



CRITICAL AREA STUDY & NO NET LOSS PLAN

FOR

COVENANT LIVING AT THE SHORES ***MERCER ISLAND, WA***

Wetland Resources, Inc. Project #24361

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1.0 INTRODUCTION

Covenant Shores seeks to re-develop the community center at 9150 Fortuna Drive. The property is a retirement community known as Covenant Living at the Shores. Wetland Resources, Inc (WRI) was contracted to identify and evaluate wetlands, watercourses, and wildlife habitat conservation areas on and near the subject property, and to describe plan compliance with the Mercer Island City Code (MICC). Three regulated features were observed: Wetland A, Lake Washington, and Buried Pipe Network 1 (piped watercourse). Two unregulated drainage features were observed: Surface Drainage Network and Buried Pipe Network 2. See Figure 1.

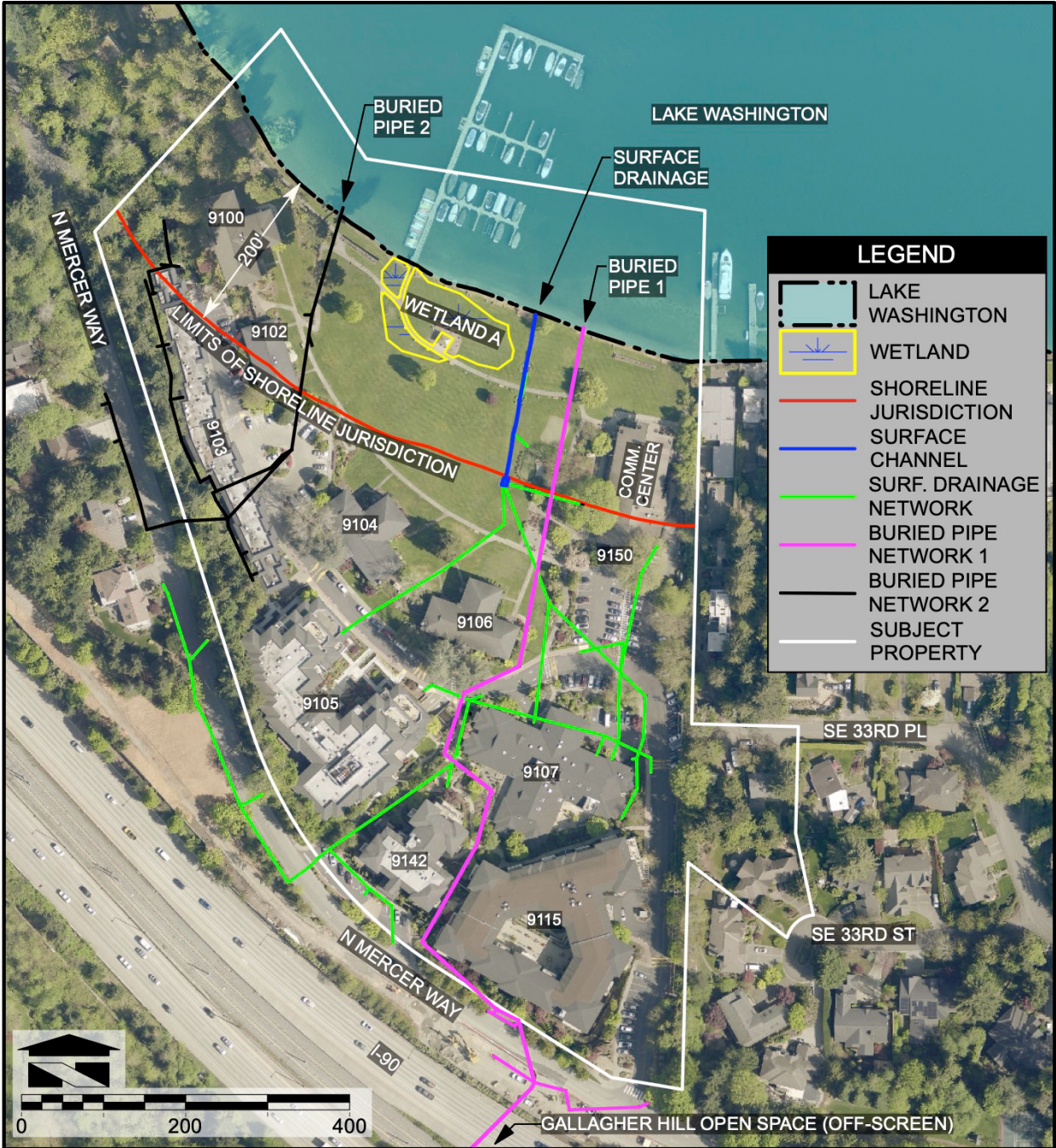


Figure 1 - Aerial Overview of Subject Property

1.1 SITE DESCRIPTION

The 12.44-acre subject property consists of one tax parcel (#0724059016) that is owned by Covenant Shores. The property is a multi-unit residential complex with an associated health center, administrative building, and a community center called the Fortuna Lodge. Surrounding land use includes single-family residential development and undeveloped land with Lake Washington to the north and I-90 to the south.

1.2 CRITICAL AREAS SUMMARY FINDINGS

Observed critical areas include Lake Washington (shoreline of statewide significance), one Category IV wetland (Wetland A), and one piped watercourse (Buried Pipe Network 1). A portion of the property is within the Urban Residential shoreline environment designation. Two features that do not meet the MICC watercourse definition were observed on the site (Buried Pipe Network 2, Surface Drainage Network). A detailed discussion is provided in the section below titled *Unregulated Features*. Geologic hazard areas are outside the scope of this report.

Table 1 Critical Areas Summary Findings

| Critical Area Name | Critical Area Classification | Wetland Rating Score | Critical Area Buffer/Setback Requirement | SMP Buffer/Setback Requirement |
|-----------------------|------------------------------|-------------------------------------|--|---|
| Wetland A | Category IV | 14 Total Points 4 Habitat Points | 40 feet (Buffer)/ 10 feet (Setback) | 100 feet (Buffer)/ 10 feet (Setback) |
| Lake Washington | Type S | N/A | 25 feet (Setback) | 25 feet (Setback) |
| Buried Pipe Network 1 | Piped Watercourse | N/A | 45 feet (Setback) | 45 feet (Setback) |

1.3 PROJECT DESCRIPTION

The applicant is proposing to demolish the existing Fortuna Lodge structure, adjacent parking lot, walkways, and driveway areas to construct a new building in roughly the same location. See Figure 2. The project includes new parking and a new turnaround for emergency vehicle access. 32 trees will be removed throughout the site, and 93 replacement trees will be installed. Impact minimization measures (MICC 19.07.190.D.3) will be implemented to reduce the 100-foot Shoreline Master Program (SMP) wetland buffer to 40 feet.

The following critical area alterations are proposed. See Appendix D – Sheets 2/3, 3/3

- Wetland A buffer: 269 square feet grading, new utilities (one sewer cover) within 40 feet of Wetland A
- Piped watercourse setback: 25,796 square feet grading, 11,358 square feet hardscape, new utilities (buried sewer crossing, one fire hydrant, and buried water supply line), and removal of six existing trees

Wetland buffer width averaging will be used to remove grading and new utilities from the wetland buffer in accordance with MICC 19.07.190.C.5. See Figure 3. See also Appendix D – Sheet 2/3.

Grading and hardscape are allowed in the watercourse setback pursuant to MICC 19.07.180.C.8. Reconstruction of legal nonconforming utilities is allowed in the watercourse setback pursuant to MICC 19.07.130.A.3. See Appendix D – Sheet 3/3. See also Figure 2.

