitation events.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1582.0022 - Maralco City/County: Kent / King Sampling Date: 11/10/2020

Applicant/Owner: Bridge Development Partners - Kyle Siekawitch State: WA Sampling Point: DP-2

Investigator(s): Ryan Krapp, Dustin Pringle Section, Township, Range: 1, 22 N, 4 E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 3

Subregion (LRR): A2 Lat: 47.420421 Long: -122.23449499 Datum: WGS 84

Soil Map Unit Name: Newberg silt loam NWI classification: N / A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation _____, Soil _____, or Hydrology _____ 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 ☒ No ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met, only hydrophytic vegetation observed. Data collected on hillslope north of Wetland A.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30 ft)			
1. Rubus armeniacus	90	Yes	FAC
2.			
3.			
4.			
5.			
	90	= Total Cover	
Herb Stratum (Plot size: 10 ft)			
1. Pteridium aquilinum	4	Yes	FACU
2. Athyrium cyclosorum	2	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	6	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 94

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:
Hydrophytic vegetation criteria met through the Dominance Test.

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/1	100	-	-	-	-	SaLo	Sandy loam
2 - 14	10YR 3/2	100	-	-	-	-	SaLo	Sandy loam
14 - 18	10YR 4/1	100	-	-	-	-	Sand	Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): --

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met. First two layers of soil are not dark enough to be considered for indicator A12. Additionally, soils from 14 to 18 inches lack the redox concentrations necessary to be considered depleted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No wetland hydrology criteria met.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 1582.0022 - Maralco City/County: Kent / King Sampling Date: 11/10/2020

Applicant/Owner: Bridge Development Partners - Kyle Siekawitch State: WA Sampling Point: DP-3

Investigator(s): Ryan Krapp, Dustin Pringle Section, Township, Range: 1, 22 N, 4 E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0

Subregion (LRR): A2 Lat: 47.419645 Long: -122.23535373 Datum: WGS 84

Soil Map Unit Name: Renton silt loam NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation _____, Soil _____, or Hydrology _____ 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 ☒ No ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks:
Not all three wetland criteria met, only hydrophytic vegetation observed. Data collected on upland terrace south of Wetland A.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 10 ft)			
1. Agrostis capillaris	70	Yes	FAC
2. Conium maculatum	20	Yes	FAC
3. Cirsium arvense	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:
Hydrophytic vegetation criteria met through the Dominance Test.

SOIL

Sampling Point: DP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 9	10YR 3/1	100	-	-	-	-	SaLo	Sandy loam
9 - 16	10YR 3/2	100	-	-	-	-	SaLo	Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): --

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): None

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No wetland hydrology criteria met.

Appendix E – Wetland Rating Forms

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): A Date of site visit: 11/10/20

Rated by Ryan Krapp Trained by Ecology? ✔ Yes ___No Date of training 10/18

HGM Class used for rating Depressional Wetland 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 ESRI ArcGIS

OVERALL WETLAND CATEGORY ____ III ____ (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

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	L	L	L	
Landscape Potential	H	H	L	
Value	H	M	L	**TOTAL**
Score Based on Ratings	7	6	3	16

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	N/A

Wetland name or number 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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number A

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 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.*

Wetland name or number A

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	2
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 > ½ 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	0
Total for D 1 Add the points in the boxes above	5

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **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_____ Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **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: X **2-4 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland:

Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	2
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*

Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	0
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	

D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*

The area of the basin is less than 10 times the area of the unit	points = 5	3
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	

Total for D 4	Add the points in the boxes above	5

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1 No = 0	1
Total for D 5	Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **3 = H** ___ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.*

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):

- Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2
- Surface flooding problems are in a sub-basin farther down-gradient. points = 1

Flooding from groundwater is an issue in the sub-basin. points = 1

The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0

_____

There are no problems with flooding downstream of the wetland. points = 0

1

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0 — 0

Total for D 6	Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____Aquatic bed	4 structures or more: points = 4
__x__Emergent	3 structures: points = 2
____Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
__x__Forested (areas where trees have > 30% cover)	1 structure: points = 0

If the unit has a Forested class, check if:

__x__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

2

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

____Permanently flooded or inundated	4 or more types present: points = 3
__x__Seasonally flooded or inundated	3 types present: points = 2
____Occasionally flooded or inundated	2 types present: points = 1
__x__Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
____Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

1

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

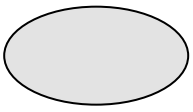
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted: > 19 species	points = 2
5 - 19 species	points = 1
< 5 species	points = 0

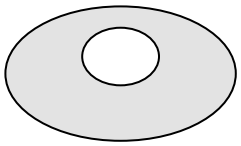
1

H 1.4. Interspersion of habitats

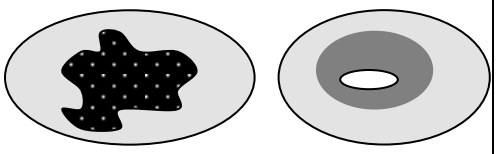
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points

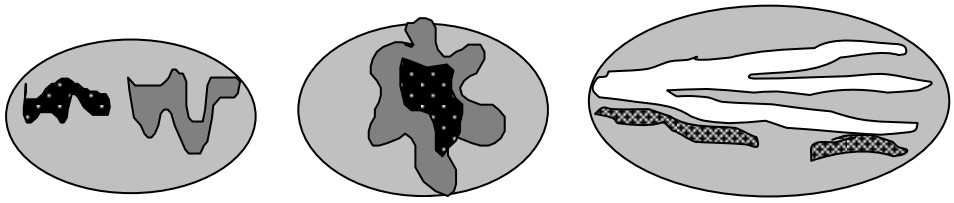


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



1

Wetland name or number A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* __x__Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	6

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** _X_**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* [0.73] % undisturbed habitat **+** [(% moderate and low intensity land uses) [0] /2] **=** 0.73 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [3.07] % undisturbed habitat **+** [(% moderate and low intensity land uses) [2] /2] **=** 4.07 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	0
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-2

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** _X_**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If score is:___**2 = H** ___**1 = M** _X_**0 = L** *Record the rating on the first page*

Wetland name or number A

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to **SC 1.1** ☒ No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐ Yes = **Category I** ☐ No = **Category II**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to **SC 3.3** ☒ No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to **SC 3.3** ☒ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number A

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

- **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.
- **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐Yes **= Category I** ☒No **= Not a forested wetland for this section**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

- The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks
- The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)*

☐Yes – Go to **SC 5.1** ☒No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

- The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).
- At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.
- The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2)

☐Yes = **Category I** ☐No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

- Long Beach Peninsula: Lands west of SR 103
- Grayland-Westport: Lands west of SR 105
- Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐Yes – Go to **SC 6.1** ☒No = **not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐Yes = **Category I** ☐No – Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

☐Yes = **Category II** ☐No – Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐Yes = **Category III** ☐No = **Category IV**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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Wetland name or number B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): B Date of site visit: 03/19&11/20

Rated by Ryan Krapp Trained by Ecology? ✔ Yes ___No Date of training 10/18

HGM Class used for rating Depressional Wetland 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 ESRI ArcGIS

OVERALL WETLAND CATEGORY ____ III ____ (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

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	L	L	L	
Landscape Potential	H	H	L	
Value	H	M	L	**TOTAL**
Score Based on Ratings	7	6	3	16

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	N/A

Wetland name or number B

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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number B

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 B

☒ 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.*

Wetland name or number B

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	2
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 > ½ 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	0
Total for D 1 Add the points in the boxes above	5

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **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_____ Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **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: X **2-4 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number B

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: **2**

- Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4
- Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2
- Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1
- Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* **0**

- Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7
- Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5
- Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3
- The wetland is a "headwater" wetland points = 3
- Wetland is flat but has small depressions on the surface that trap water points = 1
- Marks of ponding less than 0.5 ft (6 in) points = 0

D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* **3**

- The area of the basin is less than 10 times the area of the unit points = 5
- The area of the basin is 10 to 100 times the area of the unit points = 3
- The area of the basin is more than 100 times the area of the unit points = 0
- Entire wetland is in the Flats class points = 5

Total for D 4	Add the points in the boxes above	5

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1 No = 0	1
Total for D 5	Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **3 = H** ___ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* **1**

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):

- Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2
- Surface flooding problems are in a sub-basin farther down-gradient. points = 1

Flooding from groundwater is an issue in the sub-basin. points = 1

The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0

_____

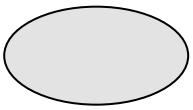
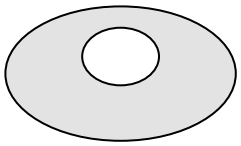
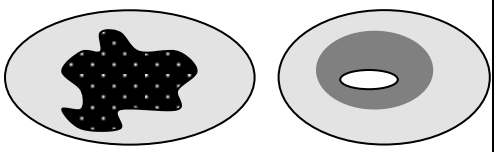
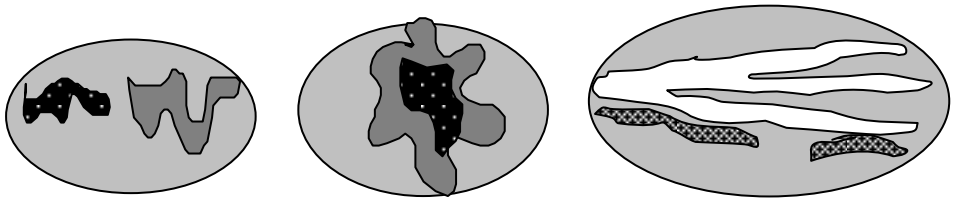
There are no problems with flooding downstream of the wetland. points = 0

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0 **0**

Total for D 6	Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number B

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed — 4 structures or more: points = 4 __x__Emergent — 3 structures: points = 2 __x__Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 ____Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	1
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated — 4 or more types present: points = 3 ____Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 __x__Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	0
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	2

Wetland name or number B

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* __×__Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	5

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** __X__**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* [0.74] % undisturbed habitat **+** [(% moderate and low intensity land uses) [0] /2] **=** 0.74 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [3.98] % undisturbed habitat **+** [(% moderate and low intensity land uses) [2.66] /2] **=** 5.3100000000000 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	0
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-2

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** __X__**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 × Site does not meet any of the criteria above points = 0	0

Rating of Value If score is:___**2 = H** ___**1 = M** __X__**0 = L** *Record the rating on the first page*

Wetland name or number B

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number B

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to **SC 1.1** ☒ No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐ Yes = **Category I** ☐ No = **Category II**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to **SC 3.3** ☒ No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to **SC 3.3** ☒ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number B

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

- **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.
- **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐Yes **= Category I** ☒No **= Not a forested wetland for this section**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

- The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks
- The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)*

☐Yes – Go to **SC 5.1** ☒No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

- The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).
- At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.
- The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2)

☐Yes = **Category I** ☐No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

- Long Beach Peninsula: Lands west of SR 103
- Grayland-Westport: Lands west of SR 105
- Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐Yes – Go to **SC 6.1** ☒No = **not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐Yes = **Category I** ☐No – Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

☐Yes = **Category II** ☐No – Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐Yes = **Category III** ☐No = **Category IV**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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Wetland name or number C

RATING SUMMARY – Western Washington

Name of wetland (or ID #): C Date of site visit: 11/10/20

Rated by Ryan Krapp Trained by Ecology? ✔ Yes ___No Date of training 10/18

HGM Class used for rating Depressional Wetland 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 ESRI ArcGIS

OVERALL WETLAND CATEGORY ____ III ____ (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

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	L	L	L	
Landscape Potential	H	H	L	
Value	H	M	L	**TOTAL**
Score Based on Ratings	7	6	3	16

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	N/A

Wetland name or number C

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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number C

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 C

☒ 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.*

Wetland name or number C

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 > ½ 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	0
Total for D 1 Add the points in the boxes above	4

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **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_____ Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **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: X **2-4 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number C

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	3
Total for D 4 Add the points in the boxes above	5

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

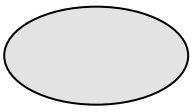
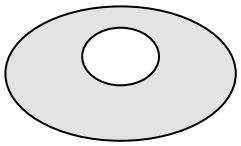
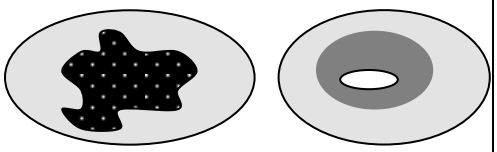
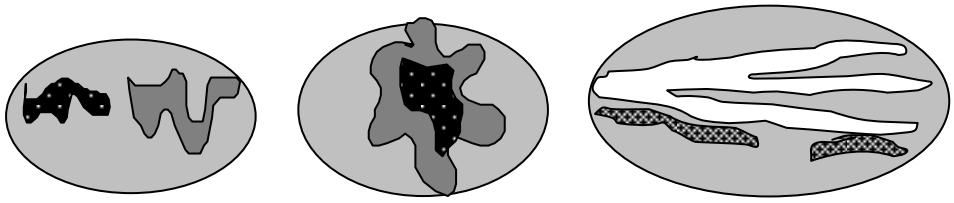
D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **3 = H** ___ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 _____ There are no problems with flooding downstream of the wetland. points = 0	1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number C

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed — 4 structures or more: points = 4 __x__Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 ____Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated — 4 or more types present: points = 3 ____Seasonally flooded or inundated — 3 types present: points = 2 __x__Occasionally flooded or inundated — 2 types present: points = 1 __x__Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

Wetland name or number C

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	2

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** X **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* [0.00] % undisturbed habitat **+** [(% moderate and low intensity land uses) [0.10] /2] **=** 0.05 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [3.98] % undisturbed habitat **+** [(% moderate and low intensity land uses) [2.66] /2] **=** 5.3100000000000 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	0
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-2

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** X **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 × Site does not meet any of the criteria above points = 0	0

Rating of Value If score is:___**2 = H** ___**1 = M** X **0 = L** *Record the rating on the first page*

Wetland name or number C

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number C

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to **SC 1.1** ☒ No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐ Yes = **Category I** ☐ No = **Category II**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to **SC 3.3** ☒ No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to **SC 3.3** ☒ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number C

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

- **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.
- **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐Yes **= Category I** ☒No **= Not a forested wetland for this section**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

- The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks
- The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)*

☐Yes – Go to **SC 5.1** ☒No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

- The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).
- At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.
- The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2)

☐Yes = **Category I** ☐No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

- Long Beach Peninsula: Lands west of SR 103
- Grayland-Westport: Lands west of SR 105
- Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐Yes – Go to **SC 6.1** ☒No = **not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐Yes = **Category I** ☐No – Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

☐Yes = **Category II** ☐No – Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐Yes = **Category III** ☐No = **Category IV**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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Wetland name or number D

RATING SUMMARY – Western Washington

Name of wetland (or ID #): D Date of site visit: 11/10/20

Rated by Ryan Krapp Trained by Ecology? ✔ Yes ___No Date of training 10/18

HGM Class used for rating Depressional Wetland 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 ESRI ArcGIS

OVERALL WETLAND CATEGORY IV (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

__X__**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	L	L	L	
Landscape Potential	M	H	L	
Value	H	M	L	**TOTAL**
Score Based on Ratings	6	6	3	15

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	N/A

Wetland name or number D

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	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number D

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 D

☒ 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.*

Wetland name or number D

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 > ½ 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	0
Total for D 1 Add the points in the boxes above	4

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **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_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 or 4 = H** X **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: X **2-4 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number D

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	0
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	3
Total for D 4 Add the points in the boxes above	3

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

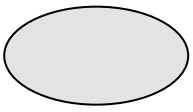
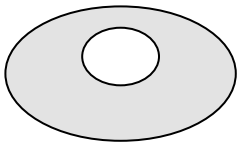
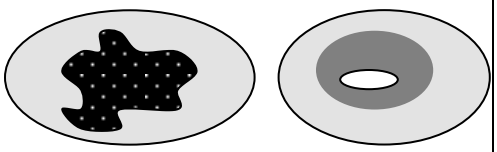
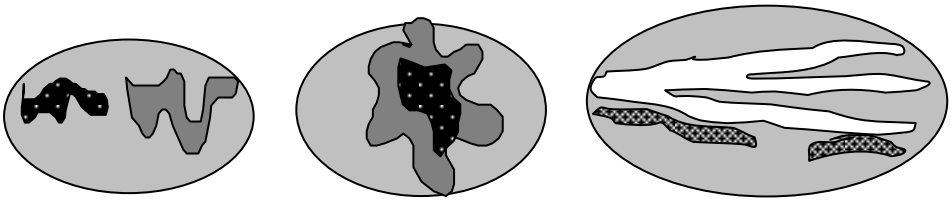
D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **3 = H** ___ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 _____ There are no problems with flooding downstream of the wetland. points = 0	1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number D

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed — 4 structures or more: points = 4 __x__Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 ____Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated — 4 or more types present: points = 3 ____Seasonally flooded or inundated — 3 types present: points = 2 __x__Occasionally flooded or inundated — 2 types present: points = 1 __x__Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

Wetland name or number D

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	2

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** X **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* [0.7] % undisturbed habitat **+** [(% moderate and low intensity land uses) [0.00] /2] **=** 0.7 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* [3.98] % undisturbed habitat **+** [(% moderate and low intensity land uses) [2.66] /2] **=** 5.3100000000000 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	0
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-2

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** X **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If score is:___**2 = H** ___**1 = M** X **0 = L** *Record the rating on the first page*

Wetland name or number D

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number D

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to **SC 1.1** ☒ No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐ Yes = **Category I** ☐ No = **Category II**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes **– Go to SC 2.2** ☒ No **– Go to SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes **= Category I** ☒ No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒ No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes **= Category I** ☒ No **= Not a WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to **SC 3.3** ☒ No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to **SC 3.3** ☒ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No **= Is not a bog**	

Wetland name or number D

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

- **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.
- **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐Yes **= Category I** ☒No **= Not a forested wetland for this section**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

- The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks
- The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)*

☐Yes – Go to **SC 5.1** ☒No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

- The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).
- At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.
- The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2)

☐Yes = **Category I** ☐No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

- Long Beach Peninsula: Lands west of SR 103
- Grayland-Westport: Lands west of SR 105
- Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐Yes – Go to **SC 6.1** ☒No = **not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐Yes = **Category I** ☐No – Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

☐Yes = **Category II** ☐No – Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐Yes = **Category III** ☐No = **Category IV**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

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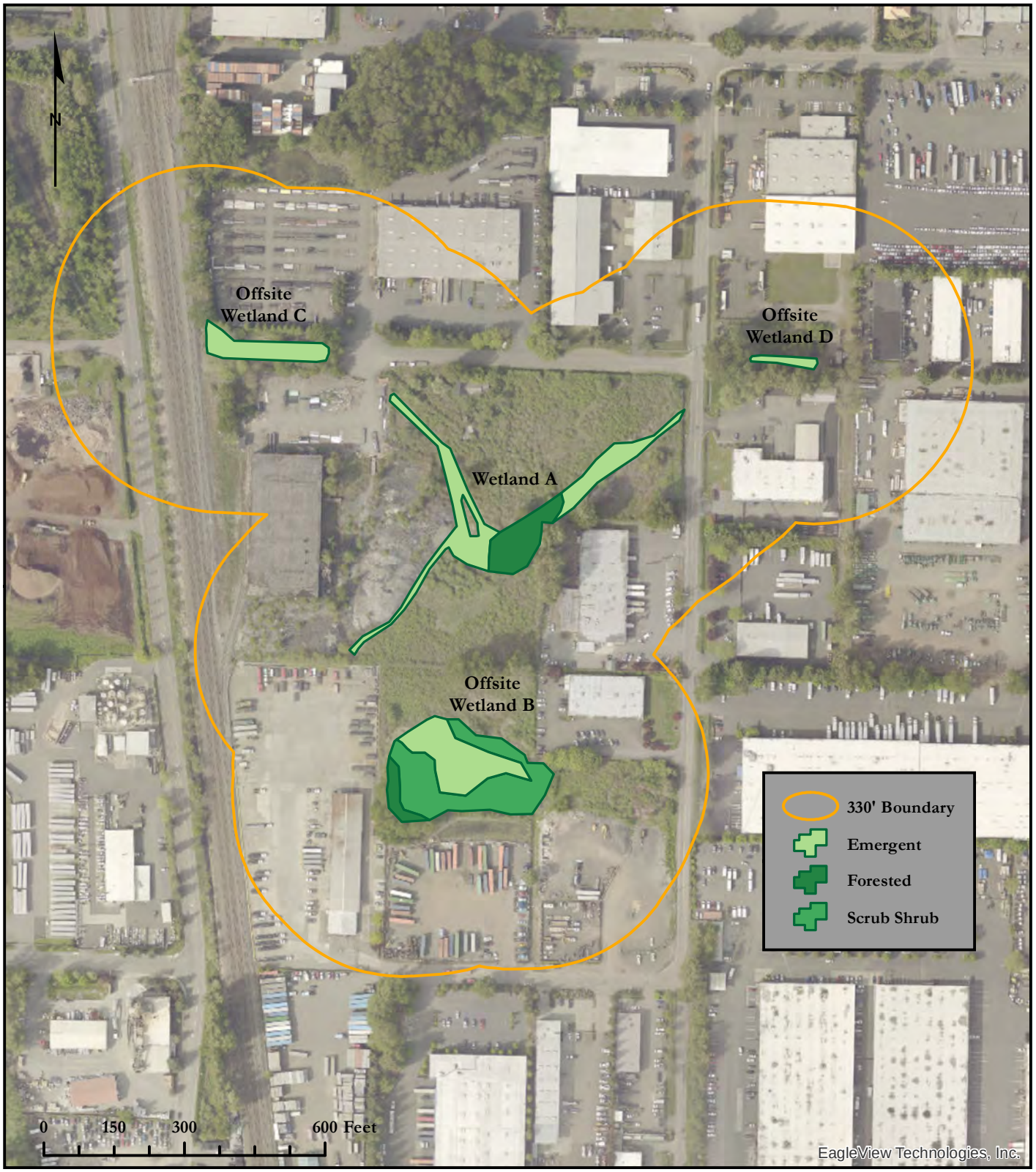
Appendix F – Wetland Rating Figures

MALARCO - COWARDIN



Soundview Consultants LLC
Environmental Assessment • Planning • Land Use Solutions
2907 Harborview Dr., Suite D, Gig Harbor, WA 98335
Phone: (253) 514-8952 Fax: (253) 514-8954
www.soundviewconsultants.com

MALARCO

7421 S 202ND STREET
KENT, WA 98032

KING COUNTY PARCEL NUMBER:
631500-0020

DATE:	1/25/2022
JOB:	1582.0022
BY:	RJK
SCALE:	1 " = 300 '
FIGURE NO.	1 of 5

MALARCO - HYDROPERIOD

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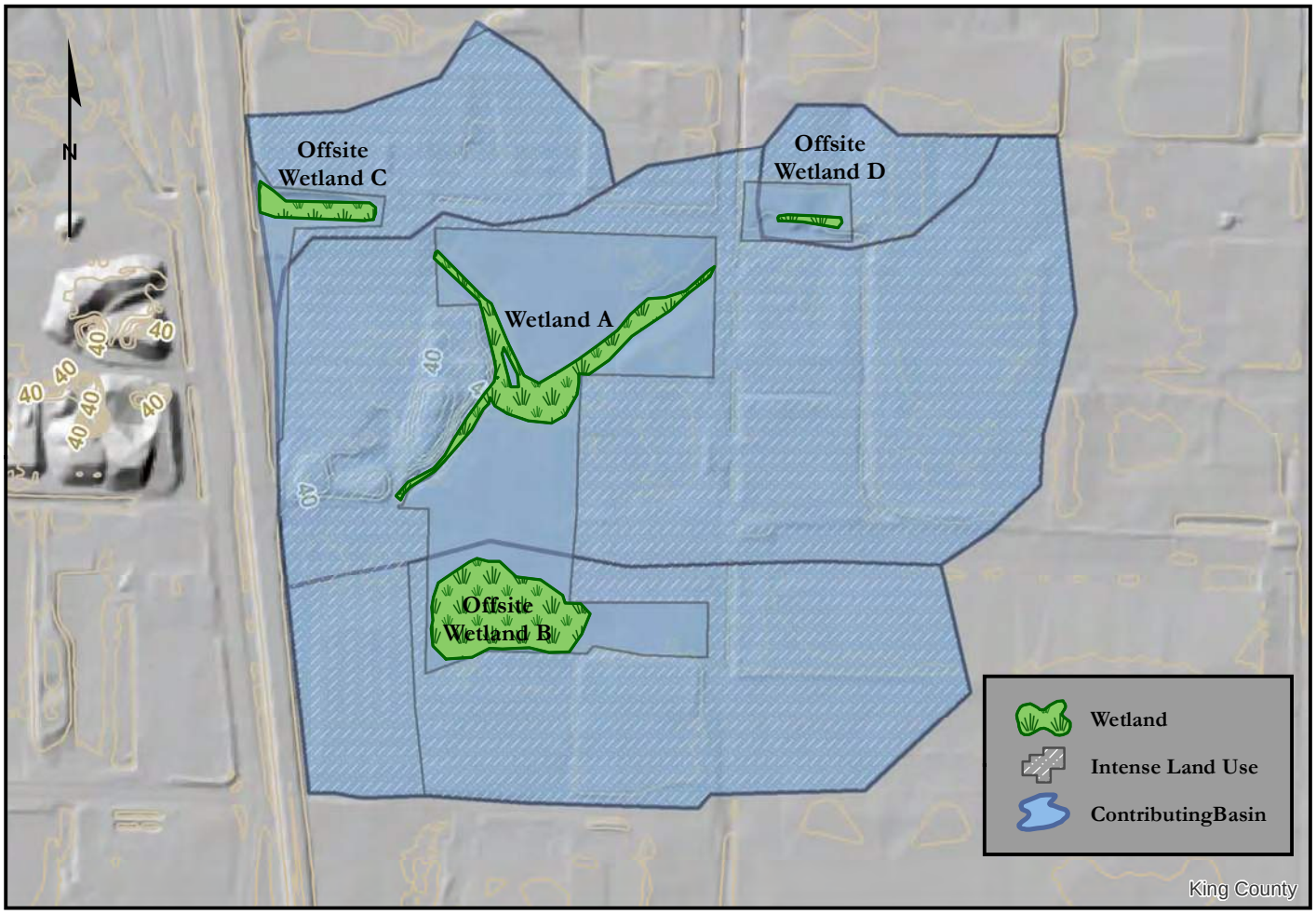
MALARCO

7421 S 202ND STREET
KENT, WA 98032

KING COUNTY PARCEL NUMBER:
631500-0020

DATE:	1/25/2022
JOB:	1582.0022
BY:	RJK/JML
SCALE:	1 " = 250 '
FIGURE NO.	2 of 5

MALARCO - CONTRIBUTING BASIN



D.4.0 / D.4.3			D.4.0 / D.4.3		
	Area of Contributing Basin (SF)	1,374,999		Area of Contributing Basin (SF)	254,425
	Area of Wetland A (SF)	41,319		Area of Wetland C (SF)	11,177
	Percent of Wetland A within Contributing Basin	**3.005%**		**Percent of Wetland C within Contributing Basin**	**4.393%**
	Area of Intensive Human Land Uses (SF)	1,192,788		Area of Intensive Human Land Uses (SF)	222,921
	Percent of Intensive Human Land Use within Contributing Basin for Wetland A	**87%**		**Percent of Intensive Human Land Use within Contributing Basin for Wetland C**	**88%**
	Area of Contributing Basin (SF)	759,216		Area of Contributing Basin (SF)	122,631
	Area of Wetland B (SF)	55,983		Area of Wetland D (SF)	2,332
	Percent of Wetland B within Contributing Basin	**7.374%**		**Percent of Wetland D within Contributing Basin**	**1.902%**
	Area of Intensive Human Land Uses (SF)	516,615		Area of Intensive Human Land Uses (SF)	96,540
	Percent of Intensive Human Land Use within Contributing Basin for Wetland B	**68%**		**Percent of Intensive Human Land Use within Contributing Basin for Wetland D**	**79%**

0 200 400 800 Feet

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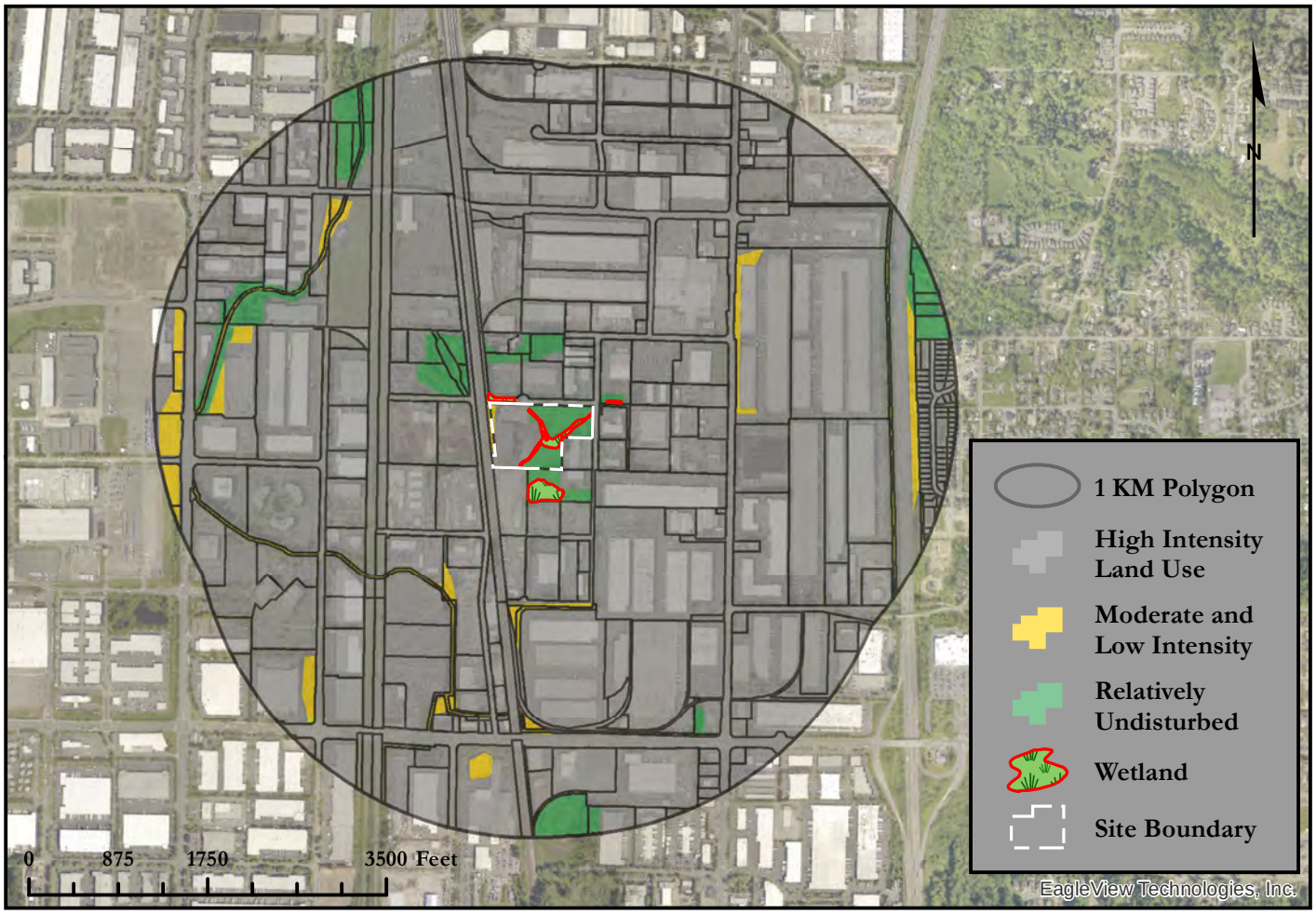
MALARCO