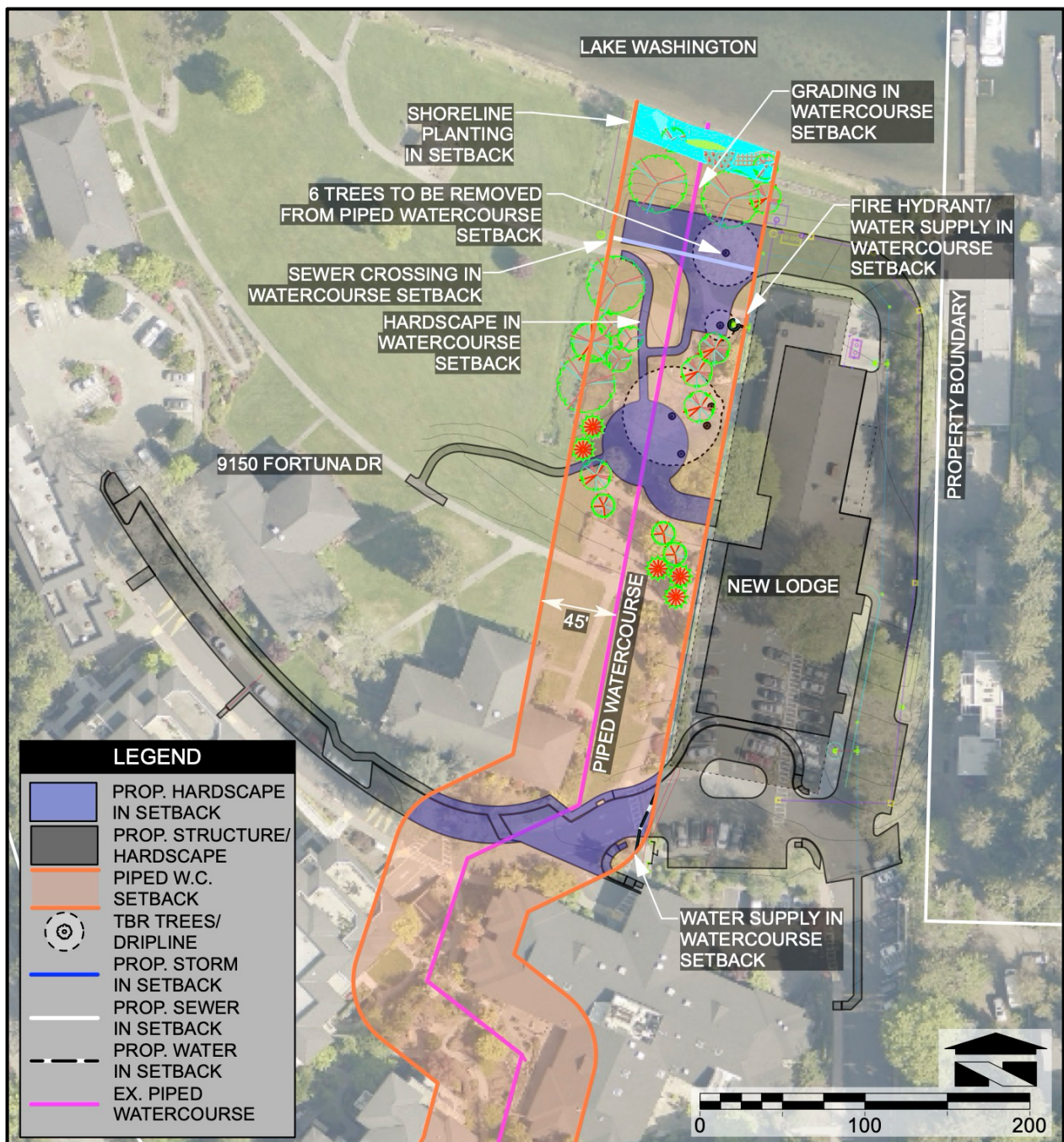


Figure 2 – Piped Watercourse Development Overview

The following shoreline alterations are proposed. See Figure 3 and Appendix D – Sheet 2/3

- Removal of 15 trees within 200 feet of Lake Washington
- 21,473 square feet of new hardscape/structure within 200 feet of Lake Washington (6,685 square-foot net increase)
- 35,479 square feet of new grading
- 373 lineal feet of new water line and two new fire hydrants
- 212 lineal feet of new sewer pipe and one sewer cover
- 269 lineal feet of new storm pipe, one storm cover, one storm outfall, and three catch basins

Overall tree replacement (32 removed, 93 installed) is generally consistent with the ratios and locations provided in MICC 19.10.070. Within shoreline jurisdiction, 67 proposed trees will replace 15 removed trees. Hardscape/structure/utilities alterations are consistent with bulk and dimensional shoreline regulations, outside of the 25-foot shoreline structure setback, and will result in no net loss of ecological functions due to proposed native planting along the lakeshore.

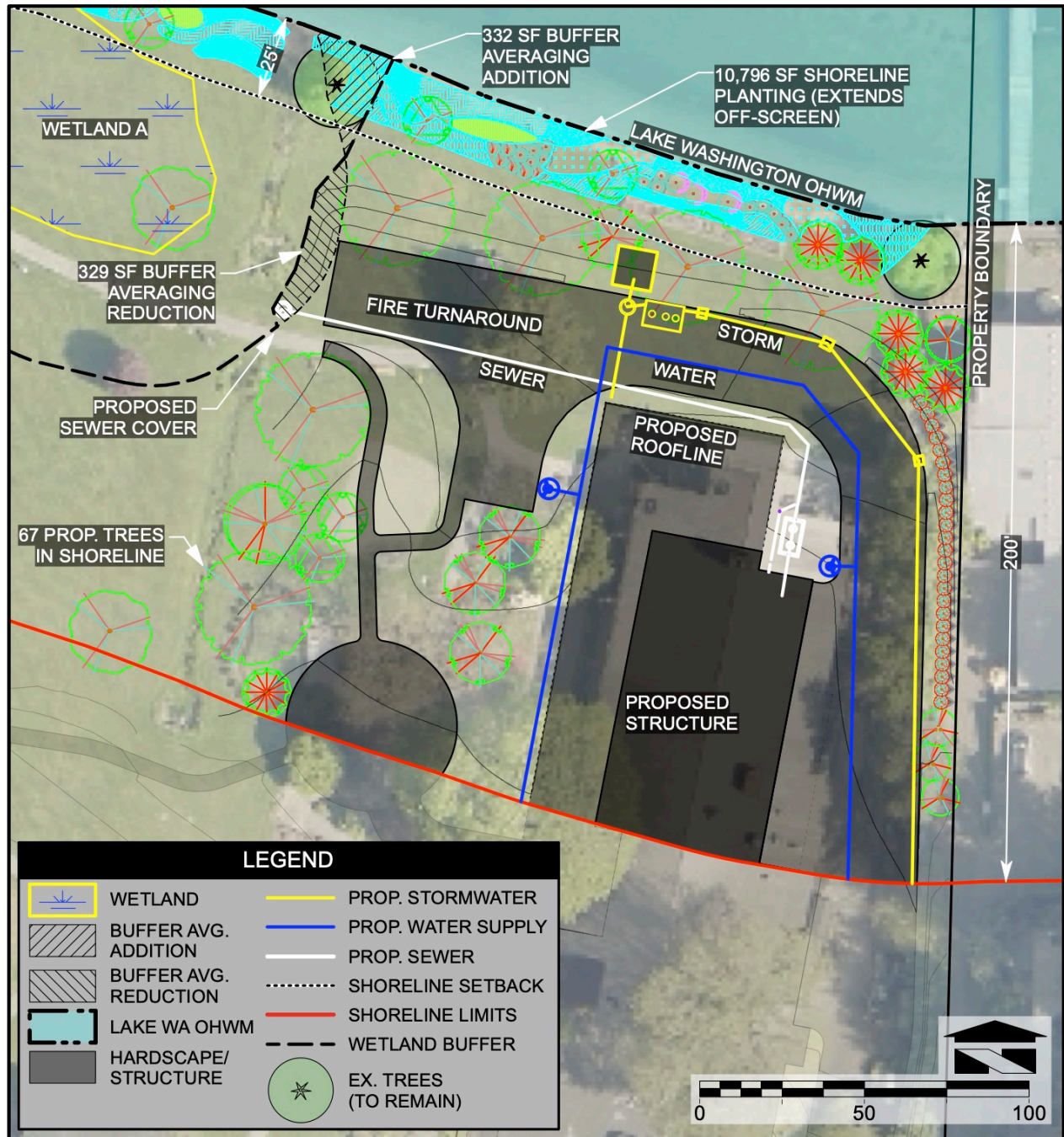


Figure 3 - Shoreline Development and Buffer Averaging Overview

2.0 REGULATORY SETTING

2.1 MINIMUM REPORTING REQUIREMENTS

MICC 19.07.100 requires the submission of a critical area study any time proposed development will result in the alteration of one or more critical areas or critical area buffers, or when required to determine potential impacts to those areas. This report meets the reporting standards set forth in MICC 19.07.110.B.

MICC 19.07.170 requires a wildlife habitat assessment in the form of a critical area study any time development is proposed in a fish and wildlife habitat conservation area. This report meets the general review requirements set forth in MICC 19.07.170.B.

The project requires a no net loss plan pursuant to MICC 19.13.020.C.2 because the project requires a shoreline conditional use permit. This report demonstrates that the project will not result in a net loss of shoreline ecological functions and was prepared by a qualified professional.

2.2 WETLAND IMPACT MINIMIZATION MEASURES

Wetlands in shoreline jurisdiction require buffers based on MICC 19.13.010.D. This section allows the SMP buffer width to be reduced to the standards of MICC 19.07.190.C.1 where applicable/beneficial MICC 19.07.190.D.3 impact minimization measures are implemented. The applicant's site plan includes all applicable/beneficial wetland impact minimization measures. A tabular summary of project impact minimization measures is provided as Appendix E.

2.3 MITIGATION SEQUENCING

MICC 19.07.100 requires applicants to document how the project avoids, minimizes, and compensates for critical area and buffer impacts. MICC 19.07.100.A-F are re-stated below in italics (indented) with the applicant's response immediately following in normal font (justified).

19.07.100.A. Avoiding the impact altogether by not taking a certain action or parts of an action. The applicant shall consider reasonable, affirmative steps and make best efforts to avoid critical area impacts. However, avoidance shall not be construed to mean mandatory withdrawal or denial of the development proposal or activity if the proposal or activity is an allowed, permitted, or conditional use in this title. In determining the extent to which the proposal should be redesigned to avoid the impact, the code official may consider the purpose, effectiveness, engineering feasibility, commercial availability of technology, best management practices, safety and cost of the proposal and identified changes to the proposal. Development proposals should seek to avoid, minimize and mitigate overall impacts based on the functions and values of all of the relevant critical areas and based on the recommendations of a critical area study. If impacts cannot be avoided through redesign, use of a setback deviation pursuant to section 19.06.110(C), or because of site conditions or project requirements, the applicant shall then proceed with the sequence of steps in subsections B through E of this section;

Applicant's Response:

Impacts have been avoided by placing all structures outside of the shoreline setback and the piped watercourse setback. Due to the requirement to provide a fire turnaround, and the limitations of the piped watercourse setback and the east property line, a setback deviation for the side yard setback is needed. The setback deviation alone is insufficient to avoid impacts to the buffer due to turnaround requirements imposed by the fire department. It is not possible to avoid impacts to the buffer associated with Wetland A.

B. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, using a setback deviation pursuant to section 19.06.110(C), using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;

Applicant's Response:

Due to the configuration of the wetland, lake, piped watercourse, and east property line, and the requirement to provide a fire turnaround, limited options are available to further minimize project impacts. Proposed buffer width averaging is the minimum necessary to achieve project goals and meet land use requirements.

C. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

Applicant's Response:

Any temporary impacts to the wetland buffer that may occur adjacent to the firetruck turnaround during construction will be restored. The area consists of maintained lawn, and any temporarily disturbed areas will be grass seeded immediately following construction. To compensate for the increase in hardscape and lot coverage, 75% of the area within 20 feet of the OHWM will be planted with native vegetation.

D. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;

Applicant's Response:

Buffer impacts will be eliminated by incorporating buffer averaging. The resulting buffer will be of equal structure and function and will be slightly larger than the standard buffer.

E. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or

Applicant's Response:

The proposed buffer addition area adequately replaces the proposed buffer reduction area, and the proposed 10,796 square feet of native vegetation within 20 feet of the of the lake easily compensates for the proposed increase in impervious surface area.

F. Monitoring the impact and taking appropriate corrective measures to maintain the integrity of compensating measures.

Applicant's Response:

Five years of monitoring will ensure the integrity of compensating measures. See Section 6.0 below.

2.4 BUFFER WIDTH AVERAGING

MICC 19.07.190.C.5 allows buffer width averaging with conditions. MICC 19.07.190.C.5.a-d are re-stated below in italics (indented) with the applicant's response immediately following in normal font (justified).

a. The applicant has demonstrated how impacts have been avoided consistent with section 19.07.100, mitigation sequencing;

Applicant's Response:

See Section 2.3 above.

b. The applicant has demonstrated how all proposed impacts have been mitigated consistent with subsection E of this section and will not result in a loss of ecological function;

Applicant's Response:

The buffer reduction and buffer addition areas both consistent of maintained grass, which performs limited support to Wetland A. The buffer addition area is slightly larger than the buffer reduction area and contains one tree. Therefore, no net loss of ecological functions will occur.

c. The proposed buffer width is not less than 75 percent of the standard buffer width at any point; and

Applicant's Response:

The minimum proposed buffer width is exactly 75 percent of the standard 40-foot buffer (30 feet).

d. The total area of the buffer is equal to the area required without averaging.

Applicant's Response:

The proposed buffer reduction area is 429 square feet in size, and the buffer addition area is 432 square feet in size. Therefore, the final buffer area will be slightly larger than the total buffer area without averaging.

2.5 PROPOSED DEVELOPMENT IN SETBACKS

Type S waterbodies require a 25-foot setback pursuant to MICC 19.13.050. Proposed development in the 25-foot shoreline setback is limited to native planting only.

Piped watercourses require a 45-foot setback pursuant to MICC 19.07.180.C.6.b. Proposed development in the piped watercourse setback includes the following.

- Hardscape/Structure: 11,358 square feet proposed hardscape/structure
- Grading: 25,796 square feet of new grading
- Sewer: 90 lineal feet of new buried sewer line
- Water Supply: 47 lineal feet of buried water supply line and one new fire hydrant
- 1,722 square feet of new shoreline planting (within piped watercourse setback)

2.6 IMPERVIOUS SURFACE LIMITS

MICC 19.13.050 limits hardscape and lot coverage in proximity to the OHWM. Maximum allowed hardscape/lot coverage is ten percent between 10-25 feet from the OHWM, and 30 percent between 25-50 feet from the OHWM. The site will conform to hardscape and lot coverage limits within 25 feet of the OHWM and within 25-50 feet from OHWM. See Table 2.

Table 2 Proposed Hardscape/Lot Coverage

| Location Relative to OHWM | Total Lot Area (Square Feet) | Proposed Hardscape (Sq. Ft./Percent) |
|---------------------------|------------------------------|--------------------------------------|
| 0-25 feet | 17,582 | 1,379/7.8% |
| 25-50 feet | 18,031 | 2,232/12.3% |

2.7 SHORELINE VEGETATION PLANTING

The proposed project will increase lot coverage and hardscape within the Urban Residential shoreline environment. MICC 19.13.050.K.4 requires shoreline vegetation planting when new lot coverage and hardscape exceed 1,000 square feet. Existing hardscape to be removed totals 14,788 square feet. New roof, structure, and hardscape area totals 21,473 square feet. Pursuant to MICC

19.13.050.K.4.i-iv, this proposal requires a shoreline vegetation plan that includes 75% vegetation coverage within 20 feet of the OHWM of Lake Washington.

3.0 CRITICAL AREAS DETERMINATION METHODOLOGY

3.1 WATERCOURSE BOUNDARIES

Stream and watercourse/waterbody ordinary high water marks (OHWM) are generally identified using the methodology described in the Washington State Department of Ecology (DOE) publication titled *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Anderson et al. 2016).

For this project, the OHWM of Lake Washington is 18.6 NAVD 88 based on the OHWM definition presented in MICC 19.16.010.O. 18.6 NAVD 88 was identified by the surveyor. The centerline of the piped watercourse is based on survey.

3.2 WETLAND BOUNDARIES

Wetland conditions are evaluated and delineated using the approach described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). The following process was used to conduct the wetland boundary determination:

- 1.) Examination of the site for hydrophytic vegetation (species present and percent cover);
- 2.) Examination of the site for hydric soils;
- 3.) Determining the presence of wetland hydrology.

Vegetation Criteria

The Corps Manual and 2010 Regional Supplement define hydrophytic vegetation as “*the assemblage of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence.*” Field indicators are used to determine whether the hydrophytic vegetation criteria have been met. Examples of these indicators include, but are not limited to, the rapid test for hydrophytic vegetation, a dominance test result of greater than 50%, and/or a prevalence index score less than or equal to 3.0.

Soils Criteria

The 2010 Regional Supplement (per the National Technical Committee for Hydric Soils) defines hydric soils as soils “that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.” Field indicators are used to determine whether a given soil meets the definition for hydric soils. Indicators are numerous and include, but are not limited to, presence of a histosol or histic epipedon, a sandy gleyed matrix, depleted matrix, and redoximorphic depressions.