7421 S 202ND STREET
KENT, WA 98032

KING COUNTY PARCEL NUMBER:
631500-0020

DATE: 1/25/2022
JOB: 1582.0022
BY: RJK
SCALE: 1 " = 400 '
FIGURE NO. 3of 5

MALARCO - HABITAT



H.2.0 Wetlands A & B		
H.2.1		
	Abutting Undisturbed Habitat	0.74%
	Abutting Moderate & Low Intensity Land Uses	0.00%
	Accessible Habitat	**0.74%**
H.2.2		
	Undisturbed Habitat	3.98%
	Moderate & Low Intensity Land Uses	2.66%
	Undisturbed Habitat in 1 KM Polygon	**5.31%**
H.2.3		
	High Intensity Land Use in 1 KM Polygon	**93.36%**

H.2.0 Wetland C		
H.2.1		
	Abutting Undisturbed Habitat	0.00%
	Abutting Moderate & Low Intensity Land Uses	0.10%
	Accessible Habitat	**0.05%**
H.2.2		
	Undisturbed Habitat	3.98%
	Moderate & Low Intensity Land Uses	2.66%
	Undisturbed Habitat in 1 KM Polygon	**5.31%**
H.2.3		
	High Intensity Land Use in 1 KM Polygon	**93.36%**

H.2.0 Wetland D		
H.2.1		
	Abutting Undisturbed Habitat	0.07%
	Abutting Moderate & Low Intensity Land Uses	0.00%
	Accessible Habitat	**0.07%**
H.2.2		
	Undisturbed Habitat	3.98%
	Moderate & Low Intensity Land Uses	2.66%
	Undisturbed Habitat in 1 KM Polygon	**5.31%**
H.2.3		
	High Intensity Land Use in 1 KM Polygon	**93.36%**

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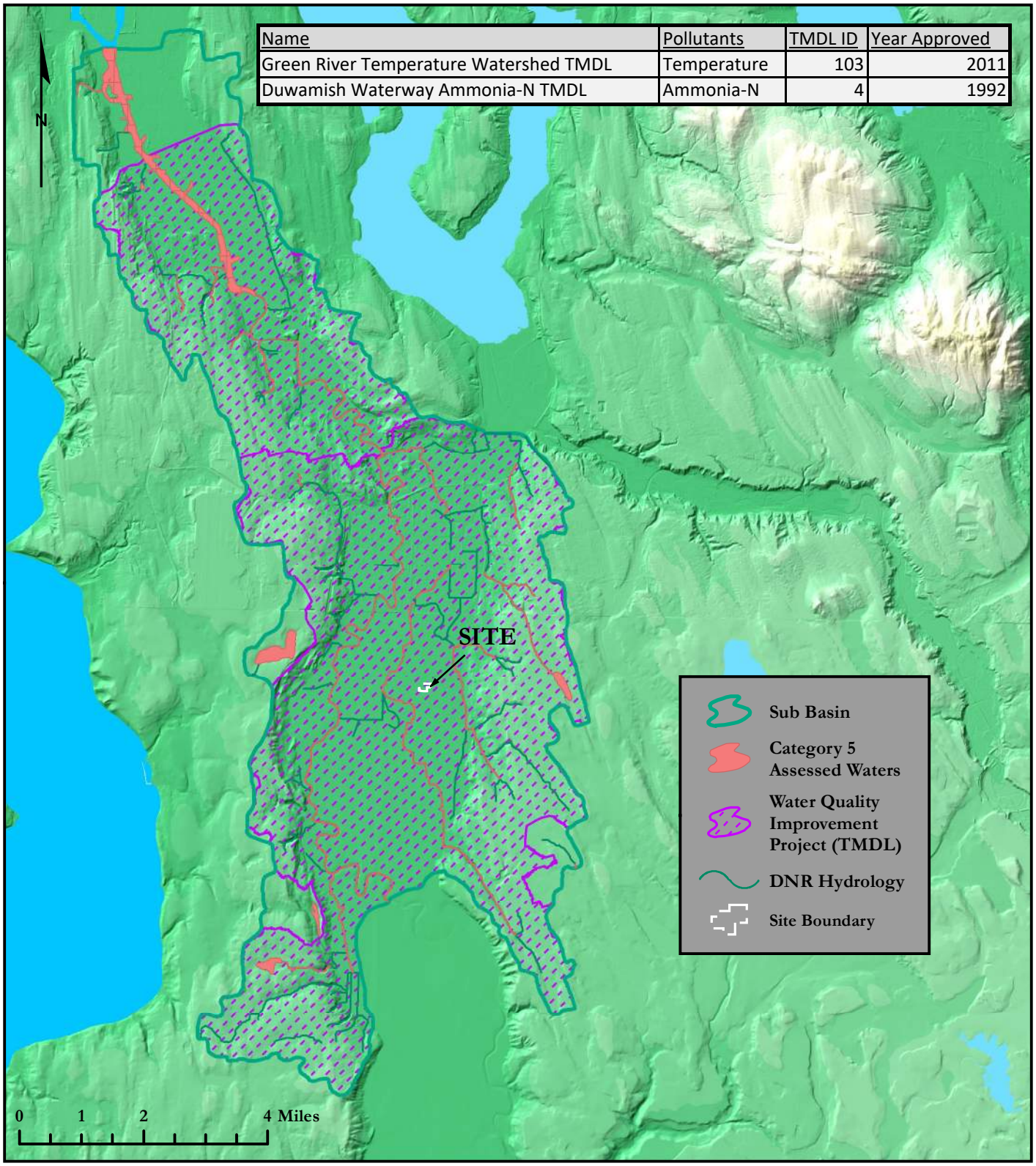
MALARCO

7421 S 202ND STREET
KENT, WA 98032

KING COUNTY PARCEL NUMBER:
631500-0020

DATE: 1/25/2022
JOB: 1582.0022
BY: RJK
SCALE: 1 " = 1,750'
FIGURE NO. 4 of 5

MALARCO - 303(D) MAP



Soundview Consultants LLC
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MALARCO

7421 S 202ND STREET
KENT, WA 98032

KING COUNTY PARCEL NUMBER:
631500-0020

DATE:	6/9/2021
JOB:	1582.0022
BY:	RJK
SCALE:	1 " = 2 mi
FIGURE NO.	5 of 5

Appendix G – Site Photographs

Typical Undeveloped Conditions Onsite

Typical Upland, Developed Conditions Onsite

Southern Portion of Stream Z Facing South Adjacent to Ash Waste Pile

Southern Portion of Stream Z Facing West

Stream Z on the Northwest Portion of the Site (With Plastic Lining) Facing South

Wetland A Facing Northeast

View of Plastic Lining observed along Stream Z

View of Plastic Lining observed along Stream Z Bank

View of Offsite Roadside Ditch Northeast of Site

Appendix H – Qualifications

All field inspections, jurisdictional wetland boundary delineations, habitat assessments, and supporting documentation, including this ***Wetland and Fish and Wildlife Habitat Assessment Report*** prepared for the ***Maralco*** project were prepared by, or under the direction of, Jon Pickett of SVC. In addition, the site investigations were completed primarily by Ryan Krapp and report preparation was completed by Morgan Kentch.

Jon Pickett

Associate Principal
Professional Experience: 10+ years

Jon Pickett is an Associate Principal and Senior Scientist with a diverse background in environmental and shoreline compliance and permitting, wetland and stream ecology, fish and wildlife biology, mitigation compliance and design, and environmental planning and land use due diligence. Jon oversees a wide range of large-scale industrial, commercial, and multi-family residential projects throughout Western Washington, providing environmental permitting and regulatory compliance assistance for land use entitlement projects from feasibility through mitigation compliance. Jon performs wetland, stream, and shoreline delineations and fish & wildlife habitat assessments; conducts code and regulation analysis and review; prepares reports and permit applications and documents; provides environmental compliance recommendation; and provides restoration and mitigation design.

Jon earned a Bachelor of Science degree in Natural Resource Sciences from Washington State University and Bachelor of Science and Minor in Forestry from Washington State University. Jon has received 40-hour wetland delineation training (Western Mountains, Valleys, & Coast and Arid West Regional Supplements) and regularly performs wetland, stream, and shoreline delineations. Jon is a Whatcom County Qualified Wetland Specialist and Wildlife Biologist and is a Pierce County Qualified Wetland Specialist. He has been formally trained by WSDOE in the use of the Washington State Wetland Rating System 2014, How to Determine the Ordinary High-Water Mark (Freshwater and Marine), Using Field Indicators for Hydric Soils, and the Using the Credit-Debit Method for Estimating Mitigation Needs.

Ryan Krapp

Environmental Scientist / Field Lead
Professional Experience: 10+ years

Ryan Krapp is an Environmental Scientist and Field Lead with a background in conducting wetland delineations, habitat assessments, botanical surveys, avian surveys, threatened & endangered species surveys, and fisheries studies. He has considerable experience in production of Environmental Assessments and Biological Assessments and Evaluations under NEPA guidelines for projects regulated by the U.S. Forest Service, U.S. Army Corps of Engineers, and Bureau of Indian Affairs as well as leading Section 7 ESA consultation with the U.S. Fish and Wildlife Service. Project planning, permitting, and compliance are all part of his professional experiences and practices at SVC.

Ryan has managed environmental investigation projects including wetlands, streams, and critical habitats data collection on large pipeline corridors, overhead electrical transmission corridors, and oil/natural gas drilling development. He has extensive experience in utilizing GIS to collect, manage,

and analyze large volumes of spatial and temporal field data to aide in project management, monitoring, analysis, and mapping. In addition, he is a FAA trained recreational pilot and a PADI certified SCUBA diver with fresh and saltwater diving experience.

Morgan Kentch

Staff Scientist
Professional Experience: 2 years

Morgan Kentch is a Staff Scientist with a background concentrating in marine biology and aquatic ecosystems in Washington State. Morgan earned her Bachelor of Science degree in Biology with marine emphasis from Western Washington University, Bellingham. There she received extensive, hands-on experience working in lab and field settings, and studying local marine and aquatic organisms and ecosystems. One of Morgan's more exceptional projects included monitoring a stream restoration project for the City of Bellingham by assessing stream habitat and biotic quality, collecting data, identifying local stream invertebrates, and writing a report outlining analyzed results. Morgan also participated in a study abroad program in La Paz, Baja California Sur, where she led an independent study on the effects of temperature on bioluminescent organisms in a local bay. Through this project, she demonstrated a strong understanding of collecting background research, following the scientific method, conducting scientific research, and writing a scientific paper formatted for journal submission.

Morgan currently assists in wetland, stream, and shoreline delineations and fish and wildlife habitat assessments; conducts environmental code analysis; and prepares environmental assessment and mitigation reports, biological evaluations, and permit applications to support clients through the regulatory and planning process for various land use projects. She has received wetland delineation training (Western Mtns, Valleys, & Coast and Arid West Regional Supplement), and has received formal training through the Washington State Department of Ecology and Coastal Training Program in Using the 2014 Wetland Rating System, and How to Conduct a Forage Fish Survey.

MITIGATION PLAN

MARALCO

REVISED JANUARY 2023

APRIL 2022

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

MITIGATION PLAN
MARALCO

REVISED JANUARY 26, 2023

APRIL 1, 2022

PROJECT LOCATION
7730 SOUTH 202ND STREET
KENT, WASHINGTON 98032

PREPARED FOR

BRIDGE DEVELOPMENT PARTNERS, LLC
10655 NORTHEAST 4TH STREET, SUITE 500
BELLEVUE, WASHINGTON 98004

PREPARED BY
SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE
GIG HARBOR, WASHINGTON 98335
(253) 514-8952

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

Executive Summary

Soundview Consultants LLC (SVC) has been assisting Bridge Development Partners LLC (Applicant) with a mitigation plan for a proposed industrial redevelopment of a 12.05-acre site located at 7730 South 202nd Street in the City of Kent, Washington. The subject property consists of one tax parcel situated in the Southeast ¼ of Section 1, Township 22 North, Range 04 East, W.M. (King County Tax Parcel Number 631500-0300).

SVC investigated the subject property for potentially-regulated wetlands, waterbodies, fish and wildlife habitat, and/or priority species in November of 2020, with a follow-up investigation completed in January of 2022. Using current methodology, the site investigations identified and delineated one potentially-regulated wetland (Wetland A) onsite. Two drainages (collectively referred to as Stream Z) were observed bisecting Wetland A. Although Stream Z does not appear to meet the definition of a potentially regulated stream, the Applicant agrees to treat Stream Z as a Type 3 stream. Additionally, three potentially-regulated wetlands (offsite Wetlands B-D) were identified offsite within 275 feet of the subject property. Wetland A and Offsite Wetlands B and C are classified as Category III depressional wetlands and subject to standard 75-foot buffers per Kent City Code (KCC) 11.06.600.B.1. Offsite Wetland D is classified as a Category IV depressional wetland and subject to a standard 50-foot buffer per KCC 11.06.600.B.1. Offsite Wetland D is not anticipated to project a buffer onto the site given its distance from the site. Stream Z is subject to standard 50-foot buffer per KCC 11.06.680.C. A 15-foot building setback is required from the outer edge of all critical area buffers per KCC 11.06.600.K. In addition, a majority of the site is located within the Federal Emergency Management Agency (FEMA) designated 100-year floodplain. No other potentially regulated wetlands, waterbodies, fish or wildlife habitat, and/or priority species were identified within 275 feet of the subject property.

The Applicant proposes industrial redevelopment of the subject property to include an industrial warehouse and associated infrastructure including parking, internal site access and space for truck maneuvering / turnaround, stormwater infrastructure, and utilities. The proposed project has been carefully designed to avoid and minimize impacts to the identified wetlands by utilizing the existing developed and / or disturbed upland areas onsite to the greatest extent feasible. However, development feasibility of the warehouse and associated infrastructure is restricted by the encumbrance of Wetland A and the associated buffer on the eastern half of the site. To avoid and minimize impacts to Wetland A and Wetland C, the project will utilize administrative buffer reduction for Wetland A and Wetland C from 75 feet to 60 feet per the minimization measures outlined under KCC 11.06.600.C.2; however, buffer reduction does not allow enough space for the proposed warehouse or required parking. Site design alternations to avoid and reduce impacts include shifting the proposed warehouse further west and thus reducing the building size to less than 180,000 square feet to accommodate the diagonal parcel boundary, eliminating parking stalls within the center of the site near Wetland A, reducing the building scope to a single-loaded warehouse, and adjusting slope grading to 2:1 near Wetland A to avoid additional direct impacts. Further, utilizing enhanced water quality treatment combined with an underground stormwater vault allows more space for above-ground development, thus minimizing additional critical area impacts. In addition to these avoidance and minimization measures, the project requires the necessary and unavoidable fill of a portion of Wetland A and a portion of Stream Z as permitted under KCC 11.06.690.C as part of the remediation and restoration actions associated with the environmental site clean-up associated with the black dross, as well as to accommodate the purpose and need for the proposed industrial development. Additional

indirect wetland impacts are also required due to the remaining wetland area abutting the proposed development.

Compensatory mitigation for direct impacts to the low-functioning Category III wetland (Wetland A) and Type 3 stream onsite will be provided by onsite, in-kind stream and wetland creation and enhancement on the northeast corner of the subject property. The deficit in onsite mitigation will be compensated through the purchase of in-lieu fee (ILF) credits from the King County Mitigation Reserves Program (KCMRP). The proposed stream and wetland mitigation has been designed to utilize the combination mitigation ratios for wetland creation (1:1) and wetland rehabilitation (2:1) to the extent practicable. The remainder of onsite mitigation will utilize 2:1 wetland creation for what equivalent wetland rehabilitation area cannot be provided. The proposed onsite, in-kind mitigation actions have been designed utilizing interagency guidance to ensure no net loss of ecological functions onsite of within the greater within the greater Duwamish-Green watershed (WRIA 9). In addition, the buffers will be restored from their current severely degraded condition to further improve ecological functions onsite. Impacts to the 100-year floodplain will be compensated at a 1:1 ratio to ensure no net rise. A Mitigation Plan is included in Chapter 2 of this report.

The summary table below summarizes the identified critical areas and the potential regulatory status by different agencies.

Feature Name Name	Size Onsite	Category/Type[1]	Regulated Under KCC Chapter 11.06	Regulated Under RCW 90.48	Regulated Under Section 404 of the Clean Water Act
Wetland A	34,360 SF	III	**Yes**	**Yes**	**Likely**
Offsite Wetland B	N/A	III	**Yes**	**Yes**	**Likely**
Offsite Wetland C	N/A	III	**Yes**	**Yes**	**Likely**
Offsite Wetland D	N/A	IV	**Yes**	**Yes**	**Likely**
Stream Z	861 linear feet	Type 3	**Yes**	**Yes**	**Likely**

1. Current Washington State Department of Ecology (WSDOE) rating system (Hruby, 2014) per KCC 11.06.580.A; stream typing classification per KCC 11.06.670.C.

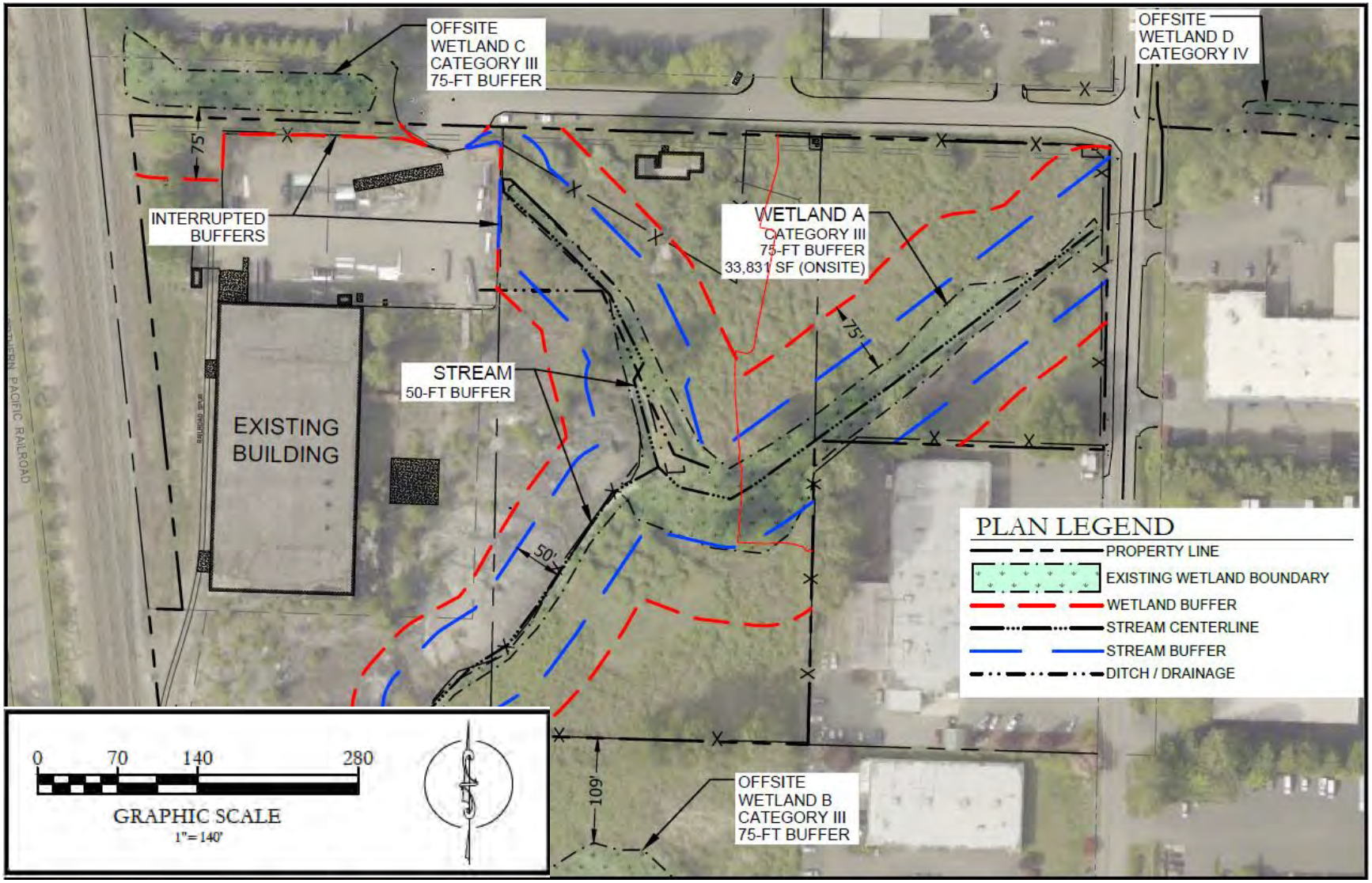
The table below summarizes the proposed critical area impacts.

Critical Area	Category/Type	Impact Type	Impact Area
Wetland A	III	Direct	20,507 SF
Wetland A	III	Indirect	4,776 SF
Stream Z	Type 3	Direct	807 linear feet

The table below summarizes the proposed permittee-responsible mitigation to offset the proposed critical area impacts.

Mitigation Type	Mitigation Area
Wetland Mitigation	
Wetland Creation	38,774 SF
Wetland Rehabilitation	7,442 SF
Wetland Buffer	
Buffer Restoration	113,261 SF
Wetland as Buffer Enhancement	4,776 SF
Stream Mitigation	
Stream Creation	930 linear feet

Site Map


OFFSITE
WETLAND C
CATEGORY III
75-FT BUFFER
OFFSITE
WETLAND D
CATEGORY IV
75'
INTERRUPTED
BUFFERS
WETLAND A
CATEGORY III
75-FT BUFFER
33,831 SF (ONSITE)
75'
STREAM
50-FT BUFFER
EXISTING
BUILDING
50'
PLAN LEGEND
PROPERTY LINE
EXISTING WETLAND BOUNDARY
WETLAND BUFFER
STREAM CENTERLINE
STREAM BUFFER
DITCH / DRAINAGE
0
70
140
280
GRAPHIC SCALE
1"= 140'
109'
OFFSITE
WETLAND B
CATEGORY III
75-FT BUFFER

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Tables

Appendices

Chapter 1. Regulatory Considerations

The site investigations in the fall of 2020 and winter of 2022 identified and delineated one potentially-regulated wetland (Wetland A) on the subject property. The Applicant will treat the identified drainages onsite as Type 3 streams to move forward with the permitting process. Additionally, three potentially-regulated wetlands (Wetlands B-D) were identified were identified offsite within 275 feet of the subject property. No other potentially-regulated wetlands, waterbodies, fish and wildlife habitat, or priority species were identified within 275 feet of the subject property during the site investigations.

1.1 Local Regulatory Requirements

1.1.1 Buffer Standards

KCC 11.06.580 has adopted the current wetland rating system for western Washington (Hruby, 2014). Category IV wetlands score less than 16 out of 27 points and generally provide low levels of function; they are typically more disturbed, smaller, and/or more isolated in the landscape than Category I, II, or III wetlands. Wetland A and offsite Wetlands B and C are classified as Category III depressional wetlands with low habitat scores. Current WSDOE guidance on habitat functions is accepted under KCC 11.06.020.B.1. As such, Wetland A and offsite Wetlands B and C are subject to standard 75-foot buffers based on the low habitat function per KCC 11.06.600.B.1. Offsite Wetland D is classified as a Category IV wetland with a habitat score of 3 points and subject to a standard 50-foot buffer based on the low habitat function. Offsite Wetland D is not anticipated to project a buffer onto the site given its distance from the site. While the buffer from Offsite Wetland C projects onto the site, the presence of paved parking lot onsite effectively disrupts the buffer and any potential functions; as a result, the buffer should terminate at the edge of the paved parking lot. Stream Z is subject to standard 50-foot valley bottom buffer per KCC 11.06.680.C. An additional 15-foot building setback is required from the edge of any wetland buffers per KCC 11.06.600.K.

1.1.2 Wetland Buffer Reduction

Per KCC 11.06.600.B, the buffers of Category III and Category IV wetlands may be reduced to 60 and 40 feet, respectively, provided enhancement measures and minimization measures outlined under KCC 11.06.600.C.2 are implemented for the duration of the proposed project. These measures are outlined in Table 1 below. The project proposes to direct lights and locate noise generating activities away from the identified wetlands, route untreated runoff away from the wetlands and limit use of pesticides in proximity of the wetlands, and to route new runoff from impervious surfaces through enhanced treatment and a stormwater vault to allow for the reduced buffer to be implemented onsite. Please refer to the TESC plan prepared by the Project Engineer for more details regarding the proposed BMPs and TESC measures that will be implemented for the proposed project.

Table 1. Wetland Mitigation Measures

Disturbance	Activities and Uses that Cause Disturbance	Minimization Measures
Lights	• Parking lots • Warehouses • Manufacturing • Residential	• Direct lights away from wetland
Noise	• Manufacturing • Residential	• Locate activity that generates noise away from wetland

Toxic runoff	• Parking lots • Roads • Manufacturing • Residential areas • Application of agricultural pesticides • Landscaping	• Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 feet of wetlands • Apply integrated pest management
Change in water regime	• Impermeable surfaces • Lawns • Tilling	• Infiltrate or treat, detain and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	• Residential areas	• Contain pets to prevent disturbance, i.e dog run, chicken coop, etc
Dust	• Tilled fields	• Use best management practices to control dust

The Applicant must demonstrate that by enhancing/restoring the buffer and use of minimization measures, the reduced buffer will function at a level equivalent to or greater than the level of the standard buffer. Prior to approval of a reduced buffer, a critical areas application shall meet all of the following criteria listed in KCC 11.06.600.C.1:

a. It will provide an overall improvement in water quality;

Stormwater runoff from impervious surfaces of the proposed project will be conveyed through enhanced treatment and a stormwater vault. The existing site currently does not have stormwater detention and treatment facilities and the site is highly disturbed with minimal functional buffer screening, filtration or protection. It is anticipated the proposed project will improve water quality functions by increasing runoff storage and conveyance capacity, retention of sediments, and pollution assimilation through the stormwater infrastructure and native woody plantings within the entire onsite buffer area. As such, the proposed project will not adversely affect water quality.

b. It will provide an overall enhancement to fish, wildlife, or their habitat;

Wetland A and the associated buffer onsite are highly degraded due to surrounding industrial development, black dross material from the onsite industrial aluminum manufacturing facility, and the presence of non-native invasive species which provide minimal habitat function for fish and wildlife species. As such, the proposed buffer restoration and mitigation actions will remove all existing degradations including fill material, black dross, and non-native invasive species. The buffer will then be replanted with a variety of native plants which will provide improved habitat conditions and function through establishing diverse vertical and horizontal vegetation strata beneficial to wildlife, resulting in a net gain in ecological function and protection. The buffer restoration actions will provide an overall functional improvement.

c. It will not result in an alteration of current drainage and stormwater detention capabilities;

No stormwater treatment or detention facilities currently exist onsite. Stormwater runoff from impervious surfaces of the proposed project will be conveyed to water quality treatment infrastructure. As such, it is anticipated the proposed project will benefit water quality, drainage and stormwater retention capabilities with the proposed stormwater treatment and buffer restoration actions. The proposed buffer restoration actions are capable of providing

pollutant filtration and increased hydrological infiltration over the existing, compacted and degraded site conditions.

d. It will not lead to unstable earth conditions or create an erosion hazard;

All appropriate erosion control and best management practices (BMP's) will be used to prevent unstable conditions. Runoff will be collected and detained to minimize any potential erosion hazards. This proposal has utilized, to the maximum extent possible, the best available construction, design, and development techniques to ensure the least amount of impact on the critical areas and associated buffer areas on the subject property. BMP's will be implemented that consist of high-visibility fencing (HVF) and silt fencing installed around native vegetation along the reduced perimeter of the remaining buffer, plastic sheeting on stockpiled materials, and seeding of disturbed soils. These BMP's should be installed prior to the start of development actions and actively managed for the duration of the project.

The proposed project has been designed with specific erosion prevention and stabilization elements to avoid the creation of unstable earth conditions and erosion hazards. The developed site will stabilize once all proposed landscaping measures are completed. Prior to final site stabilization, erosion control measures will prevent erosion hazards. The entirety of the reduced buffer will be stabilized and replanted with native seed mix, shrubs and trees.

e. It will not be materially detrimental to any other property or the city as a whole; and

The proposed buffer reduction and restoration actions will not be materially detrimental to other properties or the City; rather, it will provide an improvement in the quality of ecological functions onsite which will benefit the City and local watershed.

f. All exposed areas are stabilized with native vegetation, as appropriate.