Hydrology Criteria

The 2010 Regional Supplement defines wetland hydrology as “areas that are inundated (flooded or ponded) or the water table is less than or equal to 12 inches below the soil surface for 14 or more consecutive days during the growing season at a minimum frequency of 5 years in 10.” During the early growing season, wetland hydrology determinations are made based on physical observation

of surface water, a high water table, or saturation in the upper 12 inches. Outside of the early growing season, wetland hydrology determinations are made based on physical evidence of recent inundation or saturation (e.g. water marks, surface soil cracks, water-stained leaves).

3.3 WETLAND AND WATERCOURSE CLASSIFICATIONS

Wetland A was rated pursuant to the *Washington State Wetland Rating System for Western Washington: 2014 Update – Version 2* as required by MICC 19.07.190.A. See Appendix C. All watercourses are classified in accordance with the definition presented in MICC 19.16.010.W. Features that do not meet the watercourse definition are considered unregulated.

4.0 CRITICAL AREAS DETERMINATION FINDINGS

4.1 REVIEW OF EXISTING INFORMATION

Prior to conducting the site visit, natural resource information was reviewed to gather background information on and near the subject property. Findings are presented from all relevant publicly available natural resource databases.

City of Mercer Island - GIS Portal

The GIS Portal identifies the following features within the subject property: Lake Washington, one watercourse flowing from Gallagher Hill Open Space north across I-90 and through the center of the subject property, and two storm pipes that drain directly to Lake Washington.

The City-mapped watercourse is described in this report as Surface Drainage Network. The two storm pipes are described as Buried Pipe Network 1 and Buried Pipe Network 2. A detailed discussion of these features is provided in Section 4.5 and Section 4.6 below.

USDA Natural Resources Conservation Service (NRCS) - Web Soil Survey

The Web Soil Survey identifies soils underlying the majority of the property as Kitsap silt loam, two to eight percent slopes. This soil map unit is described as moderately well drained and contains inclusions of Alderwood (ten percent), which is also described as moderately well drained, as well as Bellingham (three percent), Seattle (one percent), and Tukwila (one percent), which are hydric soil types typically found in depressions. The westernmost part of the property is mapped as Kitsap silt loam, 15 to 30 percent slopes. This soil map unit contains inclusions of Tukwila, Bellingham, and Seattle (one percent each), which are hydric soils typically found in depressions. The southernmost part of the site is mapped as Urban Land.

US Fish and Wildlife Service - National Wetlands Inventory (NWI)

USFWS identifies Lake Washington (L1UBHh) immediately adjacent to the subject property. No other wetlands or aquatic habitats are identified on or near the subject property.

Washington Natural Heritage Program - Data Explorer

This resource does not depict any rare plants or ecosystems on Mercer Island.

Washington Department of Natural Resources - Forest Practices Application Mapping Tool (FPAMT):

FPAMT identifies Lake Washington as a Type S waterbody. A stream is depicted from Gallagher Hill Open Space on the south side of I-90 flowing northeast towards SE 33rd Street. The feature is off-site and located far from proposed development.

Washington Department of Fish and Wildlife (WDFW) - *SalmonScape*

SalmonScape identifies rearing habitat in Lake Washington for bull trout (*Salvelinus confluentus*) and documented presence in Lake Washington for coastal cutthroat trout (*Oncorhynchus clarkii*), steelhead trout (*O. mykiss*), Chinook (*O. tshawytscha*), kokanee (*O. nerka*), coho (*O. kisutch*), and sockeye salmon (*O. nerka*).

WDFW - *Priority Habitats and Species (PHS)*

PHS on the Web identifies steelhead trout, sockeye, Chinook, and coho salmon occurrence in Lake Washington. The next closest feature identified is a biodiversity area/corridor approximately 330 feet south of the site on the south side of I-90.

Pacific States Marine Fisheries Commission - *StreamNet*

StreamNet identifies bull trout rearing and migration use and steelhead trout, coastal cutthroat trout, kokanee, coho, sockeye, and Chinook salmon migration use in Lake Washington.

4.2 WETLAND DELINEATION CHALLENGES

Areas near the shoreline of Lake Washington are problematic with respect to hydrophytic vegetation and hydric soils. Vegetation in this area is a managed plant community due to irrigation and regular maintenance of lawn grasses. Soils may present relict features due to the lowered lake elevation associated with operation of the Chittenden Locks. For these reasons, field delineation relied on primary indicators of hydrology due to the absence of reliable wetland soil and vegetation indicators. Climatic conditions are discussed in Section 4.2.3 below.

4.2.1 Problematic Vegetation

The site consists of maintained grasses and ornamental vegetation and is irrigated. Mowed grasses that do not exhibit flowers or fruits cannot be identified to species, so the wetland indicator status of the dominant species in maintained lawn areas cannot be determined. No unmanaged reference sites are available. In this situation, the investigators relied on wetland hydrology and the wetland indicator status of non-dominant species.

4.2.2 Problematic Soils

The subject property is along the shoreline of Lake Washington. It is generally accepted that the opening of the Chittenden Locks in 1917 lowered the lake elevation by approximately nine feet. This means that some portion of the site near the current lake level formed in anaerobic conditions since the Vashon Stade, and in aerobic conditions in the century since the locks were placed in service. Observed primary hydric soil indicators in areas close to the lake are therefore problematic because hydric indicators may be representative of relict conditions. In this situation, the investigators relied on wetland hydrology.

4.2.3 Climatic Conditions

The U.S. Environmental Protection Agency's Antecedent Precipitation Tool (Gutenson 2023) indicates that precipitation conditions at the time of the January 17, 2025, site investigation were in the normal range for mid-January. Although the delineation occurred just before the start of the growing season, observed climatic conditions are also consistent with normal early growing season conditions.

The Natural Resources Conservation Service (NRCS) AgACIS climate data system states that rainfall in the 16 days preceding the site investigation at the Mercer Island 1.1 NE weather station totaled slightly more than 1.26 inches (with some days receiving trace amounts not included in the calculation). The most recent precipitation preceding the site visit occurred on January 11, 2025. Given the absence of rainfall in the six days preceding the site investigation, observed saturation and a high water table are attributable to hydrologic conditions that meet the 14 days in the early growing season standard of the Western Mountains, Valleys, and Coast Regional Supplement.

4.3 WETLANDS

One wetland (Wetland A) was identified in the north-central part of the property during WRI's January 17, 2025 site visit.

4.3.1 Wetland A

Cowardin Classification: Palustrine, Emergent Wetland, Persistent, Saturated

HGM Rating Classification: Depressional

Mercer Island Wetland Classification: Category IV

MICC 19.07.190 Buffer Requirement: 40 feet

MICC 19.13.010 Buffer Requirement: 100 feet

Wetland A is a Category IV wetland located in the northern section of the property. The wetland unit does not connect to the Lake Washington OHWM. Wetland A has an emergent Cowardin class with a saturated hydroperiod. Vegetation is comprised of unidentified lawn grasses, creeping buttercup (*Ranunculus repens*, FAC), clover (*Trifolium spp.*), bird's-foot trefoil (*Lotus corniculatus*, FAC) American brooklime (*Veronica americana*, OBL), and yellow flag iris (*Iris pseudacorus*, OBL).



Figure 4 - Looking Southeast Towards Wetland A

Soils within Wetland A are very dark brown (10YR 2/2) loamy sand from zero to four inches below the soil surface. From four to ten inches, soils are very dark gray (2.5Y3/1) loamy sand with three percent yellowish red (5YR4/6) redoximorphic features. From ten to twelve inches, soils are dark gray (2.5Y/4/1) sand. These soil characteristics meet the Redox Dark Surface (F6) hydric soil indicator. During the January 2025 site visit, soils met the following primary hydrology indicators: Saturation (seven inches below the mineral soil surface) and High Water Table (ten inches below the mineral soil surface). Wetland A received an overall wetland rating score of 14 points with a habitat score of four points. Category IV wetlands require a 40-foot critical area buffer and a 100-foot SMP buffer. Because Wetland A is greater than 1,000 square feet in total area, it requires an additional 10-foot building setback.

4.4 NON-WETLAND AREAS

Vegetation in upland areas consists of ornamental species and lawn grasses across most of the property. There is a forested patch along the northwestern and western property boundary. Dominant vegetation communities within non-wetland areas are facultative upland (FACU).