The reduced buffer will be enhanced through invasive removal (if necessary) and primarily native plantings which will stabilize the area and provide a net increase in ecological functions onsite when compared to the existing degraded condition of the buffer areas. Further, any remaining disturbed areas will be seeded with a native seed mix.

1.1.3 Mitigation Sequencing

The proposed project includes direct and indirect impacts to Wetland A and direct impacts to a portion of Stream Z onsite. Impacts to wetlands, streams, and associated buffers may be allowed provided that all feasible and reasonable measures under KCC 11.06.380 have been taken to avoid, minimize, and compensate for impacts as described below:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;

The Applicant proposes industrial redevelopment of the subject property to include an industrial warehouse and associated infrastructure including parking, internal site access and space for truck maneuvering / turnaround, stormwater infrastructure, and utilities. In addition, the project requires environmental remediation of the site, including Wetland A and Stream Z. The proposed project has been carefully designed to avoid and minimize impacts to the identified wetlands by utilizing the existing developed and / or disturbed upland areas onsite to the greatest extent feasible. However, development feasibility of the warehouse and associated infrastructure is

restricted by the encumbrance of Wetland A and the associated buffer on the eastern half of the site. To avoid and minimize impacts to Wetland A and Wetland C, the project will utilize administrative buffer reduction for Wetland A and Wetland C from 75 feet to 60 feet per the minimization measures outlined under KCC 11.06.600.C.2; however, buffer reduction does not allow enough space for the proposed warehouse or required parking. Site design alternations to avoid and reduce impacts include shifting the proposed warehouse further west and thus reducing the building size to less than 180,000 square feet to accommodate the diagonal parcel boundary, eliminating parking stalls within the center of the site near Wetland A, reducing the building scope to a single-loaded warehouse, and adjusting slope grading to 2:1 near Wetland A to avoid additional direct impacts. Further, utilizing enhanced water quality treatment combined with an underground stormwater vault allows more space for above-ground development, thus minimizing additional critical area impacts. In addition to these avoidance and minimization measures, the project requires the necessary and unavoidable impacts to portions of Wetland A and a portion of Stream Z for the environmental remediation actions associated with prior land use of the site as permitted under KCC 11.06.690.C, and in addition the impacted areas need to be utilized for site development to accommodate the purpose and need for the proposed industrial development. Additional indirect wetland impacts are also required due to the remaining wetland area abutting the proposed development.

2. *Minimizing impacts by limiting the degree or magnitude of the action and its implementation;*

   As described above, the direct and indirect impacts to low-functioning Wetland A and a small portion of Stream Z are necessary and unavoidable to all environmental remediation of the site and to support the proposed industrial redevelopment. No other feasible option in site design would result in less impacts to critical areas while allowing reasonable site development due to the encumbrance of Wetland A and the associated buffer on the eastern half of the subject property which severely limits site design options. In addition, site plan has been revised to include stream channel reestablishment along the northern portion of the site after remediation actions. To minimize temporary impacts to the remaining portions of Wetland A during construction, BMPs and TESC measures including silt fencing between the proposed project and remaining wetland areas will be implemented through the duration of the project.

3. *Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;*

   Compensatory mitigation for direct impacts to the low-functioning Category III wetland (Wetland A) and Type 3 stream onsite will be provided by onsite, in-kind stream and wetland creation and rehabilitation on the northeast corner of the subject property. The deficit in onsite mitigation will be compensated through the purchase of in-lieu fee (ILF) credits from the King County Mitigation Reserves Program (KCMRP). Compensatory mitigation will be completed after remediation of the proposed restoration and mitigation areas. The proposed onsite, in-kind mitigation actions have been designed utilizing interagency guidance to ensure no net loss of ecological functions onsite of within the greater within the greater Duwamish-Green watershed (WRIA 9). In addition, the buffer will be restored from its current severely degraded and contaminated condition to further improve ecological functions onsite.

4. *Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.*

   The onsite compensatory mitigation actions will also be maintained and monitored for a period of 10 years per USACE requirements (5 years for the City) to ensure success of the project. Additional potential impacts to critical areas will be reduced over time by the installation of permanent critical area easement signage and fencing between the mitigation area and proposed development in order to discourage trespassing and reduce habitat disturbance.

5. *Compensating for the impact by replacing or providing substitute resources or environments.*

   Mitigation for the direct and indirect impacts to low-functioning Wetland A and Stream Z will be provided through onsite, in-kind stream and wetland creation and wetland rehabilitation adjacent to the remaining portions of Wetland A. The deficit in onsite mitigation will be compensated through the purchase of ILF credits from the KCMRP. The proposed mitigation plan will result in an overall ecological lift over the existing degraded conditions of the critical areas proposed to be impacted.

6. *Monitoring the impact and compensation and taking appropriate corrective measures;*

   The compensatory mitigation areas will be monitored for a period of 10 years per USACE requirements (5 years for the City) to ensure success of the mitigation actions over time.

1.1.4 Avoiding Wetland Impacts

Per KCC 11.06.610, regulated activities shall not be authorized in wetlands unless the Applicant can demonstrate the following conditions:

1. *The basic project purpose cannot reasonably be accomplished using an alternative site in the general region that is available to the applicant.*

   The proposed project cannot reasonably be accomplished using an alternative site in the region that is available to the Applicant. Many of the surrounding properties have already been developed and/or are equally or more encumbered by critical areas or were not available to the Applicant during the project planning stage. Additionally, the site has already been cleared and graded for its existing use with the exception of the eastern half of the subject property which is encumbered with Wetland A and an existing stormwater ditch system (i.e. Stream Z). In addition, the project requires the necessary and unavoidable impacts to portions of Wetland A and a portion of Stream Z for the environmental remediation actions associated with prior land use of the site as permitted under KCC 11.06.690.C. Therefore, there are no alternative sites in the immediate vicinity that are less developed and would require less impacts to critical areas.

2. *A reduction in the size, scope, configuration, or density of the project as proposed, and all alternative designs of the project as proposed that would avoid or result in less adverse impacts on a wetland or its buffer, will not accomplish the basic purpose of the project.*

   The proposed project has been designed to avoid and minimize critical area impacts by utilizing the previously developed and / or disturbed upland areas onsite to the greatest extent feasible. As mentioned under 1.1.2 above, site design alternations to avoid and reduce impacts include shifting the proposed warehouse further west and thus reducing the building size to less than 180,000

square feet to accommodate the diagonal parcel boundary, eliminating parking stalls within the center of the site near Wetland A, reducing the building scope to a single-loaded warehouse, and adjusting slope grading to 2:1 near Wetland A to avoid additional direct impacts. Further, utilizing enhanced water quality treatment combined with an underground stormwater vault allows more space for above-ground industrial development, thus minimizing additional wetland impacts. In addition to these avoidance and minimization measures, the project requires the necessary and unavoidable impacts to portions of Wetland A and a portion of Stream Z for the environmental remediation actions associated with prior land use of the site as permitted under KCC 11.06.690.C to accommodate the purpose and need for the proposed industrial development.

3. *In cases where the applicant has rejected alternatives to the project as proposed due to constraints such as zoning, deficiencies of infrastructure, or parcel size, the applicant has made a reasonable attempt to remove or accommodate such constraints.*

   Not applicable; the Applicant has not rejected any alternatives due to constraints.

1.1.5 Mitigation Standards

Per KCC 11.06.550.B, adverse impacts to critical area functions shall be mitigated, and mitigation actions shall be implemented in the sequence identified in KCC 11.06.380 (Section 1.1.2 above) to ensure no net loss of wetland ecological functions. Proposed projects that include less preferred or compensatory mitigation shall demonstrate the following:

1. *All feasible and reasonable measures have been taken to reduce impacts and losses to the critical area, or to avoid impacts where avoidance is required by these regulations.*

   The mitigation sequencing under KCC 11.06.380 is described above; parts 1 and 2 under this mitigation sequencing describe the measures taken to avoid and reduce impacts to the onsite wetlands.

2. *The restored, created, or enhanced critical area or buffer will at a minimum be as viable and enduring as the critical area or buffer area it replaces.*

   Mitigation for direct and indirect impacts to Wetland A and direct impacts to Stream Z will be compensated for through onsite, in-kind wetland creation and rehabilitation on the northeast portion of the subject property. The deficit in onsite mitigation will be compensated through the purchase of ILF credits from the KCMRP. Additionally, buffer enhancement is proposed as these areas are degraded. Wetland A and Stream Z are currently degraded by the presence of non-native invasive species and debris waste piles associated with the existing aluminum processing facility adjacent to the critical areas. Such degradations will be removed, and the mitigation areas will be planted with native trees, shrubs, and groundcover. As such, the proposed compensatory and non-compensatory mitigation actions will provide a net lift in wetland and stream functions when compared to the existing degraded conditions onsite.

3. *In the case of wetlands and streams, no overall net loss will occur in wetland or stream functions and values. The mitigation shall be functionally equivalent to the altered wetland or stream in terms of hydrological, biological, physical, and chemical functions.*

   As mentioned in number 2 above, Wetland A and Stream Z are degraded by the presence of debris piles from the aluminum processing plant and non-native invasive species. Providing the

required mitigation will significantly improve ecological functions in terms of hydrological, biological, physical, and chemical functions both onsite and in the greater Duwamish-Green watershed. The wetland mitigation actions have the potential to improve water quality, hydrology, and habitat functions associated with Wetland A by increasing plant structure and diversity which will improve filtration and slow floods, and provide increased habitat for a variety of wildlife. The stream mitigation actions will provide cool, clean, and clear water from the dense native plantings which will provide stream shading, stormwater filtration, and wood recruitment as well as decreased streambank erosion; and large woody debris features for increased habitat suitability and complexity. Overall, these actions will improve water quality, hydrology, and habitat functions onsite by providing increased areas of seasonal ponding and improved plant structure to slow floods and filter pollutants, and by providing a diverse native plant community and increased habitat structures which will provide browse, nesting, and forage for small mammals which will in turn provide prey for raptors and other mammals. Therefore, the proposed mitigation actions are anticipated to provide a net gain in ecological functions when compared to the severely degraded conditions of the wetland and stream/ditch system proposed to be impacted.

4. *In the case of isolated emergent Category III or IV wetlands less than 5,000 square feet in size, avoidance of impacts is not required. However, replacement wetland area must be created pursuant to KCC 11.06.660(D).*

   The identified Category III wetland onsite is not likely considered isolated and is greater than 5,000 square feet in size. All necessary and unavoidable impacts will be appropriately compensated to ensure no net loss of critical area functions, as described in Chapter 2 of this report.

1.1.6 Wetland Mitigation Requirements

According to KCC 11.06.660.A, projects proposing to alter wetlands or associated buffers must engage in restoration, creation, and/or enhancement of the wetland or buffer in order to offset and ensure no net loss of wetland or wetland buffer functions. The project proposes a combination of onsite wetland creation and rehabilitation of the remaining wetland and buffer areas onsite. Per KCC 11.06.660.C.2.a, applicants proposing wetland creation must demonstrate the following:

i. The hydrology and soil conditions at the proposed mitigation site are conducive for sustaining the proposed wetland and that creation of a wetland at the site will not likely cause hydrologic problems elsewhere;

The area proposed for wetland creation is onsite, adjacent to existing portions of Wetland A. Wetland A will also be rehabilitated. Given the location of proposed creation directly adjacent to Wetland A, soil and hydrology conditions at this location are similar in nature to the existing wetland area onsite which will ensure the success of wetland creation actions. Wetland creation proposed in this area will help maintain hydrology by compensating for lost wetland area and providing increased storage compared to the existing, degraded onsite conditions.

ii. The proposed mitigation site does not contain invasive plants or noxious weeds or that such vegetation will be completely eradicated at the site;

The proposed wetland creation area is dominated by Himalayan blackberry, and the existing wetland area to be enhanced contains areas of non-native invasive Himalayan blackberry and reed

canarygrass. To prepare the mitigation area, this non-native invasive vegetation will be mowed/cut down and new growth will be sprayed as needed with a Washington state Department of Agriculture approved herbicide for aquatic sites prior to planting. Additionally, excavating the area for wetland creation will help remove the established root systems. The continued maintenance and monitoring will ensure effective control and removal of Himalayan blackberry and any other non-native invasive plants or noxious weeds from the area. In addition, much of the proposed mitigation area will undergo extensive remediation actions, which may include removing contaminated soils, and if necessary replaced with native top soil free of invasive species.

iii. Adjacent land uses and site conditions do not jeopardize the viability of the proposed wetland and buffer (e.g., due to the presence of invasive plants or noxious weeds, stormwater runoff, noise, light, or other impacts); and

Overall land use and site conditions will not jeopardize the viability of the proposed wetland mitigation area. Industrial activities have persisted onsite near Wetland A for several decades; therefore, the industrial redevelopment will not jeopardize the viability of the proposed mitigation actions. Invasive species are present onsite; however, the mitigation actions are proposed to increase habitat and manage invasive species to prevent encroachment into the mitigation area for a period of up to 10 years. Appropriate critical areas fencing and signage will also be placed around the mitigation site to screen the area from the proposed development and protect the area from other disturbances.

iv. The proposed wetland and buffer are designed to be self-sustaining with little or no long-term maintenance.

The proposed wetland creation and rehabilitation areas are designed to be self-sustaining following the required timeframe of maintenance and monitoring actions and is anticipated to only require minor long-term maintenance as needed and if required by the USACE. By following the site preparation specifications outlined in Chapter 2 below (e.g., excavation, topsoil installation, and plantings) the wetland creation area will maintain wetland hydrology during the growing season in most years to match the existing, functional, seasonally flooded/saturated wetland. The proposed native species have been carefully selected to ensure the plants take root and thrive in the newly created wetland environments: selection criteria included indicator status and those species that are currently thriving onsite in both wetland and non-wetland areas.

Per KCC 11.06.660.C.3, in addition to the criteria for wetland creation, applicants proposing to enhance wetlands or associated buffers must demonstrate the following:

a. How the proposed enhancement will increase the wetland's or the buffer's functions;

The existing portions of Wetland A and the associated buffer contain limited native vegetation and are largely degraded by the presence of non-native invasive species and presence of debris piles and black dross (aluminum manufacturing byproduct) associated with the existing industrial activities. Rehabilitation actions will remove the existing degradations, decompact topsoil, provide soil amendments as needed, and replant the disturbed areas with native trees, shrubs, and groundcover. Increased vertical and horizontal plant structure and plant species diversity will provide increased browse, cover, and nesting for small mammals, which in turn provide prey for raptors and other mammals. Additionally, the establishment of persistent native vegetation has the potential to increase water quality and hydrology for water leaving the project site by improving

filtration and providing more structure to slow flooding. Overall, these actions will result in a net increase in ecological functions both onsite and within the greater Duwamish-Green watershed.

b. How this increase in function will adequately compensate for the impacts; and

Compensatory mitigation will first be provided by onsite, in-kind wetland creation and rehabilitation to the extent practicable, with the balance provided through the purchase of ILF credits from the KCMRP. Additional buffer restoration will be provided to increase ecological functions. Given the extremely degraded existing conditions of the critical areas, such mitigation actions will provide a net lift in ecological functions.

c. How all other existing wetland functions at the mitigation site will be protected.

The mitigation site will be monitored for a period of up to 10 years (5 years by the City) to ensure its successful establishment. In addition, critical areas fencing and signage will be placed around the entire mitigation site to screen the critical areas from the proposed development and minimize disturbances. Further, the mitigation site will be placed in a separate critical areas tract to prohibit development in perpetuity.

1.1.7 Stream Alteration or Development Standards and Criteria

According to KCC 11.06.690, alteration of streams or their established buffers may be permitted by if the Applicant can demonstrate the following criteria:

A. Alteration shall not degrade the functions and values of the stream.

The existing stream consists of linear ditches with vertical sides lined with plastic associated with prior remediation actions. The stream is highly degraded due to the presence of non-native invasive species and black dross (a byproduct of the aluminum processing facility currently onsite). As such, any alteration to the stream will not degrade the functions and values of the stream as they are highly degraded and manipulated. Further, the proposed impacts to the stream will be offset through stream channel creation at a minimum 1:1 ratio. The stream mitigation actions will provide cool, clean, and clear water from the dense native plantings which will provide stream shading, stormwater filtration, and wood recruitment as well as decreased streambank erosion, and large woody debris features for increased habitat suitability and complexity. Overall, these actions will improve water quality, hydrology, and habitat functions onsite by providing increased plant structure to slow floods, filter pollutants, and reduce erosion, and by providing a diverse native plant community and increased habitat structures which will provide browse, nesting, and forage for small mammals which will in turn provide prey for raptors and other mammals.

B. Activities located in water bodies and associated buffers used by anadromous fish shall give special consideration to the preservation and enhancement of fish habitat, including but not limited to the following:

1. *The activity is timed to occur only within the allowable work window for the particular species as identified by the Washington Department of Fish and Wildlife.*
2. *The activity is designed so as not to degrade the functions and values of the habitat and any impacts are mitigated.*
3. *An alternate location or design is not feasible.*

Stream Z is a manipulated stormwater ditch that is treated as a Type 3 stream, a non-fish-bearing water; no fish have been observed or documented within the stream proposed to be impacted. As such, these criteria are not applicable.

C. *Relocation of a Type 2 or 3 stream solely to facilitate general site design shall not be permitted. Relocation of a stream may be permitted only when it is part of an approved mitigation or enhancement/restoration plan, and will result in equal or better habitat and water quality, and will not diminish the flow capacity of the stream.*

Stream Z is not being relocated solely to facilitate site design. As described above under criterion A, the existing stream functions as a stormwater ditch and is highly degraded and manipulated. In addition, the project requires the necessary and unavoidable impacts to portions of Wetland A and a portion of Stream Z for the environmental remediation actions associated with prior land use of the site as permitted under KCC 11.06.690. The proposed redevelopment will continue industrial use onsite while allowing the opportunity for the stream channel to be significantly improved. The proposed stream channel banks will be planted to create native forest, shrub, and emergent plant communities that are currently absent onsite. The stream channel creation will increase floodwater retention, decrease streambank erosion, and provide a more complex system with installation of large woody debris features for increased habitat suitability and complexity. Overall, the proposed stream relocation/restoration is anticipated to increase ecological functions when compared to the degraded condition of the existing stream channel proposed to be impacted.

D. *All new culverts shall be designed following guidance provided in the Washington Department of Fish and Wildlife's document: Water Crossing Design Guidelines, 2013 (or most recent version thereof). The applicant shall obtain a HPA from the Department of Fish and Wildlife. Culverts are allowed only in Types 2 and 3.*

One new culvert is proposed along Stream Z (Type 3) to allow safe site access and vehicle circulation which will require an HPA permit authorization from WDFW. The culvert will be designed using WDFW's design criteria, although design standards based on fish use are not applicable.

E. *The applicant or successors shall, at all times, keep any culvert free of debris and sediment to allow free passage of water and, if applicable, fish.*

The existing and proposed culverts onsite will be kept free of debris and sediment to allow free passage of water.

F. *The city may require that a culvert be removed from a stream as a condition of approval, unless the culvert is not detrimental to fish habitat or water quality, or removal would be a long-term detriment to fish or wildlife habitat or water quality.*

Due to the severity of degradation and manipulation along and within Stream Z, the stream lacks the necessary habitat and conditions to support fish. As such, the removal of onsite culverts would be unnecessary as no fish have been observed or documented within the stream and the existing culverts are not detrimental to habitat or water quality.

1.2 State and Federal Considerations

In a December 2, 2008 memorandum from the Environmental Protection Agency (EPA) and USACE, joint guidance is provided that describes waters that are to be regulated under section 404 of the CWA (USACE, 2008). This memorandum was amended on February 2, 2012 where the EPA and USACE issued a final guidance letter on waters protected by the CWA.

The 2012 guidance describes the following waters where jurisdiction would be asserted: 1) traditional navigable waters, 2) interstate waters, 3) wetlands adjacent to traditional navigable waters, 4) non-navigable tributaries of traditional navigable waters that are relatively permanent meaning they contain water at least seasonally (e.g. typically three months and does not include ephemeral waters), and 5) wetlands that directly abut permanent waters. The regulated waters are those associated with naturally occurring waters and water courses and not artificial waters (i.e. stormwater pond outfalls).

The 2012 memorandum further goes on to describe waters where jurisdiction would likely require further analysis: 1) Tributaries to traditional navigable waters or interstate waters, 2) Wetlands adjacent to jurisdictional tributaries to traditional navigable waters or interstate waters, and 3) Waters that fall under the "other waters" category of the regulations.

In addition, the 2012 guidance identifies thirteen waters or areas where jurisdiction will not be asserted: 1) Wet areas that are not tributaries or open waters and do not meet the agencies regulatory definition of "wetlands", 2) Waters excluded from coverage under the CWA by existing regulations, 3) Waters that lack a "significant nexus: where one is required for a water to be jurisdictional, 4) Artificially irrigated areas that would revert to upland if the irrigation ceased, 5) Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing, 6) Artificial reflecting pools or swimming pools excavated in uplands, 7) Small ornamental waters created by excavating and/or diking dry land to retain water for primarily aesthetic reasons, and puddles, 8) Water-filled depressions created incidental to construction activity, 9) Groundwater, including groundwater drained through subsurface drainage systems, 10) Erosional features (gullies and rills), 11) Non-wetland swales, 12) Ditches that are excavated wholly in uplands, drain only uplands or non-jurisdictional waters, and have no more than ephemeral flow, and 13) Ditches that do not contribute flow, either directly or through other waterbodies, to a traditional navigable water, interstate water, or territorial sea.

Wetland A, offsite Wetlands B-D, and the onsite ditches (Stream Z) are likely regulated by the USACE as WOTUS through Category 4 above. The wetlands all drain northwest to the B-86 ditch west of the subject property, which has at least a seasonal surface water connection to Mill Creek, a tributary to a traditionally navigable water. Additionally, the identified wetlands and ditches are likely regulated by the WSDOE through the Revised Code of Washington (RCW) 90.48.

Chapter 2. Mitigation Plan

The proposed mitigation actions for the project attempt to strike a balance between achieving project goals as well as a positive result for the watershed and the critical area functions within the confines of the site. In general, joint USACE and EPA rules have been established that require for more careful mitigation planning efforts utilizing a watershed approach in site selection (USACE & EPA, 2008). The proposed impacts and mitigation actions attempt to closely adhere to these rules and to the local critical areas regulations specified in KCC 11.06 while also utilizing the best available science (Granger et al., 2005; Hruby et al., 2009; Sheldon et al., 2005; WSDOE et al., 2006; and WSDOE et al. 2021). This chapter presents the mitigation details for the proposed industrial project.

2.1 Purpose and Need

The purpose of the proposed project is to provide industrial redevelopment and associated infrastructure within the City of Kent to expand the local economy by providing new jobs and new services to the area. The industrial redevelopment provides a unique opportunity to take an existing highly degraded and contaminated ditch system (Stream Z) and wetland and creating a new, highly functional channel and wetland mitigation area that will increase water quality, hydrologic, and habitat functions within the Mill Creek basin.

2.2 Description of Impacts

The Applicant proposes industrial redevelopment of the subject property to include an industrial warehouse and associated infrastructure including parking, internal site access and space for truck maneuvering / turnaround, stormwater infrastructure, and utilities. The proposed project has been carefully designed to avoid and minimize impacts to the identified wetlands by utilizing the existing developed and / or disturbed upland areas onsite to the greatest extent feasible. However, development feasibility of the warehouse and associated infrastructure is restricted by the encumbrance of Wetland A and the associated buffer on the eastern half of the site. To avoid and minimize impacts to Wetland A and Wetland C, the project will utilize administrative buffer reduction for Wetland A and Wetland C from 75 feet to 60 feet per the minimization measures outlined under KCC 11.06.600.C.2; however, buffer reduction does not allow enough space for the proposed warehouse or required parking. In addition to these avoidance and minimization measures, the project requires the necessary and unavoidable impacts to portions of Wetland A and a portion of Stream Z for the environmental remediation actions associated with prior land use of the site as permitted under KCC 11.06.690.C. Site design alternations to avoid and reduce impacts include shifting the proposed warehouse further west and thus reducing the building size to less than 180,000 square feet to accommodate the diagonal parcel boundary, eliminating parking stalls within the center of the site near Wetland A, and reducing the building scope to a single-loaded warehouse. Further, utilizing enhanced water quality treatment combined with an underground stormwater vault allows more space for above-ground development, thus minimizing additional critical area impacts. Additional indirect wetland impacts are also required due to the remaining wetland area abutting the proposed development.

2.2.1 Wetland Impacts

A summary of wetland impacts is provided in Table 2 and a wetland function impact analysis is outlined below.

- **Water Quality:** The wetland proposed to be filled is a depressional wetland that exhibits primarily seasonal saturation with some areas of seasonal flooding. Opportunity for Wetland A to provide water quality functions is moderate due to the surrounding landscape which provides a source of pollutants. The value of water quality functions provided by Wetland A is also increased as water quality is an issue in the sub-basin. However, in general Wetland A can only provide limited pollutant filtration as persistent, ungrazed plants and areas with seasonal ponding cover less than half of the wetland unit. Additionally, Wetland A is bisected by two stormwater ditches that convey flow away from the wetland during storm events, reducing the time that the wetland has to filter pollutants. Water quality functions will be improved and replaced via onsite compensatory wetland creation adjacent to the remaining portions of Wetland A on the northeast corner of the subject property.

- **Hydrologic:** Hydrology for Wetland A is provided by direct precipitation, surface sheet flow, and a seasonally high groundwater table. Opportunity for Wetland A to provide hydrologic functions is moderate due to the moderate size of the wetland relative to its contributing basin, the presence of stormwater discharges and land uses that generate excess runoff, and the presence of surface flood problems in a sub-basin further down gradient of the wetland. However, these functions are limited due to the presence of an intermittent outlet and the shallow storage depth of the wetland which limit how much flood storage the wetland can accommodate. Hydrologic functions will be improved and replaced via onsite compensatory wetland creation adjacent to the remaining portions of Wetland A on the northeast corner of the subject property.

- **Habitat:** Wetland A provides minimal habitat functions due its location in an urban industrial setting, environmental contamination and surrounding development which impedes habitat accessibility. Additionally, Wetland A has low habitat interspersion and species richness, and is encumbered with non-native Himalayan blackberry (*Rubus armeniacus*) and reed canarygrass (*Phalaris arundinacea*). Due to the low-functioning habitat conditions, the proposed wetland fill will result in limited habitat removal. Wetland habitat functions will be replaced and increased via the proposed onsite wetland creation adjacent to the remaining portions of Wetland A on the northeast corner of the subject property.

Table 2. Wetland Impact Summary

Wetland	Onsite Area (acre)	HGM[1]	Cowardin Class[2]	WSDOE Rating[3]	Impact Type	Impact Area
A	0.79	Depressional	PFO/EMBC	IV	Direct	20,507 SF (0.47 acre)
A	0.79	Depressional	PFO/EMBC	IV	Indirect	4,776 SF (0.011 acre)

Notes:
1. Brinson, M. M. (1993).
2. Cowardin et al. (1979); Federal Geographic Data Committee (2013); class based on vegetation: PFO = Palustrine Forested, PEM = Palustrine Emergent. Modifiers for Water Regime: B = Seasonally Saturated, C = Seasonally Flooded.
3. WSDOE rating according to Washington State wetland rating system for Western Washington – Revised (Hruby, 2014).

2.2.2 Stream Impacts

The onsite Stream Z currently functions as a stormwater ditch and is currently lined with plastic as part of the incomplete remediation actions onsite. The stream provides low-quality habitat due to the presence of black dross within and around the channel associated with the existing aluminum processing facility onsite and the lack of channel complexity, in-stream habitat structures, floodplain connectivity and riparian cover. A portion of the onsite stream channel will be permanently filled. A summary of the impacted stream is provided in Table 3 below. Existing habitat conditions within the channel are described in Table 4.

Table 3. Stream Impact Summary

Stream	Type[1]	Impact Type	Impact Area
Z	Type 3	Direct	807 linear feet

Notes:
1. Stream typing classification per KCC 11.06.670.C.

Table 4. Summary of Existing Stream Habitat Conditions.

Habitat Parameter	Existing Conditions
Habitat Accessibility	Degraded – the existing channels act as stormwater conveyance and are far removed from functional stream habitat farther downgradient in the basin.
Riparian Buffer	Degraded – Streambanks are lined with narrow strip of vegetation dominated by non-native, invasive reed canarygrass and Himalayan blackberry with few willows. Stream shading is minimal due to lack of woody vegetation.
Channel Morphology	Minimally complex – Linear excavated channel with stagnant flows. The excavated streambanks are almost vertical. Pool and riffle features are absent.
Off-Channel Habitat and Flood Refugia	Absent – No off-channels are present within Stream Z and the vertical banks do not support flood attenuation.
Substrate Composition	Unconsolidated material and ash – Substrate is likely sourced from an adjacent ash-waste pile located on the central portion of the subject property. The entire ditch is also lined with plastic which severely limits natural stream functions.
Large Woody Debris (LWD)	Absent from the highly modified and degraded linear stream channel.
Small Woody Debris	Low presence – Some small woody debris is present. Thickets of non-native invasive Himalayan blackberry provide limited small woody debris along the stream.
Peak and Base Flows	Summer base flows are low. Even at peak flows in the wet season, hydrology is mostly stagnant.
Floodplain Capacity and Wetland Connectivity	Floodplain capacity is extremely limited by the linear, ditched channels. One low-functioning depressional wetland with limited accessible habitat is located along the existing stream. However, the wetland does not receive any overbank flooding from the ditch/stream.
Water Quality	Degraded – Onsite water quality is likely degraded by a lack of functioning riparian buffer, location within in an urban industrial environment, and presence of black dross material from the aluminum processing operations near the channels.

2.3 Mitigation Strategy

Compensatory mitigation for direct impacts to the low-functioning Category III wetland (Wetland A) and a portion of Stream Z onsite will be provided through a combination of onsite, in-kind wetland creation and rehabilitation and the purchase of ILF credits from the KCMRP for the mitigation balance.

2.3.1 Onsite Mitigation Actions

The proposed onsite, in-kind mitigation has been designed utilizing interagency guidance and local requirements per KCC 11.06.600.D to ensure no net loss of ecological functions onsite and within the greater Duwamish-Green watershed (WRIA 9). In addition, the buffer will be restored to further improve ecological functions onsite. A stream and wetland mitigation summary is provided in Table 5. Refer to Appendix A for a detailed mitigation and planting plan.

The mitigation actions will include, but may not be limited to, the following recommendations:

- Pre-treat invasive plants with a Washington Department of Agriculture approved herbicide. After pre-treatment, grub to remove the invasive plants and replant all cleared areas with native trees, shrubs, and ground covers listed in Appendix A; Pre-treatment of the invasive plants should occur a minimum of two weeks prior to removal;
- Excavate an area contiguous with Wetland A for wetland creation that will hold sufficient wetland hydrology;
- Excavate a new channel for Stream Z within a new riparian corridor;
- Replant all mitigation areas with native trees, shrubs, and groundcovers listed in Appendix A, or substitutes approved by the responsible Project Scientist to help retain soils, filter stormwater, and increase biodiversity;
- Install special habitat features, such as large woody debris (LWD) and snags, to provide increased habitat structures for wildlife;
- An approved native seed mix will be used to seed the disturbed areas after planting;
- Maintain and control invasive plants annually, at a minimum, or more frequently if necessary. Maintenance to reduce the growth and spread of invasive plants is not restricted to chemical applications but may include hand removal, if warranted;
- Provide dry-season irrigation as necessary to ensure native plant survival;
- Direct exterior lights away from the critical areas wherever possible; and
- Place all activities that generate excessive noise (e.g., generators and air conditioning equipment) away from the remaining critical areas where feasible.

Table 5. Summary of Proposed Mitigation

Mitigation Type	Mitigation Ratio[1]	Mitigation Area Provided
Wetland Creation	1:1; 2:1	38,774 SF
Wetland Rehabilitation	2:1	7,442 SF
Stream Creation	1:1	930 linear feet
Non-Compensatory Buffer Restoration	No credit	113,261 SF

1. Wetland mitigation will first utilize the combination ratios to the extent practicable; the remainder of onsite mitigation will utilize the standard mitigation ratios.

<u>Wetland Mitigation</u>

The proposed wetland mitigation has been designed to utilize the combination mitigation ratios for wetland creation (1:1) and wetland rehabilitation (2:1) outlined by the interagency guidance (WSDOE et al., 2021) to the extent practicable; the remainder of onsite mitigation will utilize the standard

mitigation ratios. However, KCC 11.06.600.D only specifies combined mitigation for wetland creation (1:1) with enhancement (2:1). Given that rehabilitation is preferred over enhancement and is generally required at a lower ratio as discussed in WSDOE et al. (2021), the project will utilize the 2:1 ratio for wetland rehabilitation along with wetland creation to meet mitigation needs that will satisfy local, state, and federal requirements. It should be noted that the site has the opportunity to provide nearly double the required amount of wetland creation, which will be utilized to account for the shortfall in wetland rehabilitation as it is the more preferred type of mitigation.

Wetland creation actions are proposed adjacent to Wetland A and Stream Z. A combination mitigation ratio of 1:1 is required when rehabilitation and/or enhancement is also proposed. The project will utilize the combination mitigation ratios to the extent practicable; the remainder of onsite mitigation will utilize 2:1 wetland creation. Refer to Table 6 below for a summary of the proposed mitigation calculations; the mitigation deficit accounts for a portion of the indirect impact area. Depressional wetland areas will be created along Stream Z to compensate for the Category III wetland impacts. These areas are conducive to wetland creation given that they are at similar elevation adjacent to the existing wetland and located in the valley floor. Soils will be excavated to provide necessary depressions to hold sufficient hydrology to generate wetland conditions, and areas will be excavated to the existing groundwater table if possible. Organic topsoil, likely from an offsite supplier but potentially sourced onsite, will then be placed to provide suitable substrate for the proposed native plantings. In addition to the native plantings, special habitat features including LWD and snags will be installed to increase habitat complexity. The mitigation plan proposes an increase in vertical and horizontal canopy structure by planting a variety of native tree, shrub, and groundcover species appropriately located to match existing species wetland indicator statuses and local topography.

In addition to the proposed wetland creation area, the portions of Wetland A within the creation area will be rehabilitated. The existing wetland area is degraded due to the presence of trash and debris, black dross associated with the aluminum processing facility onsite, dominance of non-native invasive species, and old fill material and compacted soils. Therefore, such degradations will be removed, the ground surface will be decompacted, soil amendments will be added as needed, and native plantings will be installed to increase vertical and horizontal structure and increase species diversity and habitat complexity. The associated buffer areas onsite will be also be restored through similar measures and planted with plant species suitable for drier areas. The proposed restoration actions will further increase ecological functions onsite and help ensure the success of the wetland creation area by removing non-native invasive species that could encroach upon and overtake the mitigation site. The increased plant structure and diversity has the potential to improve water quality and hydrology for water leaving the site by improving filtration and providing plant structure that can adequately slow floods.

Through careful design and utilization of best available science, the proposed mitigation plan has a high probability of success and persistence. By following the site preparation specifications outlined herein (e.g., excavation, topsoil installation, and plantings) the wetland creation area will maintain wetland hydrology during the growing season in most years to match the existing, functional, seasonally flooded/saturated wetland. The proposed native species have been carefully selected to ensure the plants take root and thrive in the newly created and existing wetland environments: selection criteria included indicator status and those species that are currently thriving onsite in both wetland and non-wetland areas. With construction of the mitigation site, establishment of the protective buffers, installation of permanent fencing and signage around the entire conservation

easement, and implementation of the required monitoring and maintenance actions, the mitigation area is projected to be a highly functional, persistent, and successful mitigation site.

Table 6. Summary of Proposed Mitigation Calculations.

Mitigation Type	Mitigation Ratio[1]	Mitigation Area	Mitigation Deficit
Wetland Rehabilitation	2:1 (combination)	7,442 SF (0.17 AC)	0.36 AC
Wetland Creation	1:1 (combination)	3,711 SF (0.09 AC)	0.36 AC
Wetland Creation	2:1	38,774 SF (0.86 AC)	**3,305 SF (0.076 AC)**

1. Wetland mitigation will first utilize the combination ratios to the extent practicable; the remainder of onsite mitigation will utilize the standard mitigation ratios.

Stream Mitigation

The existing Stream Z channel acts as a stormwater conveyance system that is severely degraded due to the plastic lining, steep cut banks, and lack of sinuosity. Stream channel creation will result in a net gain in stream length onsite due to the creation of multiple channels as off-channel habitat. The stream mitigation actions will provide cool, clean, and clear water from the dense native plantings which will provide stream shading, stormwater filtration, and wood recruitment as well as decreased streambank erosion, and large woody debris features for increased habitat suitability and complexity. Overall, these actions will improve water quality, hydrology, and habitat functions onsite by providing increased plant structure to slow floods and filter pollutants, and by providing a diverse native plant community and increased habitat structures which will provide browse, nesting, and forage for small mammals which will in turn provide prey for raptors and other mammals. The proposed establishment of a new, higher functioning stream channel within an enhanced riparian corridor will increase habitat suitability and complexity for a wide range of fauna over time which will greatly benefit the local sub-basin and greater watershed.

Perimeter Buffers

All compensatory mitigation areas will be protected by an established perimeter buffer as applicable. Per Table 6C-3 of the joint mitigation guidance (WSDOE et al., 2021), Category III wetlands with low habitat functions typically receive a 80-foot buffer for adjacent high land use intensity, 60-foot buffers for adjacent moderate land use intensity, and a 40-foot buffer for adjacent low land use intensity. However, the project will implement additional measures to reduce the required perimeter buffers adjacent to the onsite development from the buffer width required for high intensity to the buffer required for moderate intensity land use. Such measures will include planting a dense screen of native plantings along the development side to provide increased screening, filtration of sediments and pollutants, and slow surface runoff, as well as installing large woody debris for additional habitat suitability and complexity for a wide range of urban fauna. Therefore, the mitigation areas associated with Wetland A and Stream Z and buffer restoration associated with offsite Wetland C will receive a 60-foot perimeter buffer; this is consistent with the City of Kent buffer requirements for Category III wetlands.

2.3.2 In-Lieu Fee Use

Joint USACE and EPA rules (USACE & EPA, 2008) and interagency guidance (WSDOE & USACE 2006; WSDOE et al., 2021; Hruby et al., 2009) have been established that require more careful mitigation planning efforts utilizing a watershed approach in site selection, establishment of

enforceable performance standards, and preference for use of mitigation banks or ILFs wherever most ecologically practicable. The subject property is currently located within the KCMRP's Green River Service Area thus allowing the proposed project to utilize the King County approved ILF program for compensatory mitigation within the same watershed as project impacts. Onsite permittee-responsible mitigation are provided to the extent possible as discussed in Section 2.3 above. As such, ILF mitigation was determined to be the most ecologically feasible mitigation option to compensate for the remaining mitigation deficit. With ILF mitigation, the mitigation is completed on a large scale and the benefits of the purchased credits provide watershed scale benefits, with longer term maintenance and management than permittee-responsible-mitigation. Wetland functions targeted for use in the KCMRP include improving water quality, flood storage and flow reductions and habitat for plant and animals. The ILF program has the potential to provide valuable wetland functions and the landscape potential to maintain each function. The overarching mitigation goal of the Green River Service Area is to protect and enhance salmonid populations using a watershed approach, which will in turn benefit other aquatic species. The purchase of the ILF credits will allow the proposed project to achieve no net loss of aquatic resource functions.

The KCMRP, implemented by the King County Department of Natural Resources and Parks (DNRP) and King County Department of Development and Environmental Services (DDES), is intended to create a "comprehensive, equitable, and consistent" program to ensure successful mitigation actions. Oversight of this ILF program is provided by an IRT that includes representatives from the USACE, WSDOE, tribes, and other federal, state, and local regulatory agencies.

Assignment of an ILF requires quantification of wetland impacts in the form of a "debit" and calculation of wetland mitigation in the form of a "credit" (Hruby, 2012). Use of the Credit-Debit Method, as documented in Appendix D, establishes the necessary wetland "debit" for the proposed project. Once the mitigation plan is approved by regulatory staff and the appropriate debits agreed upon, the Applicant will purchase the credits from KCMRP.

Credit-debit requirements were determined using WSDOE's final draft of Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington (Hruby, 2012). The Credit-Debit Method assigns a numeric score (value) to water quality, hydrologic, and habitat functions and is based on proven methods established within the Washington State Wetland Rating System (Hruby, 2014). The purpose of most wetland mitigation actions is to provide equal or better function and value (increased lift) as compensation for wetlands being impacted. This Credit-Debit Method is intended to provide a more quantitative assessment by demonstrating that the mitigation actions, when mature, will be equal to, or have increased functional value, over the proposed wetland impacts.

Credits and debits are determined by completing a 'scoring form' that includes identifying the wetland class (i.e. tidal fringe, flats, depressional, riverine, etc.) then completing an evaluation of the three wetland functions (water quality, hydrologic, and habitat). Based on the functional scores, each of the three functions are assigned a score according to site potential, landscape potential, and value as low, moderate, or high, then each function is summed and a numeric value is reached. The functional values of the wetland become a "debit" when the wetland is impacted. Credits are determined by projecting the functional value of the mitigation site at maturity. In general, the debit value is subtracted from the credit value, and a positive number indicates a lift in wetland function; whereas a negative number indicates a loss of wetland function. Temporal loss factors in the debit calculation increase the required debit, and scaling factors decrease available credits. In practice, the Credit-Debit method may undervalue wetland enhancement and rehabilitation actions in comparison with wetland

creation and similar re-establishment actions and provides few options in incentives to conduct more than minimal enhancement measures. As such, state guidance allows for negotiation and adjustment of various scoring factors.

As outlined in Table 6 above, a total of 3,305 square feet (0.076-acre) of remaining indirect impact area from the proposed impacts will be compensated through the purchase of ILF credits; the mitigation deficit accounts for a portion of the indirect impact area. According to WSDOE et al. (2021), when indirect impacts are proposed, the agencies require compensation at one-half of the standard compensation ratio for direct impacts. The wetland debits for Wetland A totals 2.38 acre-points (1.00 Water Quality, 0.75 Hydrology, and 0.63 Habitat). The temporal loss factor for the wetland functions is 3 (delayed mitigation for impacts to an emergent or shrub community) and 4 (delayed impacts to a deciduous forested wetland community). Existing vegetation within the indirect impact areas was analyzed to determine how much impact area is considered deciduous forest versus non-forest for debit calculations; approximately 70 percent of the indirect impact area is non-forested, whereas approximately 30 percent is deciduous forest. Table 4 provides a listing of debit values for the impacted wetlands to determine the credits required through the current accounting method. Completed scoring forms to calculate debits and credits are presented in Appendix B.

Table 4. Debit Values.

Debit Values[1]				
Impacted Wetland[2]	**Water Quality**	**Hydrology**	**Habitat**	**Total**
Wetland A (indirect)	1.00	0.75	0.63	2.38

Note:
1. Temporal Loss Factors of 3 and 4 were used to determine debit values.

Negotiations of terms of the ILF credit purchase will be made with the KCMRP administrator after formal approval of this ILF Use Plan by all applicable regulatory agencies. Proof of credit purchase and transfer will be provided via a Statement of Sale from the KCMRP. Prior to any impacts to wetlands, the Statement of Sale will be provided to the appropriate regulatory agencies.

2.4 Approach and Mitigation Implementation

The onsite mitigation actions will occur concurrently with the development of the project. A pre-construction meeting will be held between the Applicant, general contractor, and the consulting Scientist to discuss the project and limitations specifically related to protection of critical areas and implementation of mitigation actions.

Equipment used will be typical for land clearing, grading, and excavation activities and will be kept in good working conditions and free of leaks. Equipment to be used will likely include excavators, backhoes, bulldozers, dump trucks, graders, et cetera. All equipment staging and materials stockpiles will be kept out of wetlands and regulated buffers, and the area will be kept free of spills and/or hazardous materials. All clean fill material will be sourced from upland areas onsite or from approved suppliers and will be free of pollutants and hazardous materials.

All appropriate BMPs and TESC measures, including dedicated construction entrance(s), silt fencing, and brush barriers, will be installed prior to and maintained throughout construction in order to minimize potential temporary impacts to Wetland A, as outlined in the TESC plan prepared by the

Project Engineer. As no work windows are expected to limit the construction schedule, this schedule is flexible, and site work will likely commence as soon as permits are issued and the site is able to support heavy equipment.

The project sequencing will be as follows:

- Pre-construction conferences and regulatory notifications;
- Pre-treatment of non-native invasive plant species;
- Install TESC measures;
- Remove debris and invasive plant material from the wetland creation and other mitigation areas;
- Rough grade the wetland and stream creation areas according to the approved grading plan;
- Rough grade inspection;
- Finish grade and prepare grounds for planting in all mitigation areas;
- Install LWD and snags;
- Seed entire mitigation area;
- Monitor site hydrology if necessary;
- Plant inspections;
- Install plant materials;
- Post-construction inspection and as-built survey; and
- Post-construction maintenance, monitoring, and annual reporting.

2.5 Goals, Objectives, and Performance Standards

The goals and objectives for the onsite mitigation actions are based on replacing wetland and stream functions lost by the proposed impacts to Wetland A and Stream Z temporary construction impacts and increasing wetland and buffer functions given their existing degraded state. These actions are capable of increasing existing water quality and hydrologic functions and providing a moderate level of habitat function for wetland-associated wildlife. It should be noted that only 5 years of monitoring is required for the City of Kent, and 10 years of monitoring for the USACE and WSDOE.

Performance standards have been added to this mitigation plan that monitor potential erosion elements in the stream restoration area that may impact the stability of the stream. For the onsite stream, the main concern would be incision due to the linear channel. Therefore, a performance standard was included to monitor the stream bed elevation. Another performance standard was included to monitor glide cracks (soil surface cracks due to movement of material) as well as culvert blockages. Given that erosion is a natural stream process that is hypervariable, the performance standards have been specifically designed to require action only if erosion exceeds particular thresholds, or visual observations determine immediate concerns. The goals and objectives of the proposed mitigation actions are as follows:

Goal 1 – Partially compensate for the approximately 20,507 square feet of direct impacts and 4,776 square feet of indirect impacts to Wetland A by creating 38,774 square feet of depressional wetland area contiguous with Wetland A.

Objective 1.1 – Establish wetland hydrology in the wetland creation area associated with Wetland A by excavating depressional areas (approximately 12 to 18 inches of material) to tie into the existing groundwater elevation.

Performance Standard 1.1.1 – The wetland creation area will have seasonally saturated soils (or greater hydroperiod) within 12 inches of the surface over for a minimum of 14 consecutive days early in the growing season (March – May) in years with normal precipitation levels over the monitoring period.

Performance Standard 1.1.2 – The compensatory wetland creation area will measure at least 38,774 square feet in size as demonstrated by wetland delineation during the monitoring event conducted in Year 10 of the monitoring period for the USACE and WSDOE and Year 5 for the City of Kent. *The wetland area will be delineated using the 1987 Army Corps of Engineers Delineation Manual and the Western Mountains, Valleys, and Coast Regional Supplement, Version 2 (May 2010).*

Objective 1.2 – Establish wetland habitat with diverse horizontal and vertical vegetation structure and species richness to provide habitat for wetland-associated wildlife over the compensatory wetland creation area.

Performance Standard 1.2.1 – By the end of Year 10, the compensatory wetland creation areas will have at least 3 native tree species and 5 native shrubs species; native volunteer species will be included in the count. This Performance Standard will be achieved by the end of Year 5 to satisfy mitigation requirements for the City of Kent given that monitoring is not required past Year 5. To be considered, the native species must make up at least 5 percent of the vegetation class.

Performance Standard 1.2.2 – State-listed, Class A noxious weeds must be completely eliminated from the wetland areas in all monitoring years and invasive species that are not considered state-listed, Class-A noxious weeds shall not exceed 20 percent aerial cover in the wetland areas in all monitoring years.

Performance Standard 1.2.3 - Minimum plant survivorship within the wetland creation areas will be at 100 percent of installed trees and shrubs at the end of Year 1 (utilization of native recruits and replacement of lost plants allowed), 85 percent at the end of Year 2, and 80 percent at the end of year 3.

Performance Standard 1.2.4 – Minimum native woody species total areal cover within the wetland creation areas will be at 20 percent total cover at the end of Year 2, 25 percent at the end of Year 3, 30 percent at the end of Year 4, 40 percent at the end of Year 5, 60 percent at the end of Year 7, and 65 percent at the end of Year 10.

Goal 2 – Partially compensate for the approximately 20,507 square feet of direct impacts and 4,776 square feet of indirect impacts to Wetland A by rehabilitating 7,442 square feet of depressional wetland area.

Objective 2.1 – Rehabilitate a total of 7,442 square feet of existing emergent wetland area in Wetland A with a suite of native trees and shrubs to create diverse horizontal and vertical vegetation structure and additional wildlife habitat.

Performance Standard 2.1.1 – By the end of Year 10, the compensatory wetland rehabilitation areas will have at least 3 native tree species and 5 native shrubs species; native volunteer species will be included in the count. This Performance Standard will be achieved by the end of Year 5 to satisfy mitigation requirements for the City of Kent. To be considered, the native species must make up at least 5 percent of the vegetation class.

Performance Standard 2.1.2 – State-listed, Class A noxious weeds must be completely eliminated from the wetland areas in all monitoring years and invasive species that are not considered state-listed, Class-A noxious weeds shall not exceed 20 percent aerial cover in the wetland areas in all monitoring years.

Performance Standard 2.1.3 - Minimum plant survivorship within the wetland rehabilitation areas will be at 100 percent of installed trees and shrubs at the end of Year 1 (utilization of native recruits and replacement of lost plants allowed), 85 percent at the end of Year 2, and 80 percent at the end of year 3.

Performance Standard 2.1.4 – Minimum native woody species total areal cover within the wetland rehabilitation areas will be at 20 percent total cover at the end of Year 2, 25 percent at the end of Year 3, 30 percent at the end of Year 4, 40 percent at the end of Year 5, 60 percent at the end of Year 7, and 65 percent at the end of Year 10.

Goal 3 – Improve and protect wetland and buffer functions by restoring the remaining buffer areas associated with Wetland A, Wetland C, and Stream Z.

Objective 3.1 – Restore a total of 113,261 square feet of buffer area with a suite of native trees, shrubs, and emergent plants to create diverse horizontal and vertical vegetation structure and additional wildlife habitat.

Performance Standard 3.1.1 – By the end of Year 10, the enhancement areas will have at least 3 species of native trees and 5 species of native shrubs; native volunteer species will be included in the count. This performance standard will be achieved by the end of year 5 as well, to satisfy mitigation requirements for the City of Kent. To

be considered, the native species must make up at least 5 percent of the vegetation class.

Performance Standard 3.1.2 – Minimum plant survivorship will be at 100 percent of installed plants at the end of Year 1 (replacement of lost plants allowed), 85 percent at the end of Year 2, and 75 percent at the end of Year 3.

Performance Standard 3.1.3 – State-listed, Class A noxious weeds must be completely eliminated from the buffer areas in all monitoring years and invasive species that are not considered state-listed, Class-A noxious weeds shall not exceed 20 percent aerial cover in the buffer areas in all monitoring years.

Performance Standard 3.1.4 – Minimum native woody species total areal cover within the buffer restoration areas will be 20 percent total cover at the end of Year 2, 25 percent at the end of Year 3, 30 percent at the end of Year 4, 40 percent at the end of Year 5, 60 percent at the end of Year 7, and 65 percent at the end of Year 10.

Goal 4 – Compensate for the direct impacts to the degraded Stream Z channel by creating a new restored stream channel.

Objective 4.1 – Create a new restored stream reach with enhanced habitat components.

Performance Standard 4.1.1 – The new stream channel system will be created according to the final approved design and documented in the As-Built Report.

Performance Standard 4.1.2 – Habitat structures with large woody debris in the new stream channel system will be present and functioning according to the final approved design and documented in the As-Built Report.

Objective 4.2 – Establish a stable stream channel.

Performance Standard 4.2.1 – The new onsite culvert for Stream Z will be kept free of blockages to allow free passage of water.

Performance Standard 4.2.2 – The restored stream banks/slopes will be free of glide cracks.

Performance Standard 4.2.3 – The new restored stream channel will maintain bed elevation within 1-foot of the final approved design and grades.

2.6 Plant Materials and Installation

2.6.1 Plant Materials

All plant materials to be used for mitigation actions will be nursery grown stock from a reputable, local source. Only native species are to be used; no hybrids or cultivars will be allowed. Plant material provided will be typical of their species or variety; if not cuttings they will exhibit normal, densely developed branches and vigorous, fibrous root systems. Plants will be sound, healthy, vigorous plants free from defects, and all forms of disease and infestation.

Container stock shall have been grown in its delivery container for not less than six months but not more than two years. Plants shall not exhibit rootbound conditions. Under no circumstances shall container stock be handled by their trunks, stems, or tops. Seed mixture used for hand or hydroseeding shall contain fresh, clean, and new crop seed mixed by an approved method. The mixture is specified in the plan set.

All plant material shall be inspected by the Project Scientist upon delivery. Plant material not conforming to the specifications below will be rejected and replaced by the planting contractor. Rejected plant materials shall be immediately removed from the site.

Fertilizer will be in the form of Agroform plant tabs or an approved like form. Mulch will consist of sterile wheat straw for seeded areas (if necessary) and clean recycled wood chips approximately ½-inch to 1-inch in size and ½-inch thick for woody plants. The mulch material may be sourced from non-invasive woody materials sourced from the land clearing activities.

2.6.2 Plant Scheduling, Species, Size, and Spacing

Plant installation should occur as close to conclusion of the construction activities as possible to limit erosion and limit the temporal loss of function provided by the wetlands and buffers. All planting should occur between September 1 and May 1 to ensure plants do not dry out after installation, or temporary irrigation measures may be necessary.

2.6.3 Quality Control for Planting Plan

All plant material shall be inspected by the qualified Project Scientist upon delivery. Plant material not conforming to the specifications above will be rejected and replaced by the planting contractor. Rejected plant materials shall be immediately removed from the site. Under no circumstances shall container stock be handled by their trunks, stems, or tops.

The landscape contractor shall provide the responsible Project Scientist with documentation of plant material that includes the supplying nursery contact information, plant species, plant quantities, and plant sizes.

2.6.4 Product Handling, Delivery, and Storage

All seed and fertilizer should be delivered in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. This material should be stored in a manner to prevent wetting and deterioration. All precautions customary in good trade practice shall be taken in preparing plants for moving. Workmanship that fails to meet industry standards will be rejected. Plants will be packed, transported, and handled with care to ensure protection against injury and from drying out. If plants cannot be planted immediately upon delivery they should be protected with soil, wet peat moss, or in a manner acceptable to the responsible Project Scientist. Plants, fertilizer, and mulch not installed immediately upon delivery shall be secured on the site to prevent theft or tampering. No plant shall be bound with rope or wire in a manner that could damage or break the branches. Plants transported on open vehicles should be secured with a protective covering to prevent windburn.

2.6.5 Preparation and Installation of Plant Materials

The planting contractor shall verify the location of all elements of the mitigation plan with the responsible Project Scientist prior to installation. The responsible Project Scientist reserves the right to adjust the locations of landscape elements during the installation period as appropriate. If

obstructions are encountered that are not shown on the drawings, planting operations will cease until alternate plant locations have been selected by and/or approved by the Project Scientist.

Circular plant pits with vertical sides will be excavated for all container stock. The pits should be at least 1.5 times the width of the rootball, and the depth of the pit should accommodate the entire root system.

Broken roots should be pruned with a sharp instrument and rootballs should be thoroughly soaked prior to installation. Set plant material upright in the planting pit to proper grade and alignment. Water plants thoroughly midway through backfilling and add Agroform tablets. Water pits again upon completion of backfilling. No filling should occur around trunks or stems. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water and install a 4- to 6-inch layer of mulch around the base of each container plant, using care not to cover the base/stem of the plant itself.

2.6.6 Temporary Irrigation Specifications

While the native species selected for mitigation actions are hardy and typically thrive in northwest conditions and the proposed actions are planned in areas with sufficient hydroperiods for the species selected, some individual plants might perish due to dry conditions. Therefore, irrigation or regular watering may be provided as necessary for the duration of the first two growing seasons, two times per week while the native plantings become established. If used, irrigation will be discontinued after two growing seasons. Frequency and amount of irrigation will be dependent upon climatic conditions and may require more or less frequent watering than two times per week.

2.6.7 Invasive Plant Control and Removal

Invasive species to be removed include Himalayan blackberry and reed canarygrass and all listed noxious weeds that may potentially be present within the mitigation areas; such non-native invasive species will require an effective control strategy. To ensure non-native invasive species do not expand following the mitigation actions, non-native invasive plants within the entire mitigation area will be pretreated with a root-killing herbicide approved for use in aquatic sites (i.e. Rodeo) a minimum of two weeks prior to being cleared and grubbed from the mitigation area. A second application is strongly recommended. The pre-treatment with herbicide should occur prior to all planned mitigation actions, and spot treatment of surviving non-native invasive vegetation should be performed again each fall prior to senescence for a minimum of three years.

2.7 Maintenance & Monitoring Plan

The maintenance and monitoring plans is described below in accordance with KCC 11.06.570. The Applicant is committed to compliance with the mitigation plan and overall success of the project. As such, the Applicant will continue to maintain the mitigation areas, keeping the site free from of non-native invasive vegetation, trash, and yard waste.

The wetland mitigation actions will require continued monitoring and maintenance to ensure the mitigation actions are successful. Therefore, the mitigation areas will be monitored for a period of 10 years, with formal inspections by a qualified Project Scientist. Monitoring events will be scheduled at the time of construction, 30 days after planting, and minimally on an annual basis during Years 1, 2, 3, 4, 5, 7, and 10. Closeout monitoring will occur in Year 5 for the City and Year 10 for the USACE to ensure the success of the mitigation actions.

Monitoring will consist of percent cover measurements at permanent monitoring stations, walk-through surveys to identify invasive species presence and dead or dying mitigation plantings, photographs taken at fixed photo points, wildlife observations, and general qualitative habitat and wetland function observations.

To determine percent cover, observed vegetation will be identified and recorded by species and an estimate of areal cover of dominant species within each sampling plots. Circular sample plots, approximately 30 feet in diameter (706 square feet), are centered at each monitoring station. The sample plots encompass the specified wetland areas and terminate at the observed wetland or buffer boundary. Trees and shrubs within each 30-foot diameter monitoring plot are then recorded to species and areal cover. Herbaceous vegetation is sampled from a 10-foot diameter (78.5 square feet) within each monitoring plot, established at the same location as the center of each tree and shrub sample plot. Herbaceous vegetation within each monitoring plot is then recorded to species and includes an estimate of percent areal cover. A list of observed tree, shrub, and herbaceous species including percent areal cover of each species and wetland status is included within the monitoring report.

2.8 Reporting

Following construction of the mitigation areas, an as-built inspection and report will be completed and submitted to the City of Kent and the USACE. Following each monitoring event, a brief monitoring report detailing the current ecological status of the mitigation actions, measurement of performance standards, and management recommendations will be prepared and submitted to the City of Kent and the USACE within 90 days of each monitoring event to ensure full compliance with the mitigation plan.

2.9 Contingency Plan

If monitoring results indicate that performance standards are not being met, it may be necessary to implement all or part of the contingency plan. Careful attention to maintenance is essential in ensuring that problems do not arise. Should any portions of the mitigation areas fail to meet the success criteria, a contingency plan will be developed and implemented with City and USACE approval. Such plans are adaptive and should be prepared on a case-by-case basis to reflect the failed mitigation characteristics. Contingency plans can include additional plant installation, erosion control, and plant substitutions including type, size, and location. The Contingency measures outlined below can also be utilized in perpetuity to maintain the wetlands and buffers associated with the proposed project site.