Figure 5 - Looking Northwest Towards On-Site Residential Structures

The soils just outside of Wetland A are generally dark grayish brown (10YR4/2) loamy sand with dark yellowish brown redoximorphic features from zero to eight inches below the soil surface. From eight to twelve inches, soils are generally dark grayish brown (2.5Y4/2) with gray (2.5Y5/1) and dark yellowish brown (10YR3/6) components. No hydrology indicators were observed in these areas during the January 2025 site visit. Therefore, these areas do not meet wetland criteria.

4.5 REGULATED WATERCOURSES

4.5.1 Lake Washington

Cowardin Classification: Lacustrine, Limnetic, Rock-Bottom, Rubble

Mercer Island Watercourse Classification: Type S

Mercer Island Shoreline Setback: 25 feet

Lake Washington is regulated as a Shoreline of Statewide Significance. Pursuant to MICC 19.13.050, Lake Washington requires a 25-foot setback to be measured landward from the OHWM. Lake Washington provides habitat for several federally listed species including Chinook salmon, steelhead trout, and bull trout.



Figure 6 - Looking North Towards Lake Washington.

4.5.2 Buried Pipe Network 1

Cowardin Classification: Not Applicable

Mercer Island Watercourse Classification: Piped Watercourse

Mercer Island Buffer Requirement: None

Mercer Island Setback Requirement: 45 feet from centerline

Buried Pipe Network 1 (BPN1) is a City-owned 18-inch concrete pipe that outlets to Lake Washington within the subject property. Based on review of the site survey, BPN1 conveys some portion of the surface channel that is mapped within Gallagher Open Space (south of I-90). This finding conflicts with the City's *Storm Utilities* GIS layer, which depicts the surface channel within Gallagher Open Space draining via the Surface Drainage Network described in Figure 1 in this report.

Figure 7 below provides a more accurate depiction of existing public stormwater infrastructure based on the site survey and the findings presented in a document prepared by The Watershed Company titled Drainage Feature Evaluation. The Drainage Feature Evaluation is provided as Appendix A. The report finds that flows originating in Gallagher Open Space are conveyed northeast along a historic path that flows to Lake Washington in the vicinity of 9418 SE 33rd Street.



Figure 7 - Buried Pipe Network 1 and Historic Route

MICC 19.16.010.W provides the definition of a regulated watercourse. The definition excludes “storm water runoff devices,” except where they “convey waters that were naturally occurring prior to construction.” Based on review of historic aerials dating back as far as 1936 and the findings of the Drainage Feature Evaluation, no naturally occurring surface channel was ever present within the subject property. However, BPN1 may still be considered a regulated watercourse simply because some portion of the flows conveyed to Lake Washington through BPN1 originated in a naturally occurring channel in Gallagher Open Space, which existed prior to construction of BPN1.

Due to the absence of a naturally occurring (historic) surface channel within the subject property, it is unclear whether the City intends to provide critical area protection to BPN1. It is likely that piped watercourse protections are intended to encourage daylighting for naturally occurring surface channels that are placed into a pipe along their historic course or route. As a conservative measure, BPN1 is classified throughout this report as a piped watercourse with a 45-foot setback.

4.6 UNREGULATED FEATURES

4.6.1 Surface Drainage Network

Cowardin Classification: Riverine, Intermittent, Emergent

Mercer Island Watercourse Classification: Unregulated

Mercer Island Buffer Requirement: None

Mercer Island Setback Requirement: None

Surface Drainage Network (SDN) is a City-owned open channel/pipe network within a private easement that outlets to Lake Washington between Wetland A and BPN1. Based on review of the site survey, the surface channel receives flows generated by the structures located at 9142, 9115, 9107, and 9105 Fortuna Drive via a privately owned network of buried pipes located entirely within the subject property. The pipe network daylights approximately 210 feet south of the lake. The network is depicted in Figure 1 above. The open channel is depicted in Figure 8 below.



Figure 8 - Looking South Towards Surface Drainage Network

Based on review of Mercer Island GIS Portal historic aerials, the SDN surface channel was constructed sometime between March 1992 and April 1999, which coincides with construction of the building labeled as 9107 Fortuna Drive. The surface channel became more prominent between April 1999 and Summer 2002, which coincides with construction of the building labeled 9115 Fortuna Drive.

SDN is described as “Drainage A” in the Drainage Feature Evaluation provided as Appendix A. It is the applicant’s understanding that the The Watershed Company’s findings were reviewed and approved by City staff. The document’s key findings are as follows.

- Drainage A/SDN “was constructed as a stormwater conveyance feature”
- Drainage A/SDN “is a short, narrow channel, and while it discharges into Lake Washington, the small size, low flows, and extremely dense vegetation in the lower half combine to preclude fish use”
- “To ascertain whether a natural stream channel existed in the location of Drainage A, historically, a review of historic aerial photographs was conducted....The 1936 aerial photograph clearly shows that no stream channel was present anywhere in the vicinity at that time”

As previously discussed, the MICC watercourse definition does not include storm water runoff devices unless they are used by fish or to convey waters that were naturally occurring prior to construction. Based on the findings of the Drainage Feature Evaluation, SDN is a storm water runoff device that is not used by fish, and it does not convey waters that were naturally occurring prior to construction. SDN is not regulated as a critical area.

4.6.2 Buried Pipe Network 2

Cowardin Classification: Not Applicable

Mercer Island Watercourse Classification: Unregulated

Mercer Island Buffer Requirement: None

Mercer Island Setback Requirement: None

Buried Pipe Network 2 (BPN2) is a privately-owned 10-inch concrete pipe that outlets to Lake Washington within the subject property. The network is depicted in Figure 1 above. Based on review of the site survey and the City’s *Storm Utilities* GIS layer, BPN2 conveys stormwater generated along N Mercer Way and impervious surfaces in the western portion of the subject property. As discussed in the Drainage Feature Evaluation prepared by The Watershed Company (Appendix A), no naturally occurring surface channel was ever present within the subject property. Due to its small diameter, poor water quality, and the lack of upstream connection to fish habitat, BPN2 is not used by fish. Therefore, BPN 2 is not regulated as a watercourse.

5.0 WILDLIFE HABITAT ASSESSMENT

5.1 MERCER ISLAND WILDLIFE HABITAT PROTECTIONS

Protection for wildlife habitat is provided through the designation of Fish and Wildlife Habitat Conservation Areas (FWHCAs). MICC 19.07.170.A defines FWHCAs as follows (indented, italicized text). Summary presence or absence is noted below in normal font. More detailed discussion is provided in the section below titled *Site Assessment*.

MICC 19.07.170.A.1. Areas where state or federally listed endangered, threatened, sensitive, or candidate species, or species of local importance, have primary association.

Applicant's Response: Federally threatened species and state candidate species are present in Lake Washington. No federally endangered species are present in the project area. No state sensitive, threatened, or endangered species are present in the project area. No species of local importance are identified in the MICC.

2. Priority habitats and areas associated with priority species identified by the Washington State Department of Fish and Wildlife;

Applicant's Response: No priority habitat or areas associated with priority species are identified by WDFW in the project area.

3. Areas used by bald eagles for foraging, nesting, and roosting, or within 660 feet of a bald eagle nest;

Applicant's Response: Foraging habitat is present in Lake Washington. No bald eagle nests were observed within 660 feet of the project area.

4. Watercourses and wetlands and their buffers; and

Applicant's Response: One piped watercourse (BPN1) is present in the project area. One wetland (Wetland A) and its associated buffer are present in the project area.

5. Biodiversity areas.

Applicant's Response: No biodiversity areas are located on or near the property.

5.2 SITE ASSESSMENT

The subject property was assessed for signs of protected wildlife and areas of primary association on January 17, 2025. On-site habitat conditions are described below.

The majority of the property is developed as a residential retirement community. Site development includes multiple residential buildings, a health center, community space, gardens, green spaces, and parking areas. These areas are comprised of structures, hardscape, maintained lawn, and ornamental gardens. See Figure 9 below.

In the northwestern corner and along the western boundary of the property, there is a forested area with walking paths and picnic tables. See Figure 10 below. This area is comprised of Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), bigleaf maple (*Acer macrophyllum*), Pacific madrone (*Arbutus menziesii*), Pacific dogwood (*Cornus nuttallii*), English laurel (*Prunus laurocerasus*), evergreen huckleberry (*Vaccinium ovatum*), English holly (*Ilex aquifolium*), low Oregon grape (*Mahonia nervosa*), English ivy (*Hedera helix*), salal (*Gaultheria shallon*), common sword fern (*Polystichum munitum*), and trailing blackberry (*Rubus ursinus*). One large snag and one tree with woodpecker activity were observed in this area.