Contingency/maintenance activities may include, but are not limited to:

1. Using plugs instead of seed for emergent vegetation coverage where seeded material does not become well-established;
2. Replacing plants lost to vandalism, drought, or disease, as necessary;
3. Replacing any plant species with a 20 percent or greater mortality rate after two growing seasons with the same species or native species of similar form and function;
4. Irrigating the mitigation areas only as necessary during dry weather if plants appear to be too dry, with a minimal quantity of water;
5. Reseeding and/or repair of wetland areas as necessary if erosion or sedimentation occurs;
6. Spot treat non-native invasive plant species; and

7. Removing all trash or undesirable debris from the wetland and buffer areas as necessary.

2.10 Long-Term Management Plan

Informal, post-compliance maintenance and monitoring of the compensatory wetland mitigation area will continue permanently in compliance with 33 CFR 332.7(d)(2). This project proposes 10 years of monitoring (5 years for the City) in compliance with the goals and performance standards outlined in Section 2.5 of the report. To ensure long-term success of the mitigation site, the landowner will also be responsible for implementing the maintenance items outlined in Section 2.7 of the report. 1) Maintenance actions may include, but are not limited to, treatment of invasive plant species and removal of trash and undesirable debris from the wetland and buffer areas. Please see the contingency/maintenance activities list for additional details. 2) Annual cost estimates for these actions: Mitigation area maintenance is anticipated to cost up to $2,000 annually and primarily will be used for potential invasive plant species treatment and any potential reoccurring debris removal. By Year 10, with the support of the contingency plan (if necessary), the plants will be well established; therefore, no budget will be necessary for watering and/or plant replacement. 3) How the long-term management will be funded: Revenue generated from the proposed development and/or tenant lease rate will be utilized for funding long-term management. 4) Frequency of monitoring, maintenance and reporting. In compliance with 33 CFR 332.7(d)(2), the mitigation areas on the project site will be maintained in perpetuity by the landowner. No additional formal wetland monitoring and reporting by a professional biologist beyond the Year 10 As-Built is proposed at this time; however, the USACE may request informal monitoring and reporting of the general condition and maintenance actions performed regarding upkeep of the mitigation site in perpetuity. In compliance with 33 CFR 332.7(d)(2) and to ensure long-term success of the mitigation site, the landowner will be responsible for implementing long-term maintenance. In addition, the mitigation areas on the project site will be maintained in perpetuity by the landowner. A notice on title will be added to the property to ensure recognition of the wetland mitigation areas into the future.

2.11 Contingency Plan

Long-term protection of the mitigation site shall be provided by placement in a separate tract in which development is prohibited or by execution of an easement dedicated to the City of Kent, a conservation organization, land trust, or similarly preserved through a permanent protective mechanism acceptable to the city. The location and limitations associated with the mitigation area shall be shown on the face of the deed or plat applicable to the property and shall be recorded with the King County recording department.

2.12 Financial Assurances

Under KCC 11.06.570.B, performance security is required to assure that all actions approved under this Mitigation Plan are satisfactorily completed in accordance with the mitigation plan, performance standards, and regulatory conditions of approval. Prior to final inspection, a maintenance and warranty security (bond) shall be obtained in an amount equal to 125 percent of the total fair market cost of construction/installation labor and materials. A bond quantity worksheet will be completed during the Final Mitigation Plan.

Chapter 3. References

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USACE. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Ver2.0),* ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-3. U.S. Army Engineer Research and Development Center. Vicksburg, Mississippi.

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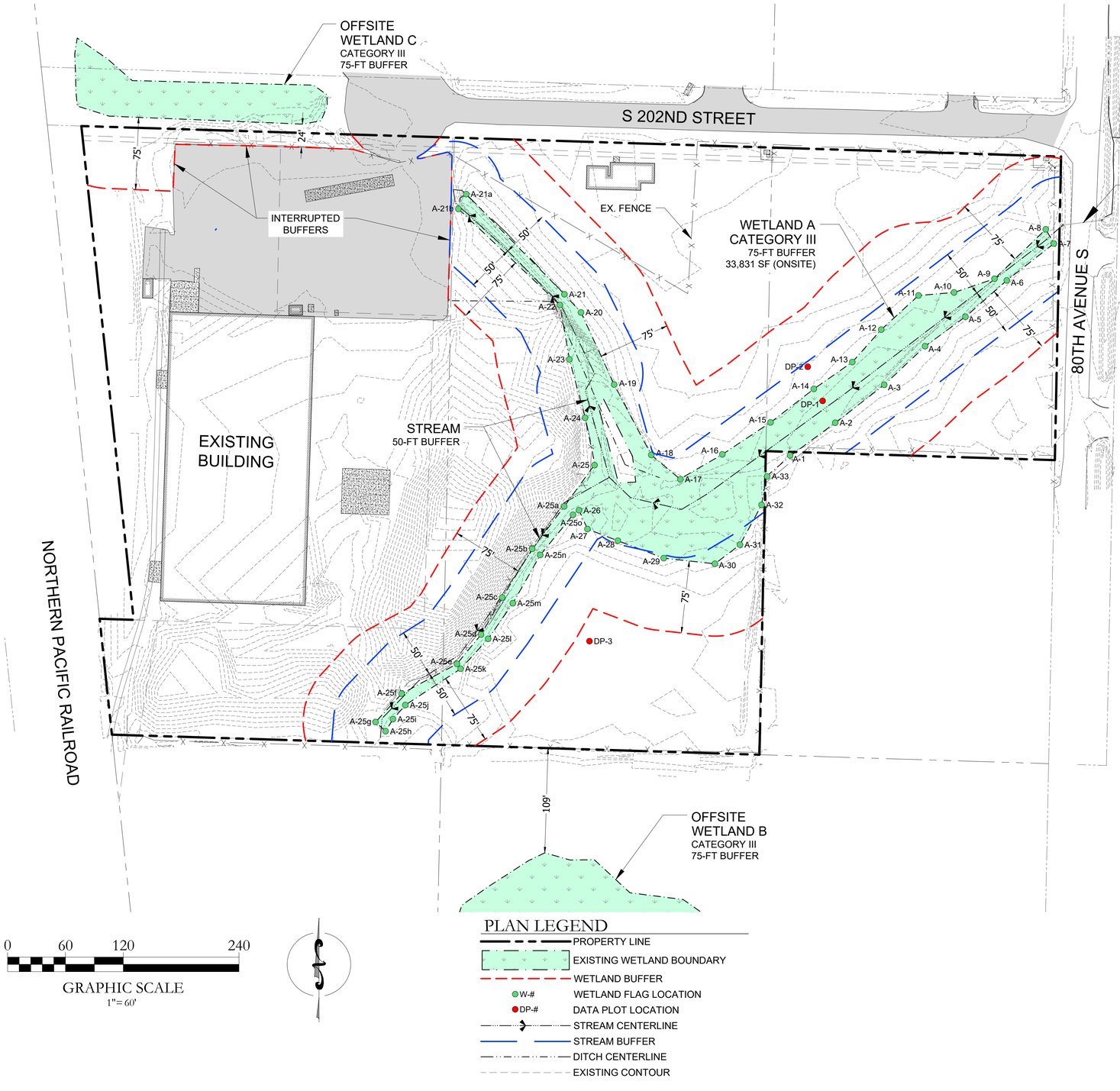
Appendix A — Existing Conditions and Proposed Exhibits



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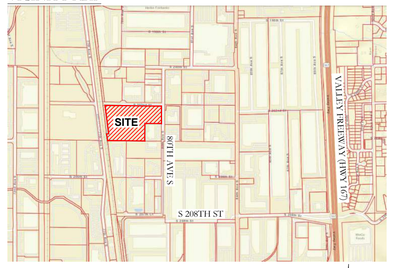
GRAPHIC SCALE
1"= 60'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- WETLAND BUFFER
- W-# WETLAND FLAG LOCATION
- DP-# DATA PLOT LOCATION
- STREAM CENTERLINE
- STREAM BUFFER
- DITCH CENTERLINE
- EXISTING CONTOUR

VICINITY MAP



SOURCE: ESRI (ACCESSED 12/7/2022)

LOCATION

THE SE ¼ OF SECTION 01,

TOWNSHIP 22N, RANGE 04E, WM

APPLICANT/OWNER

NAME: BRIDGE DEVELOPMENT PARTNERS, LLC.
ADDRESS: 10655 NE 4TH STREET, SUITE 500
BELLEVUE, WASHINGTON 98004
CONTACT: KYLE SIEKAWITCH
PHONE: (425) 749-4325
E-MAIL: KSIEKAWITCH@BRIDGEDEV.COM

ENVIRONMENTAL CONSULTANT

SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE
GIG HARBOR, WA 98355
(253) 514-8952

SHEET INDEX

SOURCE:

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barghausen.com

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MARALCO
7730 S 202ND STREET
KENT, WASHINGTON 98032

KING COUNTY
PARCEL NUMBER:
631500-0300

DATE: 1/19/2023
JOB: 1582.0022
BY: MW
SCALE: AS SHOWN
SHEET: 1

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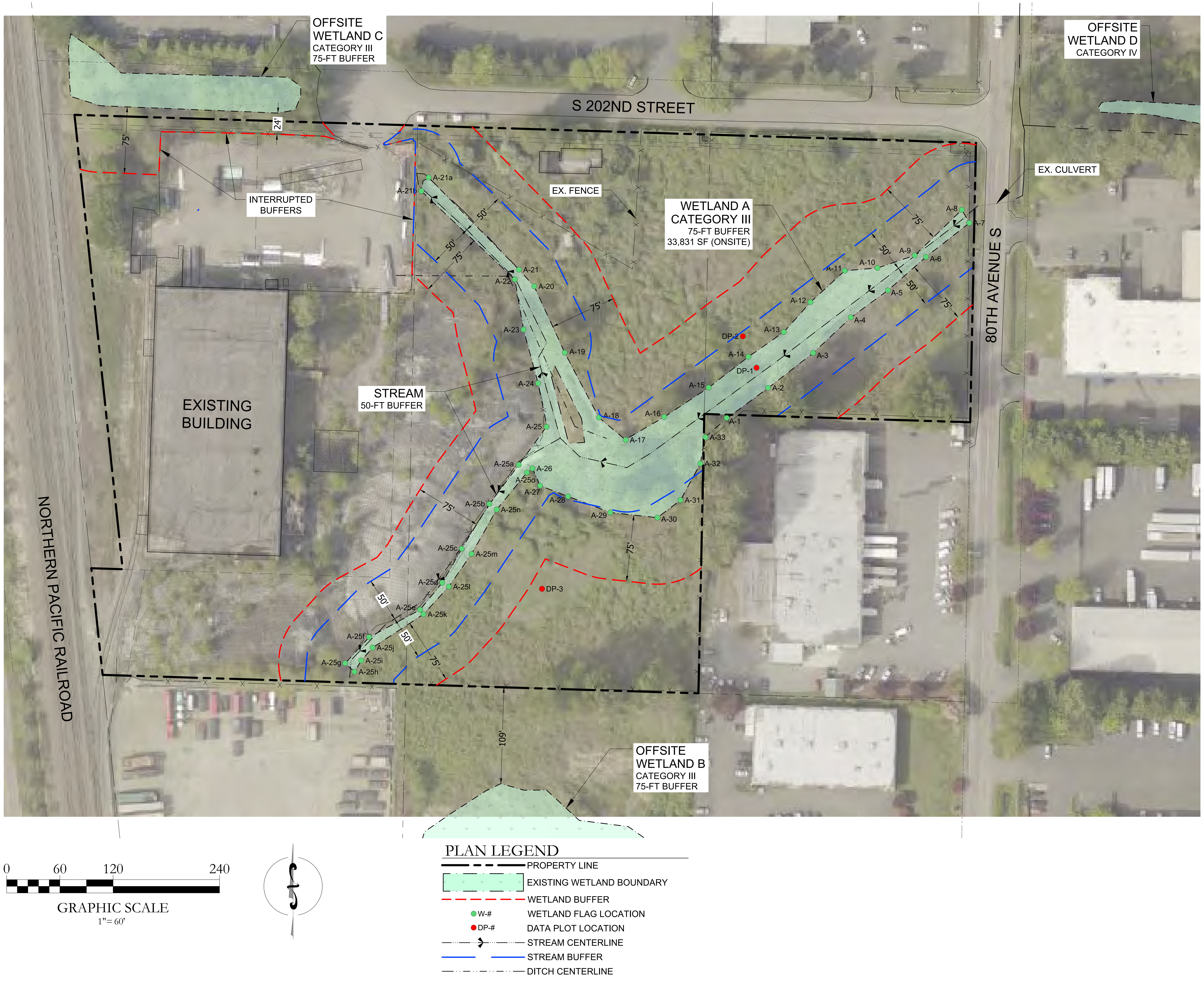
Plotted January 20, 2023



SOURCE:

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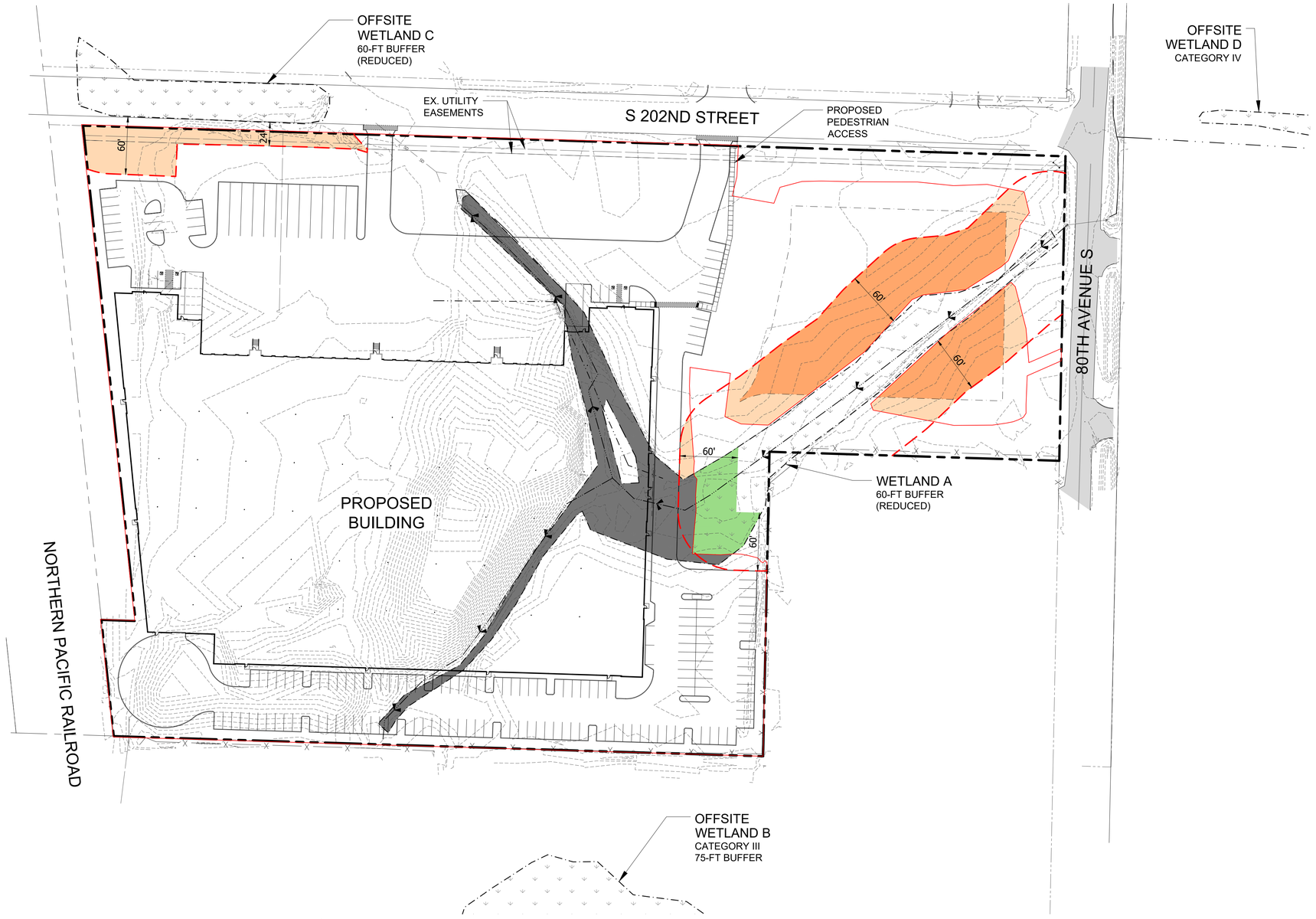
KING COUNTY
PARCEL NUMBER:
631500-0300

DATE: 1/19/2023
JOB: 1582.0022
BY: MW
SCALE: AS SHOWN
SHEET: 2

PROPOSED IMPACTS



0 60 120 240

GRAPHIC SCALE
1"= 60'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- REDUCED WETLAND BUFFER
- STREAM CENTERLINE
- STREAM BUFFER
- DITCH CENTERLINE
- CLEARING LIMITS

IMPACTS LEGEND

WETLAND FILL	20,507 SF
INDIRECT WETLAND IMPACTS	4,776 SF
TOTAL WETLAND IMPACTS:	25,283 SF
TEMPORARY BUFFER GRADING IMPACTS (TO BE RESTORED)	14,892 SF
TEMPORARY BUFFER GRADING IMPACTS (TO BE CONVERTED TO WETLAND)	24,075 SF
TOTAL TEMPORARY IMPACTS:	38,967 SF

SOURCE:

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com

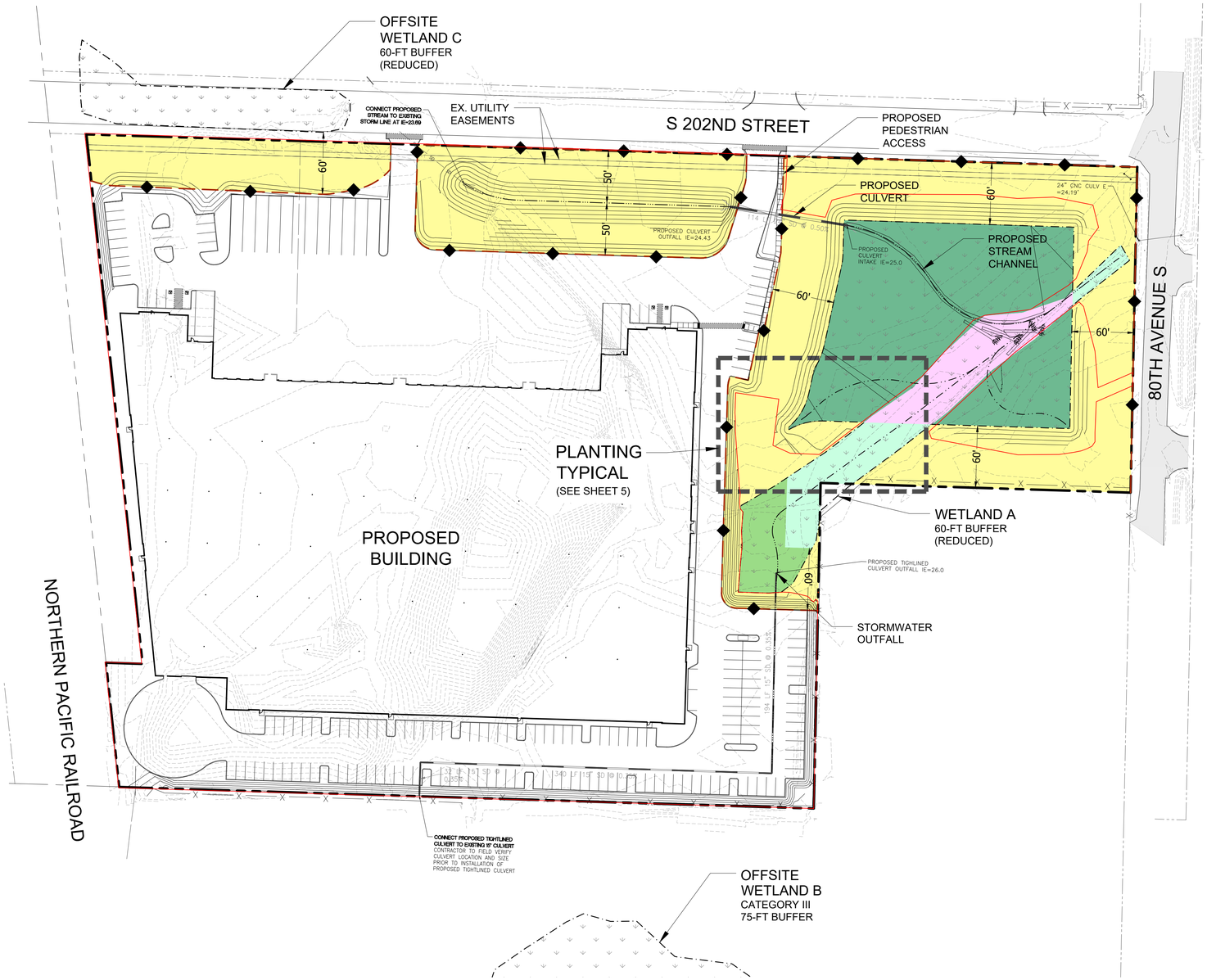
Soundview Consultants LLC
Environmental Assessment • Planning • Land Use Solutions
2907 HARBORVIEW DRIVE, SUITE D
GIG HARBOR, WASHINGTON 98335
P. 253.514.8952
F. 253.514.8954
WWW.SOUNDVIEWCONSULTANTS.COM

MARALCO
7730 S 202ND STREET
KENT, WASHINGTON 98032

KING COUNTY
PARCEL NUMBER:
631500-0300

DATE: 1/19/2023
JOB: 1582.0022
BY: MW
SCALE: AS SHOWN
SHEET: 3

S:\CURRENT\1582 Bridge Development\1582.0022 Maralco\Graphics & Maps\CAD\A - CURRENT SVC DRAWINGS\A - Current Plan Set\1582.0022 (2023-01) base.dwg
Plotted January 26, 2023

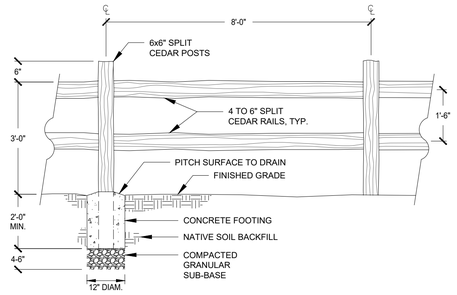


OFFSITE
WETLAND D
CATEGORY IV

OFFSITE
WETLAND B
CATEGORY III
75-FT BUFFER

SPLIT RAIL FENCE DETAIL

NOT TO SCALE

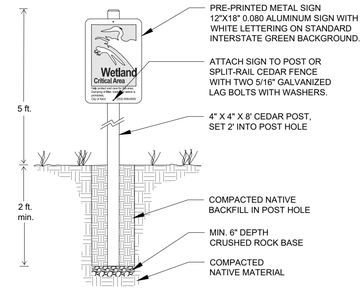


NOTES:

1. POSTS AND RAILINGS PRE-CUT FOR ASSEMBLY.
2. 3-RAIL DESIGNS ARE PERMITTED.
3. FENCE SHALL BE PLACED AT APPROVED BUFFER EDGE.

CRITICAL AREA SIGN DETAIL

NOT TO SCALE



CRITICAL AREA BOUNDARY SIGN NOTES:

1. THE WETLAND/STREAM SIGN SHALL BE POSTED AT THE BOUNDARY BETWEEN THE LOT AND THE CRITICAL AREA.
2. ONE SIGN SHALL BE POSTED PER RESIDENTIAL LOT AND ONE SIGN PER 100 FEET FOR ALL PUBLIC RIGHTS-OF-WAY, TRAILS, PARKING AREAS, PLAYGROUNDS, AND ALL OTHER USES LOCATED ADJACENT TO WETLANDS AND ASSOCIATED BUFFERS.
3. PRE-PRINTED METAL SIGN AVAILABLE THROUGH SIGN, AVAILABLE THROUGH:
   ZUMAR INDUSTRIES
   PHONE: 1-800-426-7967,
   WEBSITE: WWW.ZUMAR.COM

0 60 120 240

GRAPHIC SCALE
1"= 60'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- REDUCED WETLAND BUFFER
- STREAM CENTERLINE
- STREAM BUFFER
- DITCH CENTERLINE
- CLEARING LIMITS

MITIGATION LEGEND

WETLAND CREATION	38,774 SF
WETLAND REHABILITATION	7,442 SF
WETLAND AS BUFFER ENHANCEMENT	4,776 SF
BUFFER RESTORATION / ENHANCEMENT	113,261 SF

- POST-CONSTRUCTION BUFFER / CRITICAL AREAS FENCE
- CRITICAL AREA SIGN - 22 SIGNS
- LARGE WOODY DEBRIS

SOURCE:

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PARCEL NUMBER:
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JOB: 1582.0022
BY: MW
SCALE: AS SHOWN
SHEET: 4

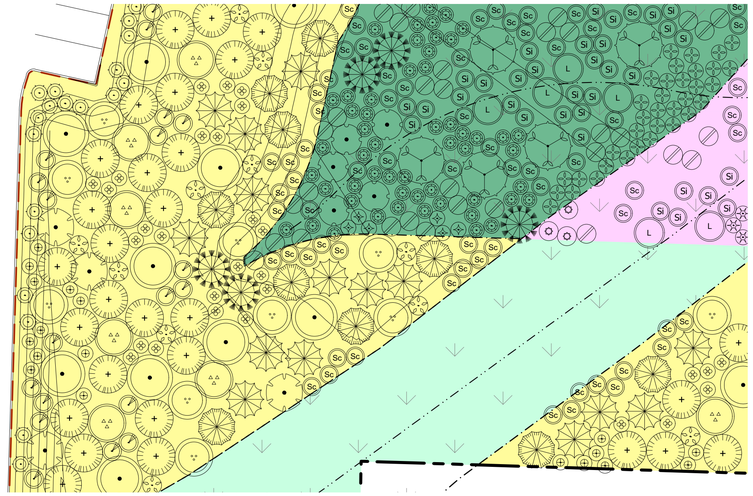
S:\CURRENT\1582 Bridge Development\1582.0022 Maralco\Graphics & Maps\CAD\A - CURRENT SVC DRAWINGS\A - Current Plot Plan(1582.0022.0023-01) base.dwg
Plotted January 20, 2023

			Area (sf):	38,774	12,218	113,261	164,253				
			Cov'g (%):	100	50	100					
			Trees (%):	25	25	50					
			Shrubs (%):	75	75	50					
	Scientific Name	Common Name	WL Status	Wetland Creation	Wetland Reestablishment Enhancement	Buffer Restoration/ Enhancement	TOTAL	Spacing (min.)	Height (min.)	Size (min.)	Planting Area
	TREES										
	Acer macrophyllum	bigleaf maple	FACU	-	-	90	90	10 ft	3 ft	2 gal	Dry
	Frangula purshiana (Rhamnus p.)	cascara	FAC	-	-	50	50	10 ft	3 ft	1 gal	Dry
	Fraxinus latifolia	Oregon ash	FACW	32	-	-	32	12 ft	3 ft	2 gal	Wet - in wetland
	Malus fusca (Pyrus f.)	Pacific crabapple	FACW	32	-	-	32	10 ft	3 ft	2 gal	Wet - in wetland
	Pinus contorta var. contorta	shore pine	FAC	20	-	40	60	10 ft	3 ft	1 gal	Dry/Moist
	Pseudotsuga menziesii	Douglas fir	FACU	-	-	264	264	10 ft	3 ft	2 gal	Dry
L	***Salix lasiandra***	Pacific willow	FACW	28	18	-	46	10 ft	4 ft	Stakes	Wet
	Thuja plicata	western redcedar	FAC	-	-	125	125	10 ft	3 ft	2 gal	Moist
	Tsuga heterophylla	western hemlock	FACU	-	-	85	85	10 ft	3 ft	2 gal	Moist
			Total:	112	18	654	784				
	SHRUBS										
	Acer circinatum	vine maple	FAC	-	-	150	150	10 ft	4 ft	2 gal	Dry/Moist
	Cornus stolonifera	red-osier dogwood	FACW	185	58	-	243	4 ft	3 ft	1 gal	Moist/Wet
	Corylus cornuta var. californica	western hazlenut	FACU	-	-	100	100	10 ft	2 ft	2 gal	Moist
NO SYMBOL	***Gaultheria shallon***	salal	FACU	-	-	500	500	4 - 5 ft	1 ft	1 gal	Dry
	Holodiscus discolor	oceanspray	FACU	-	-	180	180	5 ft	2 ft	1 gal	Dry
	Physocarpus capitatus	Pacific ninebark	FACW	-	11	-	11	5 ft	2 ft	1 gal	Moist/Wet
NO SYMBOL	***Polystichum munitum***	western swordfern	FACU	-	-	500	500	4 - 5 ft	1 ft	1 gal	Dry/Moist
	Ribes lacustre	swamp gooseberry	FAC	40	-	-	40	4 ft	2 ft	1 gal	Moist/Wet
	Rosa gymnocarpa	bald hip rose	FACU	-	-	170	170	4 ft	2 ft	1 gal	Dry/Moist
	Rosa pisocarpa	clustered wild rose	FAC	-	15	-	15	4 ft	2 ft	1 gal	Wet
	Rubus parviflorus	thimbleberry	FACU	-	-	170	170	4 ft	2 ft	1 gal	Moist
	Rubus spectabilis var. spectabilis	salmonberry	FAC	358	33	200	591	4 ft	2 ft	1 gal	Moist
Sc	***Salix scouleriana***	Scouler's willow	FAC	185	33	250	468	5 ft	4 ft	Stakes	Dry
Sl	***Salix sitchensis***	Sitka willow	FACW	215	51	-	266	10 ft	4 ft	Stakes	Moist/Wet
	Sambucus racemosa var. racemosa	red elderberry	FACU	-	11	116	127	5 ft	2 ft	2 gal	Dry
	Spiraea douglasii	Douglas spirea	FACW	360	-	-	360	4 ft	2 ft	1 gal	Moist/Wet
	Symphoricarpos albus var. laevigatus	common snowberry	FACU	-	-	280	280	4 ft	2 ft	1 gal	Dry
			Total:	1343	212	2616	4171				

	SEED MIXES (www.riverrefugeseed.com)		WL Status	Wetland Creation	Wetland Reestablishment Enhancement	Buffer Restoration/ Enhancement	TOTAL
	Native Upland Grass Mix #9	**20 lbs/acre**					
	Elymus glaucus	Blue wildrye	30%				
	Bromus carinatus	California brome	25%				
	Hordeum brachyantherum	Meadow barley	10%				
	Festuca roemeri	Roemer's fescue	10%				
	Deschampsia elongata	Slender hairgrass	10%				
	Agrostis exarata	Spike bentgrass	5%				
	Deschampsia cespitosa	Tufted hairgrass	5%				
	Festuca rubra var. rubra	Red fescue	5%				
		Total (lbs):		-	-	53	53
	Moist Soil Sedge & Rush Mix #11	**20 lbs/acre**					
	Carex unilateralis	One-sided sedge	70%				
	Carex densa	Dense sedge	12%				
	Juncus effusus	Common rush	5%				
	Juncus tenuis	Slender rush	5%				
	Juncus bufonius	Toad rush	5%				
	Carex stipata	Awl fruited sedge	2%				
	Carex obnupta	Slough sedge	1%				
		Total (lbs):		5	-	-	5
	Native Moist Soil Mgmt Mix #12	**20 lbs/acre**					
	Glyceria occidentalis	Western mannagrass	35%				
	Alisma subcordatum	American water plantain	15%				
	Polygonum pensylvanicum	Pennsylvania smartweed	15%				
	Beckmannia syzigachne	American sloughgrass	10%				
	Alopecurus aequalis	Shortawn foxtail	5%				
	Eleocharis palustris	Creeping spikerush	5%				
	Hordeum brachyantherum	Meadow barley	5%				
	Eleocharis ovata	Ovate spikerush	4%				
	Leersia oryzoides	Rice cutgrass	3%				
	Scirpus tabernaemontani	Softstem bulrush	3%				
		Total (lbs):		13	6	-	19

Habitat Structures		
Large Woody Debris	**5 ea.**	**18-20 feet long, 10 inch minimum diameter**

1 - Scientific names and species identification taken from *Flora of the Pacific Northwest, 2nd Edition (Hitchcock and Cronquist, Ed. by Giblin, Ledger, Zika, and Olmstead, 2018).*
2 - Over-sized container plants are suitable for replacement pending Wetland Scientist approval.
3 - Native plant species may be substituted or added with Wetland Scientist approval.
4 - All disturbed and bare soil areas in the buffer to be seeded with a native grass seed mix.
5 - Tree calculations based upon 10-ft average spacing.
6 - Shrub calculations based upon 5-ft average spacing.
7 - *Gaultheria shallon, Mahonia nervosa, & Polystichum munitum* to be planted in groups of no less than 5 around the bases of trees and in open areas.



PLANTING TYPICAL

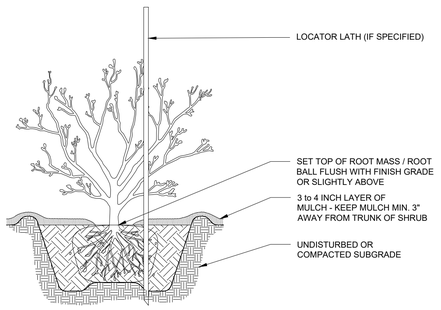
SCALE: 1"=20'

0 10 20 40

GRAPHIC SCALE
1" = 20'

TREE AND SHRUB PLANTING DETAIL (TYPICAL)

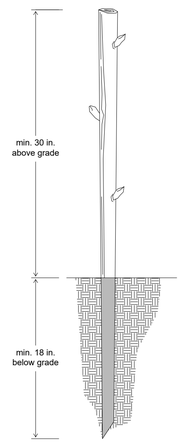
NOT TO SCALE



NOTES:
1. PLANT SHRUBS OF THE SAME SPECIES IN GROUPS OF 3 to 9 AS APPROPRIATE, OR AS SHOWN ON PLAN. AVOID INSTALLING PLANTS IN STRAIGHT LINES TO ACHIEVE A NATURAL-LOOKING LAYOUT.
2. EXCAVATE PIT TO FULL DEPTH OF ROOT MASS AND 2 X ROOT MASS DIAMETER. SPREAD ROOTS TO FULL WIDTH OF CANOPY. SCARIFY SIDES OF PIT.
3. MIDWAY THROUGH PLANTING ADD AGROFORM TABLET AND WATER THOROUGHLY.
4. BACKFILL TO BE COMPACTED USING WATER ONLY.
5. WATER IMMEDIATELY AFTER INSTALLATION.

LIVE STAKE PLANTING DETAIL (TYPICAL)

NOT TO SCALE



STORAGE OF LIVE STAKES:
ALL WOODY PLANT CUTTINGS COLLECTED MORE THAN 12 HR PRIOR TO INSTALLATION, MUST BE CAREFULLY BOUND, SECURED, AND STORED OUT OF DIRECT SUNLIGHT AND SUBMERGED IN CLEAN FRESH WATER FOR A PERIOD OF UP TO TWO WEEKS.

OUTDOOR TEMPERATURES MUST BE LESS THAN 50 DEGREES F AND TEMPERATURE INDOORS AND IN STORAGE CONTAINERS MUST BE BETWEEN 34 AND 50 DEGREES F.

IF THE LIVE STAKES CANNOT BE INSTALLED DURING THE DORMANT SEASON, CUT DURING THE DORMANT SEASON AND HOLD IN COLD STORAGE AT TEMPERATURES BETWEEN 33 AND 39 DEGREES F FOR UP TO 2 MONTHS.

NOTES:
1. LIVE STAKES TO BE A MIN. 1/2 INCH DIAMETER; MIN. 48 INCH LENGTH.
2. USE 1/2 INCH MIN. DIAMETER REBAR OR ROCK BAR TO MAKE PILOT HOLE WHEN PLANTING IN DENSE OR GRAVELY SOILS TO A MIN. DEPTH OF 18 INCHES.
3. MANUALLY INSERT LIVE STAKE INTO PILOT HOLE TAPERED END UP AND TEMP SOIL AROUND BASE. CUTTINGS SHOULD BE INSERTED TO A DEPTH OF AT LEAST 18 INCHES. LEAVE A MIN. OF 30" OF THE CUTTING ABOVE GROUND SURFACE TO ALLOW FOR SUCCESSFUL FOLIAGE DEVELOPMENT.
4. MINUMUM TWO BUDS ABOVE GRADE.
5. SET LIVE STAKES WITH DEAD-BLOW HAMMER.
6. WATER IMMEDIATELY AFTER INSTALLATION.

SOURCE:

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
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S:\CURRENT\1582 Ritzau Development\1582.0022 Maralco\Graphics & Maps\CADD\ - CURRENT SVC DRAWINGS\A - Current Set - 1582.0022 (2023-01) base.dwg
Plotted January 20, 2023

Appendix B — In-Lieu Fee Scoring Forms

Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Washington

Debit Worksheet (corrected 2/20/18) **Project** Maralco

Mitigation Project is: Advanced [ ] Concurrent: [ ] Delayed: [X]

Only fill in boxes that are highlighted. Use Temporal Loss Factors from the table below (Appendix E).

Input Ratings for Functions from Scoring Sheet

	Wetland Unit Altered (#1)			**Wetland Unit Altered (#2)**			**Wetland Unit Altered (#3)**		
	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Site Potential (H,M,L)	M	L	M						M
Landscape Potential (H,M,L)	H	H	L						L
Value (H,M,L)	H	M	M						H
Score for Wetland Unit	8	6	5	3	3	3	3	3	6
Acres of **non-forested** areas impacted	0.05311065								
Basic mitigation requirement (BMR)	0.42488522	0.31866391	0.26555326	0	0	0	0	0	0
Temporal loss factor (see below)	3								
DEBITS	1.27465565	0.95599174	0.79665978	0	0	0	0	0	0
*0.5=	0.637327825	0.47799587	0.39832989						
Acres of Deciduous **forest** impacted	0.02276171								
Basic mitigation requirement (BMR)	0.18209366	0.13657025	0.11380854	0	0	0	0	0	0
Temporal loss factor	4								
DEBITS	0.72837466	0.54628099	0.45523416	0	0	0	0	0	0
*0.5=	0.36418733	0.273140495	0.22761708						
Acres of **Evergreen Forest** impacted									
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor (see below)									
DEBITS	0	0	0	0	0	0	0	0	0
Acres of **Cat. 1 Deciduous forest**									
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor (see below)									
DEBITS	0	0	0	0	0	0	0	0	0

Acres of **Cat. 1 Evergreen forest**									
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor (see below)									
DEBITS	0	0	0	0	0	0	0	0	0

TOTALS

	Wetland Unit Altered (#1)			Wetland Unit Altered (#2)			Wetland Unit Altered (#3)		
Function	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Acre-points	**2.00303**	**1.50227**	**1.25189**	**0**	**0**	**0**	**0**	**0**	**0**
*0.5=	1.001515	0.751135	0.625945						

Total Debits by Function

	Improving Water Quality	Hydrologic	Habitat
Acre-points	**2.00303**	**1.50227**	**1.2518**
*0.5=	1.001515	0.751135	0.625945

Timing of Mitigation	Temporal Loss Factor
Advance – At least two years has passed since plantings were completed ~~or one year since "as-built" plans were submitted to regulatory agencies~~	1.25
Concurrent – Physical alterations at mitigation site are completed within a year of the impacts, but planting may be delayed by up to 2 years if needed to optimize conditions for success.	
For impacts to an emergent or shrub community	1.5
For impacts to a deciduous forested wetland community	2.0
For impacts to an evergreen forested wetland community	2.5
For impacts to a deciduous Category I forested wetland community	3
For impacts to an evergreen Category I forested wetland community	3.5
Delayed - Construction is not completed within one year of impact, but is completed (including plantings if required) within 5 growing seasons of impact.	
For impacts to an emergent or shrub community	3
For impacts to a deciduous forested wetland community	4
For impacts to an evergreen forested wetland community	5
For impacts to a deciduous Category I forested wetland community	6
For impacts to an evergreen Category I forested wetland community	7

Wetland name or number A

SCORING FORM

Scoring functions to calculate mitigation credits and debits in Western Washington

Name of wetland (if known): Wetland A (indirect)

Date of site visit: 11/10/20 Scored by: Jon Pickett
SEC:01_TWNSHP:22N_RNGE: 04E Est. size: 0.78 AC Aerial photo included? yes

These scores are for:
X Wetland being altered

_____ Mitigation site before mitigation takes place
_____ Mitigation site after goals and objectives are met

SUMMARY OF SCORING

FUNCTION	Improving Water Quality	Hydrologic	Habitat
Rating of Site Potential	M	L	M
Rating of Landscape Potential	H	H	L
Rating of Value	H	M	M
Score Based on Ratings (see table below)	8	6	5

	Wetland HGM Class Used for Rating	
	Depressional	X
	Riverine	
	Lake-fringe	
	Slope	
	Flats	
	Freshwater Tidal	
	Check if unit has multiple HGM classes present	

Scores
(*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

NOTE: Form is not complete without the figures requested.
Put only the highest score for a question in each box of the form, even if more than one indicator applies to the unit. Do NOT add the scores within a question.

Wetland name or number A

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 (i.e., 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)?

YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)

*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 not scored. This method cannot be used 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 least 20 acres (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**?

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).

NO - go to 5 **YES –** The wetland class is **Slope**

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 two years.

Wetland name or number A

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

NO - go to 6 **YES** – The wetland class is **Riverine**

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 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.

Wetland name or number A

Depressional and Flats Wetlands **WATER QUALITY FUNCTIONS** - Indicators that the site functions to improve water quality. Questions D 1.1 – D 1.4 are from the Wetland Rating System (Hruby 2004b).	
D 1.0 Does the wetland unit have the potential to improve water quality?	
D 1.1 Characteristics of surface water flows out of the wetland: *Provide photo or drawing* Unit is a depression with no surface water leaving it (no outlet) points =3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing")	2
D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES: points = 4 NO: points = 0	0
D 1.3 Characteristics of persistent plants (emergent, shrub, and/or forest Cowardin class *Provide map of Cowardin plant 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. *Provide map of hydroperiods* This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs. 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	7

Rating of Site Potential: If score is **12 – 16 = H**
6 - 11 = M (circled)
0 - 5 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

Wetland name or number A

D 2.0 Does the landscape have the potential to support the water quality function at the site?	
D 2.1 Does the Wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2 Is more than 10% of the area within 150 ft of wetland unit in agricultural, pasture, residential, commercial, or urban? Yes = 1 No = 0	1
D 2.3 Are there septic systems within 250 ft of the wetland unit? 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_____ 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 unit discharge directly to a stream, river, or lake that is on the 303d list? Yes = 1 No = 0	1
D 3.2 Is the unit 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 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

NOTES and FIELD OBSERVATIONS:

Wetland name or number A

Depressional and Flats Wetlands **HYDROLOGIC FUNCTIONS** - Indicators that the site functions to reduce flooding and stream degradation. Questions D 4.1 – D 4.3 are from Wetland Rating System (Hruby 2004b).	
D 4. 0 Does the wetland unit have the potential to reduce flooding and erosion?	
D 4.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 Unit has an unconstricted, or slightly constricted, surface outlet and is permanently flowing) points = 0 (If ditch is not permanently flowing treat unit as "intermittently flowing")	2
D 4.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	0
D 4.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
Total for D 4 Add the points in the boxes above	5

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

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

Wetland name or number A

D 5.0 Does the landscape have the potential to support hydrologic functions at the site?	
D 5.1 Does the unit receive any stormwater discharges? Yes = 1 No = 0	1
D5.2 Is >10% of the land use within 150 ft of the wetland unit agriculture, pasture, residential, urban, or commercial? Yes = 1 No = 0	1
D 5.3 Is more than 25% of the contributing basin of the wetland unit covered with intensive human land uses (residential at >1 residence/1 acre, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	3

Rating of Landscape Potential: If score is **3 = H**
1,2 = M
0 = L

Record the rating on the first page

D 6.0 Are the hydrologic functions provided by the site valuable to society?	
D 6.1 The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. ☐ The site has been identified as important for flood storage or flood conveyance in a regional flood control plan. points = 2 ☐ The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., salmon redds), AND o Damage occurs in sub-basin that is immediately down-gradient of unit. points = 2 o Damage occurs in a sub-basin further down-gradient. points = 1 ☐ Flooding from groundwater is an issue in the sub-basin. points = 1 ☐ The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why*_____ points = 0 ☐ There are no problems with flooding downstream of the unit. points = 0	1

Rating of Value: **If score is** ~~**2 = H**~~
1 = M
0 = L

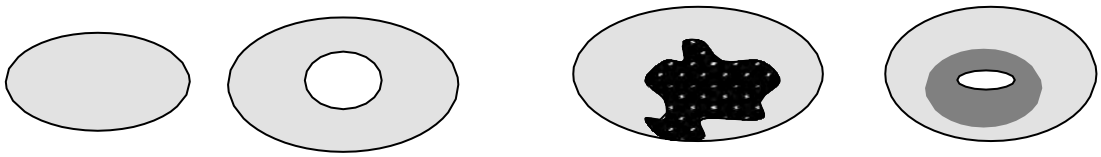
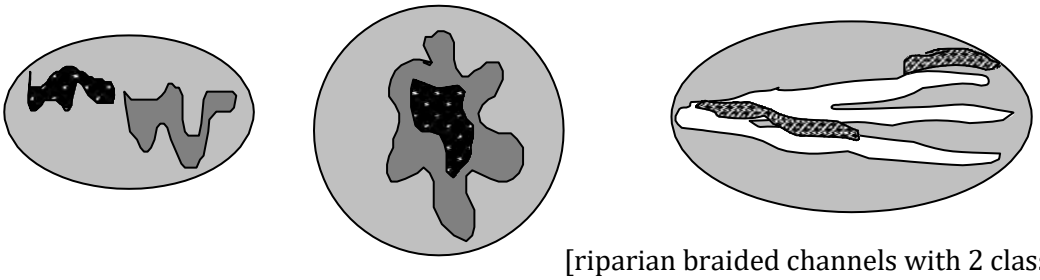
Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

Wetland name or number A

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat. Questions H 1.1 – H 1.5 are from Wetland Rating System (Hruby 2004b).	
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Structure of plant community – *indicators are Cowardin classes and layers in forest* Check the Cowardin plant classes in unit – *Polygons for each class must total ¼ acre, or more than 10% of the unit if it is smaller than 2.5 acres*. *Provide map of Cowardin plant classes* ___Aquatic bed _X_Emergent plants ___Scrub/shrub (areas where shrubs have > 30% cover) _X_Forested (areas where trees have > 30% cover) If the unit has a forested class check if: _X_The forested class has 3 out of 5 strata (canopy, sub-canopy,shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon Add the number of structures checked. If you have: 4 structures or more points = 4 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count (*see text for descriptions of hydroperiods*). *Provide map of polygons with different hydroperiods* ___Permanently flooded or inundated 4 or more types present points = 3 _X_Seasonally flooded or inundated 3 types present points = 2 ___Occasionally flooded or inundated 2 types present points = 1 _X_Saturated only 1 type present points = 0 _X_Permanently flowing stream or river in, or adjacent to, the wetland ___Seasonally flowing stream in, or adjacent to, the wetland **___Lake-fringe wetland = 2 points** **___Freshwater tidal wetland = 2 points**	2
H 1.3. Richness of Plant Species Count the number of plant species in the wetland unit that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle If you counted: > 19 species points = 2 *List species below if you want to:* 5 - 19 species points = 1 < 5 species points = 0	1

Wetland name or number A

H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion between Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. *Provide map of Cowardin plant classes (same as H1.1)*  None = 0 points Low = 1 point Moderate = 2 points  [riparian braided channels with 2 classes] **High = 3 points** NOTE: If you have four or more classes or three plants classes and open water the rating is always "high."	1
H 1.5. Special Habitat Features: Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column. X Large, downed, woody debris within the unit (>4 inches diameter and 6 ft long). X Standing snags (diameter at the bottom > 4 inches) within the unit ___Undercut banks are present for at least 6.6 ft (2m) **and/or** overhanging plants extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ___Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* X At least ¼ acre of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)* ___Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
H 1. TOTAL Score - potential for providing habitat Add the scores from H 1.1, H 1.2, H 1.3, H 1.4, and H 1.5	7

Rating of Site Potential: If score is **15 - 18 = H**
7 – 14 = M
0 – 6 = L

Record the rating on the first page

Wetland name or number A

H 2.0 Does the landscape have the potential to support habitat at the site?	
H 2.1 Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat **+** [(% moderate and low intensity land uses)/2] **= 0%** *Provide map of land use within 1 km of unit edge* If total accessible habitat is: > 1/3 (33.3%) of 1 km circle *(~100 hectares or 250 acres)* points = 3 20 - 33% of 1 km circle points = 2 10 - 19% of 1 km circle points = 1 <10% of 1 km circle points = 0	0
H 2.2 Undisturbed habitat in 1 km circle around unit. If: Undisturbed habitat > 50% of circle points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of circle points = 0	0
H 2.3 Land use intensity in 1 km circle. If: > 50% of circle is high intensity land use points = (- 2) Does not meet criterion above points = 0	-2
Total for H 2 Add the points in the boxes above	-2

Rating of Landscape Potential: If score is 4- 6 = H
1-3 = M
(< 1 = L)

Record the rating on the first page

H 3.0 Is the Habitat provided by the site valuable to society?	
H3.1Does the site provides habitat for species valued in laws, regulations or policies? *(choose only the highest score)* Site meets ANY of the following criteria: points = 2 __ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) __ It is a "priority area" for an individual WDFW species __ It is a Natural Heritage Site as determined by the Department of Natural Resources __ It scores 4 on question H2.3 of the wetland rating system __ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site scores 1-3 on question H2.3 of the wetland rating system (points = 1) Site does not meet any of the criteria above points = 0	1

Rating of Value: If score is 2 = H
(1 = M)
0 = L

Record the rating on the first page

Appendix D: Question H 2.3 of the Wetland Rating System

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf)

Count how many of the following priority habitats are within 330 ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

___**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

___**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

___**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

___**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

___**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

___**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

___**Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

___**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

___**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

___**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

___**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Scoring for H 2.3:

- If wetland has 3 or more priority habitats = 4 points
- If wetland has 2 priority habitats = 3 points
- If wetland has 1 priority habitat = 1 point
- No habitats = 0 points

"DEBIT" WORKSHEET

Wetland unit to be altered: Wetland A (indirect)

Date 01/2023

Use the following tables to calculate the Debits for the impact site. Use a separate worksheet for each wetland unit being altered. In addition, you will need to calculate the debits separately for forested areas and for emergent/shrub areas. Use the map of Cowardin plant types from question H 1.1 on the Scoring Form to determine the boundaries between forested areas and non-forested areas.

FUNCTION *From Scoring Form*	**Improving Water Quality**	**Hydrologic**	**Habitat**
Rating of Site Potential	M	L	M
Rating of Landscape Potential	H	H	L
Rating of Value	H	M	M
Score for Wetland	8	6	5

CALCULATIONS **emergent or shrub areas**	**Improving Water Quality**	**Hydrologic**	**Habitat**
Score for wetland unit (see above)	8	6	5
Impact - Acres of **non-forested** areas *(same for all functions)*	0.0531107		
Basic mitigation requirement (BMR) = *Score for function x acres impacted*	0.4248852	0.3186639	0.2655533
Temporal loss factor (TLF) (See table below)	3	3	3
Mitigation required DEBITS = BMR x TLF	1.2746556*0.5 = 0.637327825	0.95599174*0.5= 0.47799587	0.79665978*0.5= 0.39832989
CALCULATIONS **forested areas**	**Improving Water Quality**	**Hydrologic**	**Habitat**
Score for wetland unit (see above)	8	6	5
Impact - Acres of **forest** *(Create a separate column for each type of forest)* Deciduous (D), Evergreen (E), Cat. 1 deciduous (>50%cover) (CD) Cat. 1 evergreen (>50% cover)(CE)	D E CD CE D E CD CE D E CD CE 0.02276171		
Basic mitigation requirement (BMR) = *Score x acres impacted*	0.18209366	0.13657025	0.11380854
Temporal loss factor (TLF) (See table below)	4		
Mitigation required DEBITS = BMR x TLF	0.72837466*0.5= 0.36418733	0.273140495*0.5= 0.273140495	0.45523416*0.5= 0.22761708
TOTAL for forested areas (D+E+CD+CE)			

Temporal Loss Factors:

Timing of Mitigation	Temporal Loss Factor
Advance – At least two years has passed since plantings were completed or one year since "as-built" plans were submitted to regulatory agencies	1.25
Concurrent – Physical alterations at mitigation site are completed within a year of the impacts, but planting may be delayed by up to 2 years if needed to optimize conditions for success.	
For impacts to an emergent or shrub community	1.5
For impacts to a deciduous forested wetland community	2.0
For impacts to an evergreen forested wetland community	2.5
For impacts to a deciduous Category I forested wetland community	3
For impacts to an evergreen Category I forested wetland community	3.5
Delayed - Construction is not completed within one year of impact, but is completed (including plantings if required) within 5 growing seasons of impact.	
For impacts to an emergent or shrub community	3
For impacts to a deciduous forested wetland community	4
For impacts to an evergreen forested wetland community	5
For impacts to a deciduous Category I forested wetland community	6
For impacts to an evergreen Category I forested wetland community	7

NOTE: The ratings, scoring and calculations are valid for only five years because wetlands and their functions will change with time. If delays in the construction of the site are more than 5 years, the mitigation plan will probably have to be re-negotiated and the calculation re-done. This time limit was chosen to be consistent with the validity of wetland delineations as established by the U.S. Army Corps of Engineers.

TOTALS

	Improving Water Quality	Hydrologic	Habitat
DEBITS - Emergent or shrub areas	0.637327825	0.47799587	0.39832989
DEBITS - Forested areas	0.36418733	0.273140495	0.22761708
TOTAL	**1.00**	**0.75**	**0.63**

Appendix C — Qualifications

All determinations and supporting documentation, including this ***Mitigation Plan*** prepared for the ***Maralco*** project were prepared by, or under the direction of Jon Pickett of SVC. In addition, report preparation was completed by Morgan Kentch, and general project oversight and final quality assurance/quality control was completed by Kyla Caddey.

Jon Pickett

Associate Principal
Professional Experience: 10+ years

Jon Pickett is an Associate Principal and Senior Scientist with a diverse background in environmental and shoreline compliance and permitting, wetland and stream ecology, fish and wildlife biology, mitigation compliance and design, and environmental planning and land use due diligence. Jon oversees a wide range of large-scale industrial, commercial, and multi-family residential projects throughout Western Washington, providing environmental permitting and regulatory compliance assistance for land use entitlement projects from feasibility through mitigation compliance. Jon performs wetland, stream, and shoreline delineations and fish & wildlife habitat assessments; conducts code and regulation analysis and review; prepares reports and permit applications and documents; provides environmental compliance recommendation; and provides restoration and mitigation design.

Jon earned a Bachelor of Science degree in Natural Resource Sciences from Washington State University and Bachelor of Science and Minor in Forestry from Washington State University. Jon has received 40-hour wetland delineation training (Western Mountains, Valleys, & Coast and Arid West Regional Supplements) and regularly performs wetland, stream, and shoreline delineations. Jon is a Whatcom County Qualified Wetland Specialist and Wildlife Biologist and is a Pierce County Qualified Wetland Specialist. He has been formally trained by WSDOE in the use of the Washington State Wetland Rating System 2014, How to Determine the Ordinary High-Water Mark (Freshwater and Marine), Using Field Indicators for Hydric Soils, and the Using the Credit-Debit Method for Estimating Mitigation Needs.

Kyla Caddey, PWS, Certified Ecologist

Senior Environmental Scientist
Professional Experience: 8 years

Kyla Caddey is a Senior Environmental Scientist with a diverse background in stream and wetland ecology, wildlife ecology and conservation, wildlife and natural resource assessments and monitoring, and riparian habitat restoration at various public and private entities. Kyla has field experience performing in-depth studies in both the Pacific Northwest and Central American ecosystems which included various environmental science research and statistical analysis. Kyla has advanced expertise in federal- and state-listed endangered, threatened, and sensitive species surveys and assessment of aquatic and terrestrial systems throughout the Puget Sound region. She has completed hundreds of wetland delineations and has extensive knowledge and interest in hydric soil identification. As the senior writer, she provides informed project oversight and performs final quality assurance / quality control on various types of scientific reports for agency submittal, including: Biological Assessments/Evaluations; Wetland, Shoreline, and Fish and Wildlife Habitat Assessments; Mitigation Plans, and Mitigation Monitoring Reports. She currently performs wetland, stream, and shoreline

delineations and fish and wildlife habitat assessments; prepares scientific reports; and provides environmental permitting and regulatory compliance assistance to support a wide range of commercial, industrial, and multi-family residential land use projects.

Kyla earned a Bachelor of Science degree in Environmental Science and Resource Management from the University of Washington, Seattle with a focus in Wildlife Conservation and a minor in Quantitative Science. She has also completed additional coursework in Comprehensive Bird Biology from Cornell University. Ms. Caddey is a Certified Professional Wetland Scientist (PWS #3479) through the Society of Wetland Scientists and Certified Ecologist through the Ecological Society of America. She has received 40-hour wetland delineation training (Western Mtns, Valleys, & Coast and Arid West Regional Supplement), is a Pierce County Qualified Wetland Specialist and Wildlife Biologist, and is a USFWS-approved Mazama pocket gopher survey biologist. Kyla has been formally trained through the Washington State Department of Ecology, Coastal Training Program, and the Washington Native Plant Society in winter twig and grass, sedge, and rush identification for Western WA; Using the Credit-Debit Method in Estimating Wetland Mitigation Needs; How to Determine the Ordinary High Water Mark; Using Field Indicators for Hydric Soils; How to Administer Development Permits in Washington Shorelines; Puget Sound Coastal Processes; and Forage Fish Survey Techniques. Additionally, she has received formal training in preparing WSDOT Biological Assessments.

Morgan Kentch

Staff Scientist
Professional Experience: 3 years

Morgan Kentch is a Staff Scientist with a background concentrating in marine biology and aquatic ecosystems in Washington State. Morgan earned her Bachelor of Science degree in Biology with marine emphasis from Western Washington University, Bellingham. There she received extensive, hands-on experience working in lab and field settings, and studying local marine and aquatic organisms and ecosystems. One of Morgan's more exceptional projects included monitoring a stream restoration project for the City of Bellingham by assessing stream habitat and biotic quality, collecting data, identifying local stream invertebrates, and writing a report outlining analyzed results. Morgan also participated in a study abroad program in La Paz, Baja California Sur, where she led an independent study on the effects of temperature on bioluminescent organisms in a local bay. Through this project, she demonstrated a strong understanding of collecting background research, following the scientific method, conducting scientific research, and writing a scientific paper formatted for journal submission.

Morgan currently assists in wetland, stream, and shoreline delineations and fish and wildlife habitat assessments; conducts environmental code analysis; and prepares environmental assessment and mitigation reports, biological evaluations, and permit applications to support clients through the regulatory and planning process for various land use projects. She has received wetland delineation training (Western Mtns, Valleys, & Coast and Arid West Regional Supplement), and has received formal training through the Washington State Department of Ecology and Coastal Training Program in Using the 2014 Wetland Rating System, and How to Conduct a Forage Fish Survey.