Figure 9 - Looking East Across the Property



Figure 10 - Looking Southeast from the West Property Line

5.2.1 Wildlife Findings

The site assessment evaluated habitat conditions and potential wildlife presence across the property. Direct and indirect observations detected at least 25 avian species and no mammalian, reptilian, or amphibian species. Direct observations included visual and auditory observations of species. Indirect observations included evidence of use by species, such as tracks, scat, and signs of behavioral interactions with habitat features (e.g. woodpecker cavities or feeding activities in trees and snags).

Avian species directly observed on site include Pacific Wren (*Troglodytes pacificus*), Song Sparrow (*Melospiza melodia*), Cormorant (*Phalacrocorax Carbo*), Gadwall (*Mareca strepera*), Townsend's Warbler (*Setophaga townsendi*), Anna's Hummingbird (*Calypte anna*), House Finch (*Haemorhous mexicanus*), American Crow (*Corvus brachyrhynchos*), Bald Eagle (*Haliaeetus leucocephalus*), American Wigeon (*Mareca americana*), Pine Siskin (*Spinus pinus*), Brown Creeper (*Certhia americana*), Pied-billed Grebe (*Podilymbus podiceps*), Mallard (*Anas platyrhynchos*), Common Merganser (*Mergus merganser*), American Goldfinch (*Spinus tristis*), Black-capped Chickadee (*Poecile atricapillus*), American Robin (*Turdus migratorius*), Dark-eyed Junco (*Junco hyemalis*), Golden-crowned Kinglet (*Regulus satrapa*), Northern Flicker (*Colaptes auratus*), and Red-breasted Nuthatch (*Sitta canadensis*). Indirect avian observations included Pileated Woodpecker (*Dryocopus pileatus*) feeding excavations on a snag and additional feeding signs on a tree most likely attributed to Hairy Woodpecker (*Dryobates villosus*) or Downy Woodpecker (*Dryobates pubescens*).



Figure 11 - Pileated Woodpecker Feeding Excavations

5.2.2 General Wildlife Predictions

Based on the available habitat, other avian species that are likely to occur on site include Steller's Jay (*Cyanocitta stelleri*), European Starling (*Sturnus vulgaris*), House Sparrow (*Passer domesticus*), Chestnut-backed Chickadee (*Poecile rufescens*), and Spotted Towhee (*Pipilo maculatus*).

Mammals that may be expected to use the site include racoons (*Procyon lotor*), eastern cottontail (*Sylvilagus floridanus*), squirrels (*Sciurus carolinensis*), rats (*Rattus norvegicus* and *Rattus rattus*), moles (*Scapanus spp.*), and bats (*Myotis spp.*). Reptiles that may use the site include common garter snake (*Thamnophis sirtalis*) and northwestern garter snake (*Thamnophis ordinoides*).

5.2.3 Fish and Wildlife Habitat Conservation Areas Assessment

Two FWHCAs were identified during the January 2025 site assessment.

Lake Washington

Chinook salmon, steelhead trout, and bull trout, which are documented to occur in Lake Washington, are federally threatened species. Bull trout is a state candidate species. Therefore, the lake is a FWHCA. Lake Washington also provides foraging opportunities for Bald Eagles which can often be observed across Mercer Island. During the January 2025 site visit, one Bald Eagle was observed flying overhead, and a second individual was heard northwest of the site. Bald Eagles are not state or federally listed as threatened or endangered, and no Bald Eagle nests were observed on or within 660 of the property during the site visit.

Wetland A and Associated Buffer

Wetlands and their buffers are FWHCAs. Wetland A is approximately 0.3 acres in size and is classified as a Category IV wetland with a low habitat score. Wetland A requires a 40-foot buffer (MICC 19.07.190). The wetland and buffer consist of maintained lawn and landscaping and lack habitat features. Wetland A and its buffer provided limited wildlife habitat value.

6.0 SHORELINE VEGETATION PLANTING AND MONITORING PLAN

6.1 OVERVIEW

Shoreline vegetation planting within 20 feet of the OHWM of Lake Washington is required due to the proposed increase in hardscape/lot coverage within shoreline jurisdiction. The applicant contracted a landscape architect to prepare the required shoreline vegetation plan and a tree replacement plan. See THW Landscape Plan.

WRI has reviewed the plan to determine compliance with MICC 19.13.050.K.4 and MICC 19.10.070. The Landscape Plan proposes planting 75% of the area between zero and five feet from the OHWM, and 77% of the area from five to 20 feet from the OHWM. All proposed shoreline vegetation plan species are native to Washington in accordance with MICC 19.16.010.N. The shoreline vegetation plan includes a variety of ground cover, shrubs, and trees. Three existing mature trees/shrubs will remain. Based on review of the arborist report prepared for the project, the overall tree replacement plan appears to meet all MICC ratio and location hierarchy requirements (32 trees removed, 93 trees installed).

6.2 SHORELINE VEGETATION PLANTING PLAN

The applicant proposes to install native vegetation between 0-20 feet from the OHWM of Lake Washington. The following planting plan will be installed. See Appendix D – Sheet 2/3. See also THW Landscape Plan.

Shoreline Planting Plan (10,796 square feet)

| Common Name | Latin Name | Size | Spacing | Qty. |
|-----------------------|--------------------------------|-----------|---------|-------|
| Pacific dogwood | <i>Cornus nuttallii</i> | 1.5” cal. | 33’ | 2 |
| shore pine | <i>Pinus contorta</i> | 8’ ht. | 33’ | 2 |
| serviceberry | <i>Amelanchier alnifolia</i> | 2” cal. | 33’ | 2 |
| vine maple | <i>Acer circinatum</i> | 2” cal. | 33’ | 4 |
| red osier dogwood | <i>Cornus sericea</i> | 10 gal. | 11’ | 4 |
| Oregon grape | <i>Mahonia nervosa</i> | 3 gal. | 11’ | 13 |
| red flowering currant | <i>Ribes sanguineum</i> | 3 gal. | 11’ | 6 |
| baldhip rose | <i>Rosa gymnocarpa</i> | 3 gal. | 11’ | 14 |
| subalpine spiraea | <i>Spiraea densiflora</i> | 3 gal. | 11’ | 24 |
| snowberry | <i>Symphoricarpos albus</i> | 3 gal. | 11’ | 16 |
| evergreen huckleberry | <i>Vaccinium ovatum</i> | 3 gal. | 11’ | 16 |
| common yarrow | <i>Achillea millefolium</i> | 1 gal. | 1.8’ | 296 |
| nodding onion | <i>Allium cernuum</i> | 1 gal. | 1.8’ | 464 |
| western columbine | <i>Aquilegia formosa</i> | 1 gal. | 1.8’ | 111 |
| kinnikinnick | <i>Arctostaphylos uva-ursi</i> | 1 gal. | 1.8’ | 55 |
| sea thrift | <i>Armeria maritima</i> | 1 gal. | 1.8’ | 990 |
| goat’s beard | <i>Aruncus sylvester</i> | 1 gal. | 1.8’ | 69 |
| wild ginger | <i>Asarum caudatum</i> | 1 gal. | 1.8’ | 382 |
| lady fern | <i>Athyrium cyclosorum</i> | 1 gal. | 1.8’ | 192 |
| slough sedge | <i>Carex obnupta</i> | 1 gal. | 1.8’ | 93 |
| coastal strawberry | <i>Fragaria chiloensis</i> | 1 gal. | 1.8’ | 479 |
| salal | <i>Gaultheria shallon</i> | 1 gal. | 1.8’ | 208 |
| | | | Total | 3,442 |

6.3 BOND OR ASSIGNMENT OF FUNDS

The applicant has been asked to provide a bond or assignment of funds in accordance with MICC 19.01.060.C. A Bond Quantity Worksheet has been prepared. See Appendix F.

6.4 GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

The overall goal of this plan is to increase ecological functions along the lake shoreline. Specific goals, objectives, and performance standards include the following. Performance standards are also summarized in Table 3.

Goal 1

Modestly improve terrestrial and avian forage opportunities and provide additional support to the aquatic food web.

Objective 1a: Maintain a diverse assemblage of native species that can provide forage opportunities for terrestrial mammals and passerine birds, and woody debris recruitment for aquatic species.