WATER QUALITY MONITORING PLAN

MARALCO

JUNE 2023

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

WATER QUALITY MONITORING PLAN

MARALCO

JUNE 26, 2023

PROJECT LOCATION
7730 SOUTH 202ND STREET
KENT, WASHINGTON 98032

PREPARED FOR
BRIDGE INDUSTRIAL
10655 NORTHEAST 4TH STREET, SUITE 500
BELLEVUE, WASHINGTON 98004

PREPARED BY
SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE
GIG HARBOR, WASHINGTON 98335
(253) 514-8952

Soundview Consultants
Environmental Assessment
Planning + Land Use Solutions

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Appendices

Chapter 1. Introduction

Soundview Consultants LLC (SVC) has been assisting Bridge Industrial (Applicant) with a Water Quality Monitoring Plan (WQMP) for the Maralco project to ensure compliance with Washington state water quality standards per Chapter 173-201A-200 WAC, for planned work in or over surface waters of the state. The 12.05-acre site is located at 7730 South 202nd Street in the City of Kent, Washington. The subject property consists of one tax parcel situated in the Southeast ¼ of Section 1, Township 22 North, Range 04 East, W.M. (King County Tax Parcel Number 631500-0300). This WQMP includes a monitoring schedule that identifies the appropriate parameters to be monitored, sampling locations, frequency, and procedures, and reporting requirements. This WQMP will be implemented for proposed in-water and work within "Stream Z". The Applicant will submit any proposed changes to the project or WQMP to the Washington State Department of Ecology for review and approval prior to implementation.

1.1 Objectives

This WQMP:

- Identifies state water quality standards to be used for work within and over waters of the state;
- Provides a water quality monitoring and sampling plan to ensure compliance during any necessary in-water and over-water work; and
- Outlines contingency measures that will be utilized if water quality measures are not being met.

This WQMP is focused on in-water construction for the development site and is intended to complement the project Temporary Erosion and Sediment Control (TESC) plan and Stormwater Pollution Prevention Plan (SWPPP) which are for handling and management of stormwater. As stated in Section 2.1.12 (Manage the Project) and Section 6.1.3 (Updating the SWPPP) of the SWPPP; the SWPPP may be modified routinely to reflect changing site conditions; if needed, to minimize pollutant discharge; or due to a change in the design, construction, operation, or maintenance at the site. Similarly, the elements of this WQMP may also be revised if necessary due to changing site conditions. Any substantive changes to the WQMP must be approved by the Washington State Department of Ecology (WSDOE) prior to making the changes.

1.2 Project Description

SVC investigated the subject property for potentially-regulated wetlands, waterbodies, fish and wildlife habitat, and/or priority species in November of 2020, with a follow-up investigation completed in January of 2022. Using current methodology, the site investigations identified and delineated one potentially-regulated wetland (Wetland A) onsite, and one potentially-regulated stream (Stream Z) bisecting Wetland A. Additionally, three potentially-regulated wetlands (offsite Wetlands B-D) were identified offsite within 275 feet of the subject property.

The Applicant proposes industrial redevelopment of the subject property to include an industrial warehouse and associated infrastructure including parking, internal site access and space for truck maneuvering / turnaround, stormwater infrastructure, and utilities. Currently, the existing site is

heavily encumbered by onsite critical areas including Wetland A and Stream Z which span most of the eastern extent of the subject property. The two drainages (collectively referred to as Stream Z) observed bisecting Wetland A do not appear to meet the definition of a potentially regulated stream; however, the Applicant agrees to treat them as a Type 3 stream ("Stream Z") for the purposes of expediting the permitting process. Avoidance of the onsite critical areas has been implemented to the extent feasible; however, in order to provide sufficient space for the proposed development direct and indirect impacts to Wetland A, Stream Z, and their associated buffers are necessary and unavoidable. The Applicant proposes to fill and pipe the existing southern section of Stream Z below the proposed industrial building and parking facilities and reroute the remaining eastern section of Stream Z north and west along the northern property boundary. Overall, the project will impose 807 linear feet of direct impacts to Stream Z. Proposed channel relocation will widen stream banks and enhance the adjacent riparian habitat areas to increase overall habitat complexity and ecological functions. Remaining impacts to Wetland A and its associated buffer will be offset through onsite wetland creation and enhancement and buffer restoration and enhancement, and purchase of in-lieu fee credits from the King County Mitigation Reserves Program (KCMRP). Please refer to SVC's *Conceptual Mitigation Plan* (revised 2023) for the Maralco project for further details.

1.3 In-Water Activity Description

The scope of work for this WQMP includes any necessary in-water activities that may affect water quality within waters of the state including Stream Z. The proposed impacts to these aquatic areas consist of filling and realigning the Type 3 (non-fish bearing) Stream Z. In-water work is proposed to occur during when the channel is dry to reduce turbidity issues to potential fish habitat that may be present in downgradient waters.

1.3.1 Stream Z Realignment

The Stream Z realignment will be conducted for the entire onsite extent of the watercourse. The existing Stream Z conveys hydrology from two separate branches along the eastern and southern property boundary. The eastern branch of Stream Z is considered the main channel as it receives a natural source of hydrology from offsite Wetland D to the east, while the southern branch solely receives input from a stormwater detention pond south of the site. The realignment of Stream Z will include piping the entire southern branch below the proposed industrial development and parking facilities and north into the eastern channel. At the point of conversion, the eastern channel will be rerouted north and west along the northern property boundary until eventually flowing offsite through a culvert into offsite Wetland C. All excavation and grading work within the proposed Stream Z riparian corridor, including excavation of wetland bench creation areas, will be completed following dewatering and realignment actions. The excavation and grading work associated with the new stream channel and riparian corridor is anticipated to be completed during dry season. Native willow stakes, container plantings, and a seed mix will be installed/spread across the riparian corridor to stabilize the site for erosion purposes. The dewatering and rewatering of the existing and restored channel is anticipated to occur during the dry season. The following activities will occur within the stream channels using standard earthmoving, such a track hoes and excavators.

Construction of Stream Z Realignment Channels

Prior to dewatering of the existing channel, the proposed Stream Z realignment channels will be excavated. Realignment is anticipated to split into two phases: realignment and piping of the southern section of Stream Z and realignment along the eastern section of Stream Z. The southern section of stream will be entirely piped below ground and as such channel excavation is limited to trench the pipe will be placed into and backfilled following installation. Post construction and rewatering of the southern channel, realignment actions will move to redirecting the eastern channel of Stream Z north and west along the northern property boundary. Culvert installation will occur prior to rewatering of Stream Z to minimize potential erosion and turbidity. Physical separation will be maintained between the new realignment channels and the existing channels through upland plugs.

Proposed Stream Z channel:

- Excavate and grade new channel, wetlands benches, and riparian corridor. Upgradient and downgradient new channel ends will be left disconnected from existing Stream Z channel by existing upland plugs.
- Install culvert below the northeastern onsite access road.
- Place streambed substrates and large woody debris in new channel. Large woody debris will also be placed adjacent and over the new channel in floodplain areas.
- Stake willows and install plantings along new Stream Z channel as conditions allow. Hydroseed proposed planting areas throughout the riparian corridor.

Groundwater Management

Due to the depth of the proposed channel excavation, groundwater may be encountered during channel excavation. Groundwater management is proposed to minimize the amount of groundwater that may be encountered during excavation and avoid direct discharge of any encountered groundwater to Stream Z.

If groundwater is encountered, two minimization actions may be implemented. First, the amount of excavation can initially be limited to shallower and drier depths, allowing the water table to drop as the shallow excavation is completed along a significant length of the channel. The deeper excavation to final grade would then be completed after the water table drops. Second, groundwater monitoring test pits may be excavated by an excavator along the length of the proposed channel to see if any areas encounter groundwater seepage. The groundwater monitoring test pits would be used to target initial excavation efforts towards drier areas along the proposed channel length, allowing the water table to drop in areas with higher water levels. Both of these management actions are suitable to minimize the amount of groundwater that may be encountered during excavation, and either action may be implemented at the discretion of the project geo-technical engineer.

Depending on site conditions and project timing, groundwater encounters may be unavoidable. If groundwater is encountered above the planned excavation grade, then the water will be pumped out to the existing Stream Z channel (subject to state water quality standards) or pumped to upland areas adjacent to the excavated channel to infiltrate.

Dewatering and Realignment of Stream Z

The Stream Z dewatering and realignment is anticipated to occur in one section along the existing Stream Z channel from the downstream end of the impact area to the upstream end of the impact area. Water quality monitoring will be conducted during the entire dewatering and realignment of Stream Z. The proposed dewatering and realignment is anticipated to require two days.

The dewatering and realignment activities for Stream Z are expected to be concurrent with the culvert installation along the eastern section of Stream Z to minimize repetitive dewatering of the stream. If concurrent, a diversion dam will be installed at the convergent point between the southern section of Stream Z the point of onsite entry for the eastern section of Stream Z, upgradient of the proposed culvert.

Realignment and piping of the existing southern Stream Z channel will follow this sequence:

- Provide a temporary diversion dam at the upstream point of the southern Stream Z channel to restrict flow from the existing channel.
- Implement piping to bypass the existing channel and convey the southern offsite flow to the downstream conversion point with the eastern Stream Z channel. Bypass piping may implement a gravity fed or pump system to convey the water around the project area.
- Partially fill the southern channel of Stream Z and implement a permanent plastic stormwater piping (or as designed during final engineering) along the southern and eastern property boundary to convey southern channel flow to the conversion point. Piping will be buried beneath the ground to allow space for future development. Fill may occur as the channel section is dewatered.
- Remove temporary dam and piping to rewater the southern channel. See the dewatering and rewatering of the stream channel section below for general rewatering requirements.

Realignment of the existing eastern Stream Z channel will follow this sequence:

- Isolate the downgradient connection between the existing Stream Z channel and the new Stream Z channel by blocking the existing channel with temporary diversion dams discharging to the existing channel below the realignment area.
- Implement piping to bypass the existing channel and convey the Stream Z flow to the downstream culvert and offsite Wetland C. Bypass piping may implement a gravity fed or pump system to convey the water around the project area.
- Excavate the new channel to follow the northern property boundary and complete additional grading work for adjacent wetland and riparian corridor creation in this area.
- Implement WDFW-approved culvert below the existing onsite eastern access road concurrently with excavation.
- Fill the existing channel of Stream Z to match new grades for future development. Fill may occur as the channel section is dewatered.
- Remove temporary dam and piping to rewater the southern channel. See the Dewatering and rewatering of the stream channel section below for general rewatering requirements.

Dewatering and rewatering of the stream will generally follow this sequence:

- Isolate the south and east reach by implementing diversion dams directly above the dewatering area;
- If determined necessary, perform initial fish recovery as water partially drains from the reach;
- Pump 50 percent of flow into the new channels to control sediment and let water infiltrate to prevent turbidity in downgradient portions of the stream;
- Once construction monitoring indicates that turbidity meets background levels, allow the rest of the water to flow through the new channels;
- Leave existing stream on eastern portion of site as a backwater flood area.
- Partially fill existing Stream Z channel.

Native planting of the Stream Z riparian corridor will be completed following the dewatering and realignment of Stream Z. Planting is anticipated to be completed during the fall of 2023.

1.4 Water Quality Standards for Surface Waters

This project is located in Water Resource Inventory Area (WRIA) 9 (Duwamish Green). Stream Z flows into Offsite Wetland C which experiences occasional flooding during periods of heavy rain, and as such does not provide a continuous connection to downstream fish bearing streams. Additionally, all in-water work will take place during the late summer when Offsite Wetland C is anticipated to be dry. However, during periods of sustained rain Offsite Wetland C has an anticipated downstream connection to Mill Creek, approximately 0.6-mile south of the subject property, and Mill Creek flows directly into the Green River. WAC 173-201A-602 Table 602 lists use designations for specific fresh waters across the state. The fresh water with a designated use nearest to Streams Z is along the Green River approximately 1.3 miles west of the subject property. This portion of the Green River, including tributaries, is designated for Core Summer Habitat. Therefore, to minimize potential impacts to salmonids, the project will comply with core summer habitat water quality monitoring standards that are applicable to the proposed project.

Turbidity standards per WAC 173-201A-200(1)(e):

- Turbidity shall not exceed 5 nephelometric turbidity units (NTUs) over the background turbidity when the background turbidity is 50 NTUs or less.
- Turbidity shall not exceed a 10 percent increase in turbidity when the background turbidity is more than 50 NTUs.
- The points of compliance for turbidity are illustrated in Appendix B and correspond to 100 feet downgradient of in-water.

In addition to the numerical standards for turbidity described above, the project will also comply with narrative water quality standards, which include the following:

- Visual monitoring for turbidity and sheen will be conducted at all times on the development and mitigation sites.
- No distressed or dying fish observed at the construction site or immediately downstream that can be attributed to activities at the construction site.
- The points of compliance for oil and grease are all aquatic areas in the entire project area.

Chapter 2. Best Management Practices

This chapter describes the best management practices (BMPs) that will be implemented during general site construction, the realignment and culvert installation of Stream Z, and the preserved portion of Stream Z to minimize impacts on water quality.

2.1 General Protection Measures

The proposed project has been designed to minimize adverse impacts to the aquatic environment. The following BMPs will be implemented to avoid or minimize general site construction impacts on water quality in the realigned (Stream Z) channel:

- Staging areas and material stockpiles will be located a minimum of 50 feet from realigned waters of the state to the extent practicable.
- Machinery and equipment used during construction shall be serviced, fueled, maintained, and parked on uplands a minimum of 50 feet, and where practical, 100 feet, from realigned waters of the state to prevent contamination to any surface water. Bypass and sump pumps will have to be located closer than 50 feet from waterbodies due to their operational constraints involving head pressure, intake length, and functionality. These pumps will all have dual containment tanks, automatic fluid pressure failure shut-offs, and be placed within separate containment pads. The sump pump will be moved outside the work area for refueling if necessary.
- No petroleum products, fresh concrete, lime, chemicals, or other toxic or deleterious materials shall be allowed to enter realigned waters of the state.
- Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment or working area shall not be discharged into realigned or preserved waters of the state. A separate, contained area, will be established for washing down vehicles and equipment that does not have any possibility of draining to realigned waters of the state.
- All construction debris, concrete waste material, excess sediment, and other solid waste shall be properly managed and disposed of in an upland disposal site approved by the appropriate regulatory authority.
- Appropriate BMPs shall be implemented to minimize track-out during construction.
- Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters.
- A written spill prevention, control, and countermeasures (SPCC) plan will be prepared for activities that include the use of heavy equipment. The SPCC describes measures to prevent or reduce impacts due to accidental leaks or spills, as well as all hazardous materials that will be used, their proper storage and handling, and the methods that will be used to monitor their use.
- The site's Construction Stormwater General Permit conditions, TESC Plan, and SWPPP (all prepared under separate cover) will be implemented for erosion and sediment control and for protection of water quality for construction stormwater.

2.2 In-water Specific Protection Measures

The following BMPs will be implemented to avoid or minimize water quality impacts during the realignment of Stream Z.

- All equipment that will operate within waters of the state shall be free of external petroleum-based products. Accumulation of soils or debris shall be removed from the drive mechanisms and the undercarriage of equipment prior to use. Equipment shall be inspected daily for leaks, accumulation of grease, etc. Any identified problems shall be fixed before operating within waters of the state.
- An emergency spill kit will be available on-site during construction whenever work is being performed in or near the water. It will be stored in a location that facilitates its immediate deployment if needed.
- BMPs including, but not limited to, the following will be used to ensure no deleterious work materials or debris enter the water:
    - In-water work conducted within the existing stream channels will occur in sections isolated from upgradient flow by installation of temporary dams. Overwater work will be minimized.
    - Silt fence and/or straw wattles will be installed along the newly constructed stream channel to minimize materials, sediment, and turbid water from entering the adjacent waters.
    - Any materials dropped into the water that are not part of the work activities will be removed immediately by hand by the contractor as feasible
    - Pump around any water in the work area during construction to limit potential turbidity.

Streamflow piping and realignment will occur through the installation of a diversion pipe to convey flows to the new stream channel. All temporary diversion structures and dewatering activities will follow BMPs to avoid or minimize water quality impacts:

- The temporary dams to divert water around the work areas shall be in place prior to initiation of other work in the wetted perimeter of these areas.
- The temporary diversions shall be of sufficient size, constructed of non-erosive materials, and installed to divert the entire flow through the bypass or around the isolated work area for the duration of the project.
- The diversion system shall be designed and operated so as not to cause erosion in the restoration channel or on the bank of any waterbody in which the work is being conducted.
- Prior to relocating water flow to the work area, all bank protection measures shall be in place.
- Re-introduction of water into the isolated work area shall be done gradually, and at a rate not higher than the normal flow, in order to minimize the mobilization of sediments and fines.
- Coir log check dams will be placed within the newly constructed stream channel during rewatering to encourage the settling of suspended sediments before water exits this section of stream channel as needed.
- Upon completion of the project, all material used for the temporary diversions shall be removed from the site.
- Turbid restoration site water (including turbid water generated from cleaning and maintenance activities) shall not be discharged directly into waters of the state if it is beyond the prescribed turbidity threshold described in section 1.4. This turbid water may be diverted

to an upland area, such as the designed settling pond to allow the suspended sediments to settle out. The discharge from the upland areas shall meet water quality criteria at the point of discharge into surface waters and/or wetlands.

Chapter 3. Water Quality Monitoring Plan

3.1 Monitoring Contacts

A Certified Erosion and Sediment Control Lead (CESCL) or a qualified environmental scientist will be responsible for conducting the Section 401 Water Quality Certification water quality monitoring and for providing WSDOE with the necessary notifications and results of the water quality monitoring.

3.2 Monitoring Schedule

The following table outlines the onsite monitoring parameters and schedule for all in-water work activities. Specific monitoring locations are identified in Appendix B.

Table 1. Monitoring Schedule for Stream Z work

In-water Activity	Waterbody	Monitoring Point Locations	Frequency	Parameters	WQ Standard
All in-water work	Stream Z	Background points placed just above culvert inlets offsite to south Compliance points approximately 100 feet downgradient of in-water activity	Continuously	Turbidity[1]	Within 5 NTU of background[2]
All in-water work	Stream Z	Throughout entire project area	Continuously	Oil and grease	No sheen

[1] Visual monitoring of the water downgradient of the impact area will occur throughout the workday. If there is a visible change in water clarity, then turbidity samples will be taken to ensure compliance.

[2] Turbidity shall not exceed 5 NTUs over the background turbidity when the background turbidity is 50 NTUs or less. Turbidity shall not exceed a 10 percent increase in turbidity when the background turbidity is more than 50 NTUs.

3.3 Monitoring Duration

Grab samples and visual observations will be collected for as long as the in-water work is taking place. If any of the waterbodies outline in Table 1 above become dry within the project area or immediately downgradient of the project area, then the monitoring will halt and only resume if flow or continuous surface water conditions resume within the stream channels.

3.4 Contingency Measures

3.4.1 Water Quality Exceedances

If water quality exceedances are detected, then the background water quality parameter levels will be verified and the exceedance will be confirmed. Additional samples will be taken downgradient of the impact area to determine the extent of the exceedance plume. WSDOE will be notified of the exceedance.

Once an exceedance of a water quality standard is confirmed, field personnel will stop in-water or over-water work, assess the source of the exceedance or impact, and evaluate corrective actions. When the source has been identified, field personnel will implement operation modifications or other supplemental control measures or BMPs to bring the water quality measurements back into compliance with the criteria. Water quality monitoring will proceed according to the contingency sampling schedule below. Work will only resume once water quality has returned below the compliance thresholds. Water quality monitoring during the modified work operations or supplemental control measures may proceed according to the continency sampling schedule below or the standard sampling schedule at the discretion of the qualified monitoring contacts.

General corrective actions for the proposed work on the development site:

- Slow down work (fill/excavation), minimize work, or limit unnecessary equipment movement to control soil/sediment disturbance.
- Pump turbid water to nearby upland areas (through a manifold if necessary to reduce further erosion) if water quality exceeds turbidity thresholds.

Corrective actions for the proposed work in Stream Z include:

- Halt or control flow rates of the rewatering of the new stream channels by halting or slowing the pumping of water from the existing channels to the new channels;
- Divert water from the new stream channels into a settling pond prior to release into the existing stream channels;
- Halt or slow down excavation and fill work in the stream channel;
- Check the check dams for leaks during rewatering, fix as needed;
- Check by-pass pipe inlet and outlet protection and fix as necessary to eliminate any erosion (as applicable)
- Check or add check dams along new channel length, fix or add additional check dams as needed;

Once the corrective actions have been implemented, water quality monitoring will proceed according to the contingency sampling schedule below. Work will only resume after sampling confirms that water quality parameters have returned to levels that are within the compliance limits (Section 3.4.2 below).

If construction debris is observed in the waterway, the construction debris will be removed from the waterbody. If a sheen or oil is observed in the waterway, the contractor will immediately cease operations. Corrective actions will be implemented to make repairs to equipment, address the spill, or modify construction activities or BMPs, and WSDOE will be notified. Work may resume after visual sampling confirms that water quality parameters have returned to levels that are within the compliance limits (Section 3.4.2 below).

If distressed or dying fish are observed at the construction site or immediately downstream where the distress or mortality can be attributed to construction activities, work will stop immediately. WSDOE, WDFW, and other permitting agencies will be notified per regulatory approvals.

3.4.2 Contingency Sampling

If sample results confirm that water quality is out of compliance with water quality standards, the project will modify or stop the activity causing the problem and commence the contingency sampling requirements until standards are met for two consecutive sample periods. Once compliance with water quality standards is achieved, the project shall return to its standard sampling schedule.

Table 2. Contingency Monitoring Schedule for Stream Z Contingency Sampling.

Parameter	Contingency Sampling Location	Contingency Frequency	WQ Standard
Turbidity	Background points and compliance points	Every 1 hour during work activities for 1 day	Within 5 NTU of background[1]
Oil and Grease	Throughout entire project area	Continuous visual	No sheen
pH	Background point and compliance point and immediately downgradient of impact (i.e. as close as possible to point of entry)	Every 1 hour during work activities for 1 day	pH variation within < 0.2 units of background level

[1] Turbidity shall not exceed 5 NTUs over the background turbidity when the background turbidity is less than 50 NTUs. Turbidity shall not exceed a 10 percent increase in turbidity when the background turbidity is more than 50 NTUs.
[2] Continuous visual monitoring must confirm no sheen or visible turbidity is present in the waterway for 30 minutes before work operations may resume.

3.5 Non-Compliance

If either visual or physical monitoring indicates that water quality standards have been exceeded, the required reporting will be initiated. Monitoring will be extended downgradient to determine the extent of the exceedance/plume.

3.6 Sampling Protocol

2.6.1 Sampling Locations

Stream Z is a perennial non-fishbearing stream which flows into offsite occasionally flooded Wetland C. Stream Z appears to have been excavated and lined with plastic following heavy metal remediation and as such contains various amounts of surface water throughout the year but has been observed with some standing water within the channel during all seasons of the year. Prior to the start of construction, the CESCL will verify the flow rate of these waters to determine the point of compliance for water quality sampling. Construction is anticipated during the driest time of the year. WAC 173-201A-200(1)(e)(i) allows various temporary mixing zone distances for turbidity standards depending on in-channel flow rates for flowing waters. Waterbodies with a flow rate of 10 cfs or less will have an associated 100-foot temporary area of mixing. This distance will be applied downstream of the areas of influence (i.e. in-water work activities). If flow rate conditions dictate, the mixing zones and corresponding compliance points may be adjusted accordingly and will be reported on the weekly water quality monitoring reports.

The two background sampling locations will be established on Stream Z to capture each phase of realignment. Background sampling point one (BP-1) will be located just upstream of the southern section of Stream Z prior to the realignment and piping, and background sampling point two (BP-2) will be at the convergence point of the southern section and the eastern section of Stream Z immediately prior to the second phase of realignment. The compliance point will be 100 feet downstream of the proposed project actions. The 100-foot compliance point has been identified for Stream Z. Given the extent of in-water work in Stream Z, the compliance sampling point will be located within offsite Wetland C north of the subject property. If surface water is present in Wetland A immediately prior to the start of the wetland fill and/or grading actions, then a 150-foot temporary area of mixing will be established from the outer extent of proposed fill; however, water quality monitoring is not anticipated for Wetland A given that the fill area is seasonally saturated and would be dry during the summer months.

Sampling locations are provided in Appendix B for in-water and over-water work activities. Sampling locations have been given unique names or numbers, and clearly marked on the plan sheets.

2.6.2 Sampling Procedures

Background samples must be taken upstream of the area of influence and immediately prior to the compliance samples for all waterbodies where in-water or over-water work is proposed and surface water is present prior to the start of construction activities.

Water samples will be collected and analyzed for the appropriate parameters, per the Monitoring Schedule outlined in Section 3.2 above, following the equipment and sampling guidelines below:

1. *Turbidity will be monitored using a Hach 2100Q Turbidimeter or equivalent.*

Turbidity will be monitored continuously by visually observing for suspended sediments in the water.

A portable turbidity meter will be used in the field. A representative sample should accurately reflect the true condition of the water source from which the sample was taken. The following protocol will be used to ensure a representative sample is analyzed:

- Use a clean container to obtain a grab sample from the source;
- Collect sample with care to avoid disturbance of sediments and collecting surface contaminants, at a sample depth of 2 inches below the surface due to the shallow flows present in much of the reach;
- Gently but thoroughly mix the sample before pouring it into the small vial used to read the sample in the turbidimeter; and
- Without allowing the sample to settle, take turbidity reading according to turbidimeter manufacturer's instructions.

A calibration check of the turbidimeter using secondary standards will be carried out regularly (at least once per week). The instrument will be recalibrated using primary standards at least once every three months, or more when a calibration check indicates there is a problem. The manufacturer's calibration procedures will be followed.

2. *Oil and grease is monitored continuously by visually observing for a visible sheen on the water's surface.*

3.7 Reporting

All water quality monitoring results (visual and physical) will be recorded on the monitoring form attached (Attachment A).

All sample results will be submitted to the WSDOE Permit Manager/Coordinator at fednotifications@ecy.wa.gov and assigned project manager at lbec461@ecy.wa.gov on a weekly basis via email.

If sample results or visual monitoring indicate an exceedance of water quality standards, notification shall be made within 24 hours to the WSDOE Permit Manager/Coordinator and assigned Project Manager. Any oil/grease sheens or spills should be reported immediately to the Washington Emergency Management Division 24-Hour Spill Response Team at 1-800-258-5990 and within 24 hours to fednotification@ecy.wa.gov.

Chapter 4. References

Soundview Consultants (SVC). 2023. *Mitigation Plan – Maralco.* January 26, 2023 (revised). Gig Harbor, Washington.

Washington Department of Fish and Wildlife (WDFW). 2018. *Times when Spawning or Incubating Salmonids are Least Likely to be within Washington State Freshwaters.* June 1, 2018.

U.S. Army Corps of Engineers (USACE). 2010. *Approved Work Windows for Fish Protection for all Freshwaters excluding Waters within National Park Boundaries, Columbia River, Snake River, and Lakes by County and Specific Watercourse.*

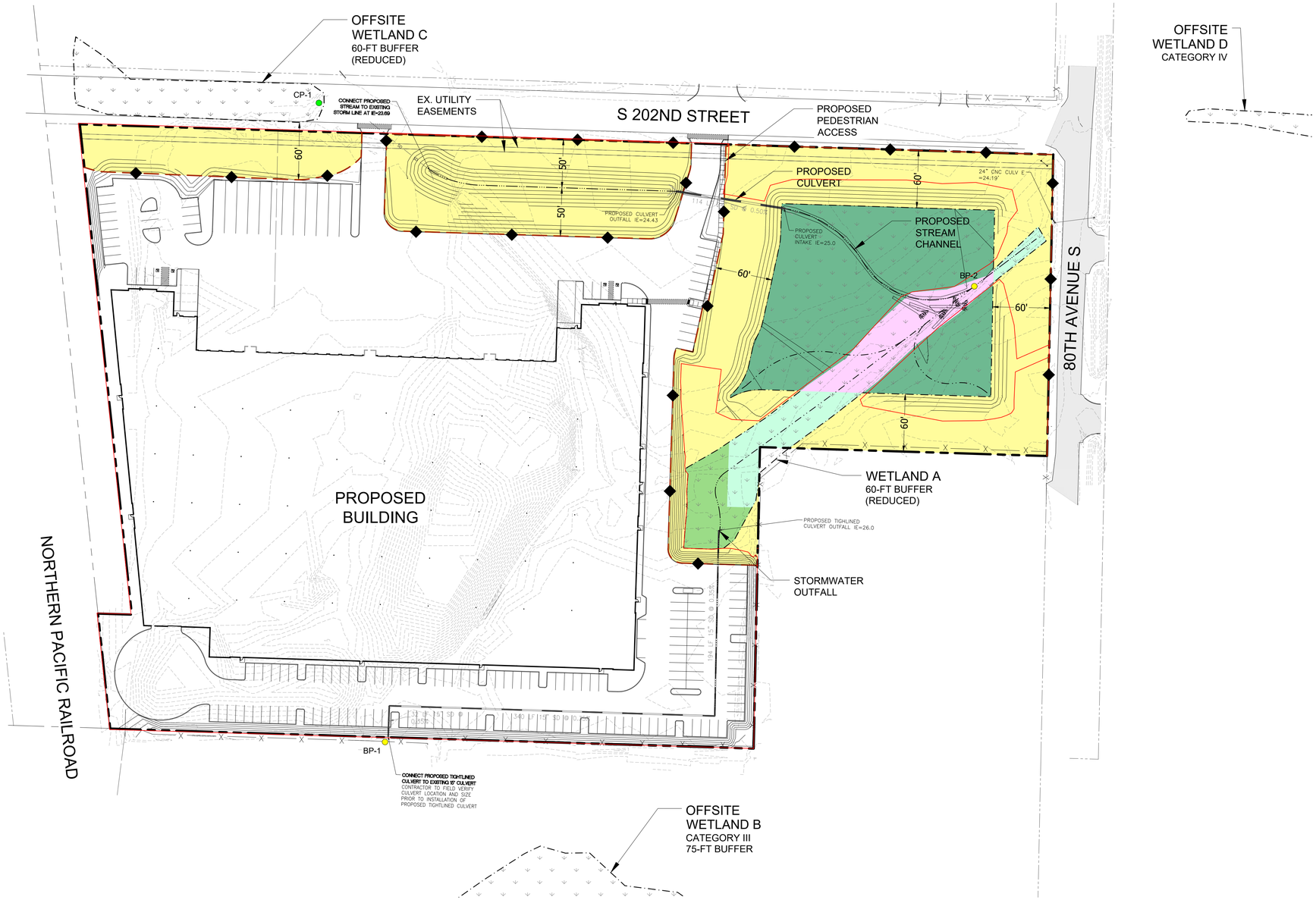
Appendix A — Water Quality Monitoring Report Form

WQMP Appendix A
Monitoring Form for Maralco

WQ Tester:
Date of last calibration for Turbidity Meter_____
Waterbody_____Activity_____Start Time_____ Stop Time_____

Sample Location	Monitoring Point	Date & Time	Turbidity	Sheen	pH	Discoloration	Notes (include weather, waterbody flow in cfs, other observations of waterbody, etc.)

Appendix B — Monitoring Location Map



0 60 120 240

GRAPHIC SCALE
1"= 60'

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- REDUCED WETLAND BUFFER
- STREAM CENTERLINE
- STREAM BUFFER
- DITCH CENTERLINE
- CLEARING LIMITS

MITIGATION LEGEND

WETLAND CREATION	38,774 SF
WETLAND REHABILITATION	7,442 SF
WETLAND AS BUFFER ENHANCEMENT	4,776 SF
BUFFER RESTORATION / ENHANCEMENT	113,261 SF

- POST-CONSTRUCTION BUFFER / CRITICAL AREAS FENCE
- CRITICAL AREA SIGN - 22 SIGNS
- LARGE WOODY DEBRIS

MONITORING LOCATION LEGEND

- CP-# COMPLIANCE SAMPLING POINT
- BP-# BACKGROUND SAMPLING POINT

SOURCE:

Barghausen Consulting Engineers, Inc.
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Kent, WA 98032
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MARALCO
7730 S 202ND STREET
KENT, WASHINGTON 98032

KING COUNTY
PARCEL NUMBER:
631500-0300

DATE: 6/8/2023
JOB: 1582.0022
BY: MW/DDS
SCALE: AS SHOWN
SHEET: 4

S:\CURRENT\1582 Bridge Industrial\1582.0022 Maralco\Graphics & Maps\CAD\A - CURRENT SVC DRAWINGS\A - Current Set.dwg\1582.0022 (2023-06) Base.dwg
Plotted June 8, 2023

Appendix C
QAPP

Interim Action Work Plan

APPENDIX C: QUALITY ASSURANCE PROJECT PLAN

Maralco Property
7730 South 202nd Street, Kent WA

June 30, 2023
Revised July 24, 2023

Prepared for:

BRIDGE

Interim Action Work Plan

APPENDIX C: QUALITY ASSURANCE PROJECT PLAN

Maralco Property
7730 South 202nd Street, Kent WA

June 30, 2023
Revised July 24, 2023

Prepared by:

CRETE
CONSULTING, INC.

Table of Contents

List of Tables

Acronyms and Abbreviations

Bridge	7730 202nd Street, LLC
CLP	Contract Laboratory Program
COI	contaminant of interest
COC	contaminant of concern
CRETE	CRETE Consulting Incorporated
DQO	data quality objective
EDD	electronic data deliverable
EPA	United States Environmental Protection Agency
LCS/LCSD	laboratory control sample/laboratory control sample duplicate
MDL	method detection limit
MRL	method reporting limit
MS/MSD	matrix spike/matrix spike duplicate
PARCC	precision, accuracy, representativeness, comparability, and completeness
Property/Site	Maralco Property
PDF	portable document format
PQL	practical quantitation limit
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RIWP	Remedial Investigation Work Plan
RPD	relative percent difference
SL	screening level
WAC	Washington Administrative Code

1 Introduction

1.1 Background

This Quality Assurance Project Plan accompanies the Interim Action Work Plan (IAWP) for the former Bunge Foods facility (Property), located at 7730 South 202nd Street in Kent, Washington (Property, Figure 1; King County Parcel Number 6315000300)). This IAWP was prepared for 7730 202nd Street, LLC (Bridge) for review by the Washington State Department of Ecology (Ecology) by Crete Consulting Incorporated (CRETE).

This QAPP describes quality assurance/quality control (QA/QC) procedures associated with collecting, analyzing, validating, and using soil sediment data to confirm the extent of the cleanup action. This QAPP uses Ecology's Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies. July 2004. Publication No. 04-03-030 (Ecology 2004).

The history, contaminants of interest (COIs), screening levels (SLs), and other background information for the Site are described in the Remedial Investigation Work Plan (RIWP; CRETE 2022, CRETE 2023). Remediation levels are provided in the body of the IAWP.

1.2 Project Description

Extensive waste material remains on the property. This interim action will focus on the removal and disposal of wastes located throughout the property. These wastes include the following:

- Outdoor stockpile – Remove and dispose at an offsite disposal facility approximately 29,300 cy of primarily black dross and a smaller amount of aluminum oxide (at the northern tip of the pile).
- Indoor stockpiles – Remove, stabilize (those that require stabilization) and dispose at an offsite disposal facility.
- Remove and dispose at an offsite disposal facility black dross that has eroded from the outdoor stockpile into the on-property drainage ditch.
- Excavate and dispose of contaminated sediment/soil where the existing ditch intersect with the drainage/wetland buffer of the development
- Remove and dispose of sediment that has accumulated in the culvert under the S. 202nd Street cul-de-sac; the culvert will remain in service
- Remove and dispose of the culvert, if present, and any contained sediment that conveyed water from the stormwater pond to the S. 202nd ditch. If present, this discharge point will be abandoned.
- Remove and dispose at an offsite disposal facility contaminated sediment from the S. 202nd Street Right-of-Way (ROW) drainage ditch.

This QAPP pertains to the confirmation sampling program for soil and sediment sampling following the removal of the source material.

1.3 Organization and Schedule

1.3.1 Roles and Responsibilities

Roles and responsibilities are defined in Table 1.

Friedman & Bruya will perform the majority of chemical analyses of the soil and sediment samples collected by CRETE Consulting, Inc. Other laboratories may be added should specialized testing be required.

1.3.2 Schedule

Field work will follow the schedule in the IAWP.

Samples will be delivered to the laboratory within applicable holding times and within 24 hours of collection time, when possible, with schedule constraints. Samples will be delivered to the laboratory by field personnel or arranged for pickup by laboratory couriers. Chain-of-custody procedures will be maintained during transit to the laboratory.

Data verification and validation will be completed prior to entry into the project database.

Soil and sediment data will be uploaded to the Ecology EIMS at the conclusion of the RI/FS.

2 Quality Objectives

The overall data quality objective for this project is the collection of representative data of known and acceptable quality. The QA procedures and measurements that will be used for this project are based on EPA guidance (EPA 2001, 2002, 2006). Parameters related to precision, accuracy or bias, representativeness, completeness, and comparability (PARCC) will be used to assess the quality of RI data (Table 3).

2.1 Precision

Precision is a measure of how closely one result matches another result expected to have the same value. Field precision will be assessed by collecting one duplicate sample for every ten field samples of each media. Field precision is determined by the relative percent difference (RPD) between a sample and its duplicate. However, results from the analysis of a duplicate sample also test laboratory precision. Therefore, the RPD between the sample and the field replicate provides an indication of both the field and laboratory precision. The tolerance limit for percent differences between field duplicates will be $\pm$ 50 percent for soil and sediment. If the RPDs exceed these limits, a replicate sample may be run to verify laboratory precision. If any RPD exceedance is linked to field sampling, the Field Manager will recheck field sampling procedures and identify the problem. Resampling and analysis may be required.

Laboratory precision can be measured through the evaluation of laboratory control samples/duplicates (LCS/ LCSD). The laboratory will perform the analysis of one set of LCS/LCSD samples for every 20 samples. Laboratory precision will be evaluated by the RPD for each analyte between LCS/LCSD samples.

$$RPD = \frac{ABS(R1-R2)}{(R1+R2)/2} \times 100$$

Where:
ABS = absolute value
R1 = Sample result
R2 = Duplicate sample result.

The tolerance limit for percent differences between laboratory duplicates will be $\pm$ 20 percent for soil and sediment samples. If the precision values are outside this limit, the laboratory will recheck the calculations and/or identify the problem. Reanalysis may be required.

2.2 Accuracy

Accuracy is an expression of the degree to which a measured or computed value represents the true value. Accuracy may be expressed as a percentage of the true or reference value for

reference material or as spike recovery from matrix spike/matrix spike duplicate (MS/MSD) samples. The RPD between the MS and MSD is used to evaluate laboratory precision. The following equations are used to express accuracy:

- For reference materials:
  - Percent of true value = (measured value/true value) x 100
- For spiked samples:
  - Percent recovery = ([SQ – NQ]/S) x 100

    SQ = quantity of spike or surrogate found in sample
    NQ = quantity found in native (unspiked) sample
    S = quantity of spike or surrogate added to native sample

The performance of the method will be monitored using surrogate compounds or elements. Surrogate standards are added to all samples, method blanks, matrix spikes, and calibration standards.

Laboratory method reporting limits (MRL) are listed in Table 2. All RLs are below remediation levels and SLs.

3 Sampling Process Design

The adequacy of the sampling design is evaluated by representativeness, comparability, and completeness of the data produced. The data must also be adequate to characterize nature and extent of contamination and to evaluate the completeness of pathways.

3.1 Representativeness

Representativeness is the degree to which data from the project accurately represent a particular characteristic of the environmental matrix which is being tested. Representativeness of samples is achieved by adherence to standard field sampling protocols and standard laboratory protocols. Representativeness is achieved through following of the sampling plan design, sampling techniques, and sample handling protocols.

3.2 Comparability

Comparability is the qualitative similarity of one dataset to another (i.e., the extent to which different datasets can be combined for use). Comparability will be addressed through the use of field and laboratory methods that are consistent with methods and procedures recommended by Ecology and that are commonly used for soil and sediment studies.

3.3 Completeness

Completeness is a measure of the amount of data that is determined to be valid in proportion to the amount of data collected. Completeness will be calculated as follows:

Completeness =
(number of valid measurements/ total number of data points planned) x 100

The data quality objective (DQO) for completeness for all analytes is 95%. Data that have been qualified as estimated (J qualified) will be considered valid for the purpose of assessing completeness. Data that have been qualified as rejected will not be considered valid for the purpose of assessing completeness. Results will be considered valid if all the precision and accuracy targets are met. Resampling or re-analysis of remaining sample aliquots may be required if the completeness DQO is not met.

3.4 Laboratory QC Procedures

Additional laboratory QC procedures will be evaluated to provide supplementary information regarding overall quality of the data, performance of instruments and measurement systems, and sample-specific matrix effects.

QC samples and procedures are specified in each method protocol. All QC requirements will be completed by the laboratory as described in the protocols, including the following (as applicable to each analysis):

- Instrument tuning

- Initial calibration
- Initial calibration verification
- Continuing calibration
- Calibration or instrument blanks
- Method blanks
- LCS/LCSD
- Internal standards
- Surrogate spikes
- Serial dilutions
- MS/MSD.

3.5 Additional Field Quality Control

Field quality control samples will be collected during the soil and sediment investigations. The field quality control samples consist of a trip blank (one for each day samples for chemical analysis are collected), decontamination field blanks (one per day that sampling equipment is reused), and field duplicates (one for every ten samples).

The goal is to have no detectable contaminants in the trip and decontamination blanks. If contamination is detected, the nature of the interference and the effect on the analysis of each sample in the batch will be evaluated. Data from affected samples may require qualification as “estimated” or “rejected.”

4 Sampling Procedures

The sampling program addressed in this QAPP is to:

- Collect soil samples (4.1)
- Collect sediment samples (4.2).

4.1 Soil and Sediment Sample Collection

Surface soil and sediment samples will be grab samples that will be collected with a hand held tool, such as a trowel, or a shovel to collect surficial soil (0 to 1.0 ft bgs) into a stainless steel bowl.

Sample containers for all analyses will be filled directly from the stainless steel bowl using a gloved hand and clean stainless steel spoon, if appropriate. Gloves will be changed between each sample. Stainless steel spoons will be decontaminated prior to each use (and between samples). Sample containers will be clearly labeled with sample ID, collection date and time, and project name, and then placed in an iced cooler for delivery to the laboratory within 24 hours of sample collection. Chain of custody will be maintained. The sample ID is the boring name (including initials for the subarea) and the depth below ground surface.

Sample containers will be clearly labeled with sample ID, collection date and time, and project name, and then placed in an iced cooler for delivery to the laboratory within 24 hours of sample collection. Chain of custody will be maintained. The sample ID is the boring name (including initials for the subarea) and the depth below ground surface.

4.2 Sampling Equipment

Field equipment and supplies will include sampling equipment (e.g., bowls, tape measures), utensils (e.g., spoons), decontamination supplies, sample containers, coolers, log books and forms, personal protection equipment, and personal gear. Protective wear (e.g., hard hats, gloves) are described in the Health and Safety Plan. Sample containers, coolers, and packaging material will be supplied by the analytical laboratory.

4.3 Decontamination

If used, stainless-steel sampling equipment will be washed with Liquinox™ detergent and rinsed with distilled water prior to use and between sampling stations. The following decontamination steps will be performed on stainless-steel bowls and spoons using for compositing prior to use at each station:

- Wash with Liquinox™
- Double rinse with distilled/deionized water
- Final rinse with distilled/deionized water.

Sample equipment will be kept wrapped in aluminum foil until time for use. To minimize sample cross-contamination, disposable gloves will be replaced between samples. If any equipment decontamination occurs, an equipment blank will be collected by pouring distilled water over the equipment and collecting in a set of the same sample containers as those used for the environmental samples the equipment is used to collect. Gloves will be changed between each sample.

4.4 Sample Nomenclature

The sample nomenclature is identified on Figure 7 of the IAWP.

4.5 Sampling Containers

Requirements for sample containers and storage conditions are provided in Table 2. All sample containers will have screw-type lids so that they are adequately sealed. Lids of the glass containers will have Teflon™ inserts to prevent sample reaction with the plastic lid and to improve the quality of the seal. Commercially available, pre-cleaned jars will be used, and the laboratory will maintain a record of certification from the suppliers. The container shipment documentation will record batch numbers for the bottles. With this documentation, containers can be traced to the supplier, and bottle rinse blank results can be reviewed.

Sampling containers will be filled to minimize head space, and will be appropriately labeled and stored prior to shipment or delivery to the laboratory. Samples must be packed to prevent damage to the sample containers and labeled to allow sample identification. All samples must be packaged so that they do not leak, break, vaporize or cause cross-contamination of other samples. Each individual sample must be properly labeled and identified. When refrigeration is required for sample preservation, samples must be kept cool, by means of ice packs or double-bagged ice in coolers, during the time between collection and final packaging.

4.6 Field Logs

All field activities and observations will be noted on weatherproof paper at the time they occur. The field logs will be compiled in a binder in the chronological order they were completed. Information will include personnel, date, time, station designation, sampler, types and number of samples collected, photographs taken, weather conditions, health and safety meetings conducted (tailgate meeting), and general observations. Any changes that occur at the site (e.g., personnel, responsibilities, deviations from the IAWP) and the reasons for these changes will be documented in the field log. It will also identify onsite visitors observing the sampling. The Site is an actively used property, therefore only those specifically visiting/observing sampling activities will be documented. The Field Manager is responsible for ensuring that the field logs are correct.

All field activities and observations will be noted during fieldwork. The descriptions will be clearly written with enough detail so that participants can reconstruct events later, if necessary.

4.7 Chain-of-Custody Procedures

All samples must be clearly identified immediately upon collection. Each sample container label will list:

- Client and project name
- A unique sample description/sample ID
- Sample collection date and time.

Additionally, the container's label may include:

- Sampler's name or initials
- Preservative, if applicable
- Analyses to be performed.

Chain-of-custody procedures will be used to document sample possession from the time of collection, through analysis, to disposal. Chain-of-custody forms will document transfers of sample custody. A sample is considered to be under custody if it is in one's possession, view, or in a designated secure area. One set of chain-of-custody forms will be used per laboratory shipment.

When transferring custody, both the staff relinquishing custody of samples and the staff receiving custody of samples will sign, date, and note the time on the form. Samples to be analyzed by Friedman & Bruya Laboratory will not be shipped, but will be delivered by project personnel to the laboratory at the end of each sampling day. If samples are to be analyzed by other laboratories, they will either be delivered or shipped, depending on the location. All samples will be stored appropriately by the laboratory.

5 Measurement Procedures

Soil samples will be analyzed by the methods and to the reporting limits identified in Table 2. The number of samples and the sample nomenclature are described in the IAWP.

6 Quality Control

6.1 Laboratory Quality Control

Only laboratories accredited in accordance with WAC 173-50, Accreditation of Environmental Laboratories will be used for this project. EPA Contract Laboratory Program (CLP) QA/QC procedures or similar efforts will be used for the analyses. Internal quality control procedures are used to produce consistently high-quality data. A routine QC protocol is an essential part of the analytical process. The minimum requirements for each analytical run are described here. Additional description of laboratory QA/QC procedures can be found in the laboratory's QA manual. A project narrative detailing analytical results must accompany all data packages submitted by the laboratory.

Preparation batches have a maximum of 20 field samples of the same matrix. QA/QC samples processed with each batch are:

- **One method blank**. The method blank is used to assess the preparation batch for possible contamination during the preparation and processing steps. It is processed along with and under the same conditions as the environmental samples. Concentrations of compounds detected in the blank will be compared to the samples. Any concentration of common laboratory contaminants (i.e., phthalates, acetone, methylene chloride, or 2-butanone) in a sample lower than 10 times that found in the blank will be considered a laboratory contaminant and will be so qualified. For other contaminants, any compounds detected at concentrations lower than five times that found in the blank will be considered laboratory contamination (EPA 2008). Values reported for the method blanks are expected to be below the MDLs for all analytes, except the common laboratory contaminants. Deviations from this must be explained in the laboratory project narrative(s).
- **One LCS**. The LCS is used to evaluate the performance of the total analytical system, including all preparation and analysis steps.
- **One MS**. Matrix specific QA/QC samples indicate the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. The information from these controls is sample/matrix specific and is not normally used to determine the validity of the entire batch.
- **At least one duplicate**. Duplicates are replicate aliquots of the same sample taken through the entire analytical procedure. The results from this analysis indicate the precision of the results for the specific sample using the selected method. One duplicate sample is analyzed with each preparation batch. If sufficient sample is provided, this will be either an MSD. If not, an LCSD will be analyzed.
- **Initial and continuing calibration:** A calibration standard will be analyzed each time an instrument is calibrated. The instruments used to perform the analyses will be calibrated, and the calibrations will be verified as required by EPA methodologies. For example, a standard five-point initial calibration will be utilized to determine the linearity of response with the gas

chromatograph/electron capture detection. Once calibrated, the system must be verified every 12 hours. All relative response factors, as specified by the analytical method, must be greater than or equal to 0.05. All relative standard deviations, as specified by the analytical method, must be less than or equal to 30 percent for the initial calibration and less than or equal to 25 percent for the continuing calibration.

- **Surrogate evaluations:** Surrogate recovery is a QC measure used in organics analyses. Surrogates are compounds added to every sample at the initiation of preparation to monitor the success of the sample preparation on an individual sample basis (accuracy). Although some methods have established surrogate recovery acceptance criteria that are part of the method or contract compliance, for the most part, acceptable surrogate recoveries need to be determined by the laboratory. Recoveries of surrogates will be calculated for all samples, blanks, and QC samples. Acceptance limits will be listed for each surrogate and sample type and will be compared against the actual result by the data validator.
- **Laboratory management review:** The Laboratory Project Manager will review all analytical results prior to final external distribution (preliminary results will be reported before this review). If the QA Officer finds that the data meet project quality requirements, the data will be released as "final" information. Data which are not acceptable will be held until the problems are resolved, or the data will be flagged appropriately.

6.2 Field Quality Control

QA/QC samples will be collected during all sampling activities. Trip blank, field duplicate, and matrix spike/matrix spike duplicate samples will be collected as follows:

Field duplicate samples will use the same naming system as the environmental samples do that they are submitted "blind" to the laboratory. Field duplicates are useful in identifying problems with sample collection or sample processing. One duplicate sample will be collected for every 10 field samples of the same matrix. Each field duplicate will be analyzed for the same parameters as the samples to evaluate heterogeneity attributable to sample handling.

Rinsate and equipment blanks are not expected because samples will be collected using either disposable or dedicated tools, which prevents cross-contamination.

6.3 Instrument and Equipment Testing, Inspection, and Maintenance

The primary objective of an instrument/equipment testing, inspection, and maintenance program is to aid in the timely and effective completion of a measurement effort by minimizing the downtime due to component failure.

Testing, inspection, and maintenance will be carried out on all field and laboratory equipment in accordance with manufacturer's recommendations and professional judgment.

Analytical laboratory equipment preventative testing, inspection, and maintenance will be addressed in the laboratory QA manual, which will be kept on file at the contracted laboratory.

As appropriate, schedules and records of calibration and maintenance of field equipment will be maintained in the field notebook. Equipment that is out of calibration or is malfunctioning will be removed from operation until it is recalibrated or repaired.

6.4 Instrument and Equipment Calibration and Frequency

Field equipment and laboratory instrumentation used for monitoring and sample analysis will be subject to the following calibration requirements:

- **Identification**. Either the manufacturer's serial number or the calibration system identification number will be used to uniquely identify equipment. This identification, along with a label indicating when the next calibration is due, will be attached to the equipment. If this is not possible, records traceable to the equipment will be readily available for reference.
- **Standards**. Equipment will be calibrated, whenever possible, against reference standards having known valid relationships to nationally recognized standards (e.g., National Institute of Standards and Technology) or accepted values of natural physical constraints. If national standards do not exist, the basis for calibration will be described and documented.
- **Frequency.** Equipment will be calibrated at prescribed intervals and/or prior to use. Frequency will be based on the type of equipment, inherent stability, manufacturers' recommendations, intended use, and observation of equipment readings over the course of the field work. All sensitive equipment to be used in the field or laboratory will be calibrated or checked prior to use.
- **Records**. Calibration records (certifications, logs, etc.) will be maintained for all measuring and test equipment used.

If field or laboratory equipment is found to be out of calibration, the validity of previous measurements will be investigated, and/or corrective action will be implemented. The Field QA Manager or the Laboratory QA Manager, respectively, will lead the evaluation process, which will be document in the field forms or laboratory log book, respectively.

All laboratory calibration requirements must be met before sample analysis may begin. The laboratory will follow the calibration procedures dictated by the analytical methods to be performed. If calibration non-conformances are noted, samples will be reanalyzed under compliant calibration conditions within method-specified hold times.

6.5 Inspection and Acceptance of Supplies and Consumables

The Field Manager will be responsible for material procurement and control. The Field Manager will verify upon receipt that materials meet the required specifications and that, as applicable, material or standard certification documents are provided, maintained, and properly stored with the project files. The Field Manager will also verify that material storage is properly maintained and that contamination of materials is not allowed.

The laboratory must document and follow procedures related to:

- Checking purity standards, reagent grade water, and other chemicals relative to intended use
- Preparing and storing chemicals
- Handling disposable glassware (including appropriate grade).

The Field Manager will be responsible for procuring and transporting the appropriate sample containers, equipment, and consumables (e.g., soap) to the Site. The containers will be pre-cleaned and certified by lot. If needed, reagents provided will be of the appropriate grade for the analysis. Records of these certifications and grades of material will be maintained on file at the laboratory.

7 Corrective Actions

Upon receipt of data, the QA Officer will evaluate field and laboratory precision by the RPDs between the field duplicate and sample data (using calculated totals for total PCBs, and cPAH TEQ and using other individual constituents). Non-conforming items and activities are those which do not meet the project requirements or approved work procedures. Non-conformance may be identified by any of the following groups:

- **Field staff/Manager**: during the performance of field activities, supervision of subcontractors, performance of audits
- **Laboratory staff**: during the preparation for and performance of laboratory testing, calibration of equipment, and QC activities
- **QA Staff**: during the performance of audits and during data validation, through the use of data to make decisions (i.e., do the data make sense?).

If possible, the Field Manager will identify any action that can be taken in the field to correct any non-conformance observed during field activities. If necessary and appropriate, corrective action may consist of a modification of methods or a re-collection of samples. If implementation of corrective action in the field is not possible, the non-conformance and its potential impact on data quality will be discussed in the data quality section of the RI/FS Report.

Corrective action to be taken as a result of non-conformance during field activities will be situation-dependent. The laboratory will be contacted regarding any deviations from the QAPP, will be asked to provide written justification for such deviations, and in some instances, will be asked to reanalyze the sample(s) in question. All corrective actions must be documented. The person identifying the nonconformance will be responsible for its documentation.

Documentation will include the following information:

- Name(s) of the individual(s) identifying or originating the nonconformance
- Description of the nonconformance
- Any required approval signatures
- Method(s) for correcting the nonconformance or description of the variance granted.

Documentation will be made available to project, laboratory, and/or QA management. Appropriate personnel will be notified by the management of any significant nonconformance detected by the project, laboratory, or QA staff. Implementation of corrective actions will be the responsibility of the Field Manager or the QA Officer. Any significant recurring nonconformance will be evaluated by project or laboratory personnel to determine its cause. Appropriate changes will then be instituted in project requirements and procedures to prevent future recurrence. When such an evaluation is performed, the

results will be documented. If there are unavoidable deviations from this QAPP, the Project Manager will document the alteration and track the change in the subsequent deliverables.

8 Audits and Reports

Field investigators will maintain field notes in a bound notebook or on field forms, and all documents, records, and data collected will be kept in a case file in a secure records filing area. All laboratory deliverables with verifiable supporting documentation shall be submitted by the laboratory to the QA Officer. The following documents will be archived at the laboratory: 1) signed hard copies of sampling and chain-of-custody records; and 2) electronic files of analytical data including extraction and sample preparation bench sheets, raw data, and reduced analytical data.

PDFs of all analytical reports will be retained in the laboratory files, and at the discretion of laboratory management, the data will be stored electronically for a minimum of 1 year. After 1 year, or whenever the data become inactive, the files will be transferred to archives in accordance with standard laboratory procedure. Data may be retrieved from archives upon request.

No audits, other than the identified data verification and validation will be conducted.

9 Data Verification and Validation

Analytes detected at concentrations between the MRL and the method detection limit (MDL) will be reported with a J qualifier to indicate that the value is an estimate (i.e., the analyte concentration is below the calibration range). J-qualified data are considered valid when completeness is calculated. Undetected data will be reported at the MRL. The MRL will be adjusted by the laboratory as necessary to reflect sample dilution or matrix interference.

Verification of completeness and method compliance, as well as raw data entry and calculations by analysts will be reviewed by the Laboratory Project Manager. The Laboratory Project Manager will be responsible for checking each group or test data package for precision, accuracy, method compliance, compliance to special client requirements, and completeness. The Laboratory Project Manager will also be responsible certifying that data in PDFs and EDDs are identical prior to release from the laboratory.

Data validation will be completed by a third-party data validator. Data validation will be completed within two weeks after receipt of the complete laboratory data package.

The laboratory will generate Level 2B data package for all analytes. Validation of the analytical data will comply with criteria set forth in the CLP National Functional Guidelines for Superfund Organic Methods Data Review (EPA 2008).

10 Data Quality (Usability) Assessment

The QA Officer will review the field notebooks, laboratory reports, and the data validation report to determine if the data quality objectives have been met. Instances where the data quality objectives were not met will be documented. The usability of the data will depend on the magnitude of the data quality objective exceedance. Data that has been rejected will be flagged as “R” and will not be included in the database. The QA Officer will determine if rejected data trigger additional sample collection.

The achieved MRLs will be compared to the remediation level or SL in order to determine if the produced laboratory data can answer the study questions.

11 References

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Tables

Table 1 Project Roles and Responsibilities

Role	Person	Responsibilities
Ecology Project Manager	TBD	• Direct other Ecology staff and their consultants to review and comment on materials • Grant final approval on this QAPP, on data use, and on further data collection.
Consultant Team Project Manager	Grant Hainsworth (253-797-6323)	• Primary point of contact with the Port • Review all technical documents associated with the project for technical accuracy and feasibility, as well as adherence to budget and schedule.
Quality Assurance Officer	Jamie Stevens (206-799-2744)	• Monitor all aspects of the project to verify that work follows project plans • Review laboratory analytical data • Serve as liaison between the laboratory and Field Manager • Maintain a complete set of laboratory data • Evaluate conformance of the analyses with the specifications of this QAPP • Verify the reported results with the raw data • Check that EDDs match the analytical reports • Review compliance with field methods and procedures.
Field Manager	Rusty Jones (832-330-1359)	• Collect or direct collection of soil sediment samples • Maintain a log (field log book) for all sampling-related activities • Coordinate the sampling operations to verify that the this QAPP is followed • Identify any deviations from this QAPP • Prepare the field data and information for RI/FS • Maintain the integrity of samples throughout sample collection and transport to the laboratory.
Laboratory Project Manager	Eric Young (206-285-8282)	• Conduct analysis of soil sediment samples • Practice quality assurance methods per internal laboratory standard operating procedures and this QAPP, and document such practices • Verify quality of samples (e.g., cooler temperature) as they're received at the laboratory • Verify accuracy and completeness of laboratory reports and EDDs.

Table 2 Soil and Sediment Sample Analytes

Analyte	Preparation Method	Analytical Method	Method Reporting Limit	Lowest Screening Level	Holding Time	Sample Container
Metals other than Mercury (mg/kg)	3050	EPA 6010	0.3 to 5	Silver = 0.57	1 year	4-ounce glass
Mercury (mg/kg)	3050	CVAA	0.025	0.66	28 days	4-ounce glass

Table 3 Measurement Quality Objectives

Parameter	Precision (RPD; lab/field)	Accuracy	Completeness	Preservation/ Storage
Metals	Soil/Sediment: 20%/50%	70-130%	100%	Dark, 4°C; freeze VOCs with 48 hours if not analyzed.

Note

1. These data quality objectives will be applied to soil and sediment samples only.
2. Water – includes any equipment blanks or laboratory liquid samples for QAQC