Performance Standard 1a1 - Diversity

The planting area shall contain at least ten different native species (including native pioneer species) during each monitoring year.

Performance Standard 1a2 - Survivorship

100 percent survivorship of all installed species at the time of year one inspection.

80 percent survivorship of all installed species at the time of year two and year three inspection.

Performance Standard 1a3 – Native Cover

50 percent area cover of native trees, shrubs, and ground cover at the time of year three inspection.

60 percent cover at the time of year four inspection.

70 percent cover at the time of year five inspection.

Native volunteer species may count toward this standard.

Objective 1b: Control aggressive non-native species.

Performance Standard 1b1 – Invasive Species

Aggressive non-native species shall constitute less than ten percent areal cover in the shoreline vegetation planting area for all monitoring years. Invasive species are classified as any Class A, B, or C noxious weed based on the current list maintained by the King County Noxious Weed Control Board.

Table 3 Shoreline Vegetation Plan Performance Standards Summary

| Monitoring Inspection | Species Diversity | Survivorship | Areal Cover* | Invasive Cover |
|------------------------------|--------------------------|---------------------|---------------------|-----------------------|
| YR1 Semi-Annual | Ten Different Species | 100% | - | <10% |
| Year One | Ten Different Species | 100% | - | <10% |
| YR2 Semi-Annual | Ten Different Species | 80% | - | <10% |
| Year Two | Ten Different Species | 80% | - | <10% |
| Year Three | Ten Different Species | 80% | 50% | <10% |
| Year Four | Ten Different Species | - | 60% | <10% |
| Year Five | Ten Different Species | - | 70% | <10% |

*Includes Native Pioneer Species

6.5 PLANTING NOTES

Planting shall be in accordance with all requirements set forth in the THW Landscape Plan.

6.6 MONITORING PROTOCOL

Purpose for Monitoring

The purpose for monitoring this mitigation project shall be to evaluate its success relative to the above performance standards. The property owner shall grant access to the mitigation area for inspection and maintenance to the contracted landscaper, qualified professional, and City of

Mercer Island staff or third-party consultant during the monitoring period or until the project is evaluated as successful.

As-Built Letter

An as-built letter will be prepared and submitted to city staff within 30 days of successful plan installation. The letter will describe plan compliance and any substitutions or changes relative to the approved plan. Permanent photo points will be established during the as-built site visit and submitted with the as-built letter. If plants are installed during the spring, the year one inspection shall be conducted in fall of the next calendar year.

Monitoring

The monitoring period will begin upon City acceptance of written notification confirming the mitigation plan has been successfully implemented. Monitoring shall be conducted annually for five years in accordance with the approved plan. Two semi-annual site visits shall occur, one prior to year one monitoring and one prior to year two monitoring. Final inspection will occur five years after successful installation or when site conditions meet year five performance standards. Additional years of monitoring may be necessary. Once performance standards are met, the qualified professional will prepare a final report documenting the success of the project.

Vegetation Monitoring

Due to the relatively small physical size of the restoration area, survivorship estimates will be based on a hand count of installed species and/or a visual assessment of gaps that exceed proposed spacing. Areal cover and invasive species cover will be based on a qualitative assessment.

Photo points

No less than six permanent photo points will be established within the shoreline vegetation planting area. Photographs will be taken from these points to visually record condition of the restoration area.

Monitoring Report Contents

Monitoring reports shall be submitted by December 31 of each year during the monitoring period. As applicable, monitoring reports must include descriptions / data for:

1. Site plan and site overview map
2. Historic description of project including date of installation, current year of monitoring, re-statement of performance standards
3. Monitoring methodology
4. Survivorship, native cover, and invasive cover findings in the context of performance standards
5. Recommendations for management
6. Color photographs taken from permanent photo-points that shall be depicted in the as-built letter and in all monitoring reports

6.7 MAINTENANCE REQUIREMENTS

The mitigation areas will require periodic maintenance to remove aggressive non-native species and replace vegetation mortality. Maintenance actions will be directed by a qualified professional for vegetation restoration planning.

Duration and Extent

In order to achieve performance standards, the permittee shall have the mitigation area maintained regularly for the duration of the monitoring period. Maintenance includes watering, weeding around the base of installed plants, pruning, replacement, re-staking, removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-750-005) as well as Himalayan blackberry, and any other measures needed to ensure plant survival.

Installation Timing for Replacement Plants

Replacement plants shall be installed between September 15 and January 15, unless otherwise determined by the qualified professional.

Irrigation / Watering

At least one inch of water shall be provided per week from June 1 to October 15 for the first two years after installation.

6.8 CONTINGENCY PLAN

Contingency planning may be needed if individual species are experiencing significant mortality, or if over 20 percent of all installed plants are severely stressed during any of the inspections. Elements of a contingency plan may include more aggressive weed control, pest control, mulching, replanting with larger plant material, species substitution, fertilization, soil amendments, and/or irrigation. Contingency planning decisions will be made by the qualified professional.

7.0 SHORELINE NO NET LOSS PLAN

Pursuant to MICC 19.13.020.C.2, a no net loss plan is required because the project requires a conditional use permit. No net loss plans demonstrate that the proposed project will not create a net loss in ecological function in the shorelands.

7.1 EXISTING SHORELINE CONDITIONS

With the exception of a forested area in the northwest corner of the property, plant communities within the subject property have been a managed emergent community since at least 1936 based on review of King County iMap historic aerials. By 1963, residential structures were built across the property and the vegetation management regime transitioned from agricultural to residential. Residential land use continues to the present day and most of the area within shoreline jurisdiction consists of maintained lawn or impervious surfaces with sporadic ornamental landscaping.

Existing shoreline ecological support functions are limited due to the intensity of human use, soil compaction and fertilizer use associated with lawn areas, lack of native species diversity and density, and the absence of woody vegetation that could be recruited to the lake or provide diffuse overwater shade.

7.2 PROPOSED SHORELINE DEVELOPMENT

The project will re-configure the existing community center but will not alter the intensity of human land use. 6,685 square feet of new hardscape and roof area will be added within 200 feet of the lake (14,788 square feet of structure/hardscape to be removed and 21,473 square feet proposed), which will displace existing grass lawn and will result in the removal of 15 existing trees.

New hardscape will be located closer to the lake but still outside of the 25-foot shoreline setback. The outer 25 percent of the buffer associated with Wetland A will be slightly modified, which will result in a modest net increase in buffer area of three square feet and will provide protection to an existing deciduous tree.

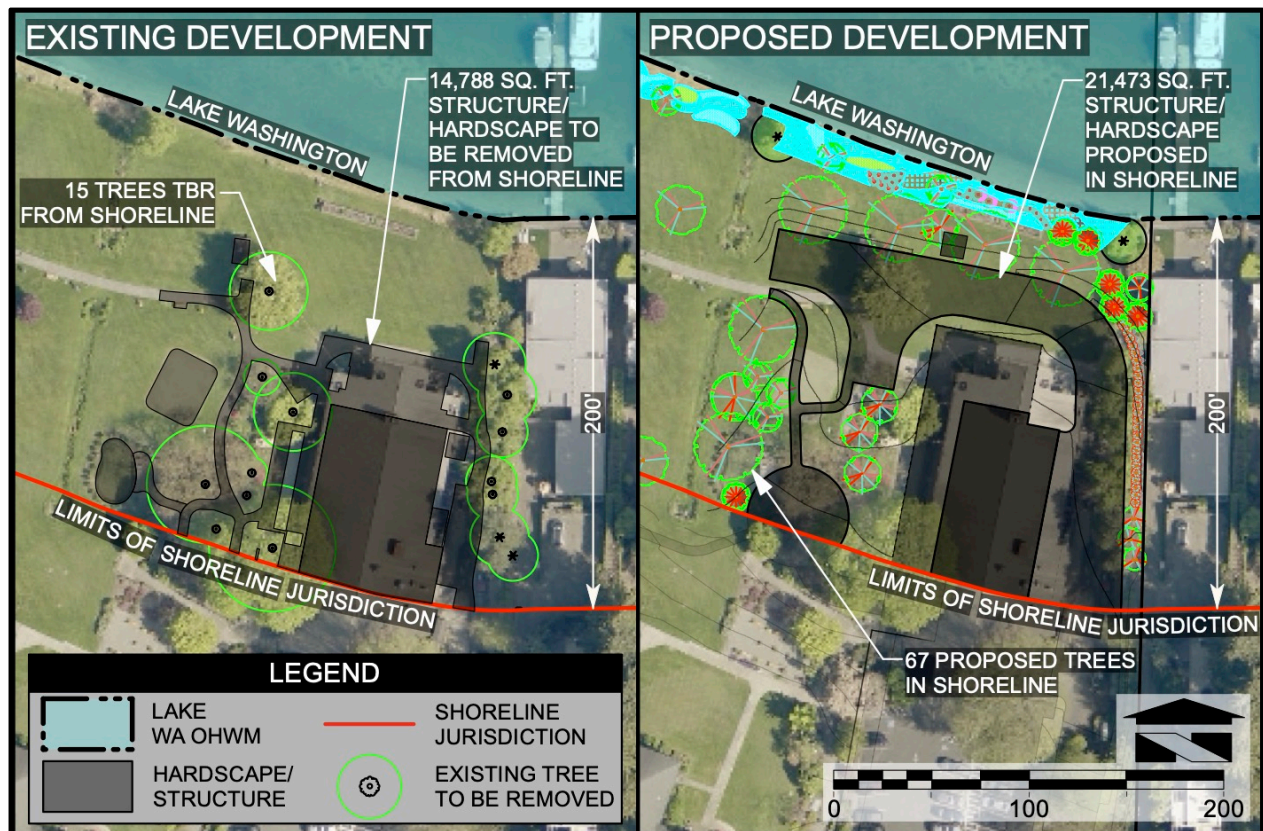


Figure 12 - Existing Features and Proposed Development

The project will result in new shoreline planting totaling 10,796 square feet in close proximity to the shoreline. 15 trees will be removed from within shoreline jurisdiction and 67 trees will be installed.

7.3 NET LOSS OF FUNCTIONS

Replacing maintained grass with impervious surfaces could alter the quality, quantity and timing of surface flows entering the lake. However, the project has been designed in accordance with the current Ecology stormwater manual, which requires treatment and flow control. Therefore, new impervious surfaces will not negatively impact shoreline ecological functions relative to the existing condition.

The 15 trees proposed for removal do not provide overwater shade or a woody debris recruitment source to the lake due to their proximity to the lakeshore. The proposed shoreline planting plan will replace existing lawn with ten trees, 93 native shrubs, and 3,339 plants that provide ground cover along the lake edge. These plants may provide forage opportunities for avian species, a diverse native seed source, and woody debris recruitment potential that supports the aquatic food web.

Proposed buffer modification (i.e. buffer width averaging) will exchange 429 square feet of maintained lawn for 432 square feet of maintained lawn and one tree. Providing buffer addition immediately adjacent to the shoreline provides additional protection to a deciduous tree in a high-value landscape position. Buffer width averaging will modestly improve shoreline ecological support functions.

The existing condition of the site provides minimal shoreline ecological support functions. The proposal will significantly improve ecological functions due to the proposed shoreline planting plan. This project will not result in a net loss of shoreline ecological functions.

8.0 USE OF THIS REPORT

This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions.

The laws applicable to critical areas are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

Wetland Resources, Inc.



Emily Prosser
Associate Ecologist & Wildlife Biologist



Niels Pedersen, PWS
Senior Ecologist

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Appendix A

The Watershed Company Drainage Feature Evaluation

September 28, 2022

Randy Gross
Vice President, Project Development
Covenant Retirement Communities & Services
Via email: regross@covliving.org
Phone: 773-878-4572

Re: Mercer Island Covenant Shores, Drainage Feature Evaluation

The Watershed Company Reference Number: 161001.1

Dear Randy:

This letter summarizes our evaluation of the jurisdictional status of a drainage feature in the north-central part of the Covenant Shores property on Mercer Island. This letter summarizes the findings of that evaluation. I conducted separate site investigations in October 2016 and September 2022 to assess the on-site feature and the surrounding landscape and inventoried watercourse features.

Public-domain information for the feature in question was reviewed for this study. These sources include:

- City of Mercer Island GIS mapping program (GIS Portal);
- Washington Department of Fish and Wildlife interactive mapping program (SalmonScape);
- Washington Department of Natural Resources, Forest Practices Application Mapping Tool (FPARS);
- WDFW & NWIFC: Statewide Washington Integrated Fish Distribution Maps (SWIFD);
- King County GIS mapping program (iMap)

A survey of the Covenant Shores property was also reviewed for this study (Bush, Roed & Hitchings, June 8, 2016) (BRH Survey). See attached Sheets 2, 3, and 5 of BRH Survey with highlights added to clarify relevant stormwater pipes.

Findings

The subject property is located at 9150 Fortuna Drive, Mercer Island, Washington (parcel #0724059016). Several large, multi-unit residential buildings, an administrative building, and mowed lawn areas comprise the approximately 12.4-acre property. An open-channel, ditch like drainage feature (Drainage A) originates from a pair of culverts near the center of the property (Figures 1 & 2). Drainage A flows northward for approximately 200 feet before discharging into Lake Washington at the north end of the property. Drainage A is approximately one-foot wide on average, and it contained very low flows (less than two inches) at the time of the inspections.



Figure 1: Drainage A facing north (downstream) (10/2016)

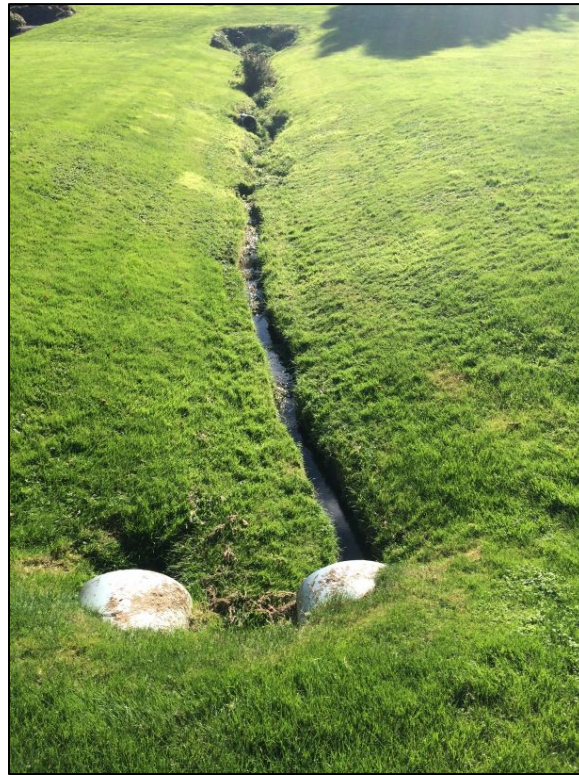


Figure 2: Drainage A facing south (upstream). Note small size (less than one foot) (10/2016)



Figure 3: Watercourse A upstream of I-90. Note large size comparable to Drainage A (9/15/2022)

According to the City's GIS Portal, Drainage A is identified as a Type F watercourse, with a 100-foot buffer. GIS Portal's storm utility map shows a Type Np watercourse (Watercourse A) entering a pipe just south of Interstate 90 (I-90) on parcel #0724059117. This area was evaluated during the October 2016 and September 2022 inspections. The location of Watercourse A is confirmed south of I-90 (Figure 3). Watercourse A averages approximately six to eight feet in width and contained approximately four inches of flow, on average, at the time of the inspections. Watercourse A enters a vertical culvert approximately four feet in diameter just south of I-90. Per GIS Portal, the pipe conveys the watercourse flow northeast beneath I-90 then north beneath N. Mercer Way. Multiple stormwater drainage lines from north and south of I-90 are mapped as discharging into the piped segments and directly into Drainage A. The entire piped system is mapped as daylighting at the origin point of Watercourse A (Figure 4). This evidence suggests that Drainage A is the downstream segment of a natural watercourse feature (Watercourse A) that is piped for approximately 1,100 feet before daylighting on the subject property and supplemented by stormwater. Under such a scenario, the drainage feature would be regulated as a watercourse under the Mercer Island Municipal Code (MIMC). However, further investigation indicates that the stormwater mapping shown on GIS Portal is incorrect.

None of the other public inventories reviewed (aside from GIS Portal) depict Watercourse A as being redirected towards the north beneath N. Mercer Way towards Drainage A. Instead, these resources depict the piped segment of Watercourse A as continuing towards the northeast beyond I-90 and connecting with an open stream channel approximately 900 feet southeast of Drainage A (Figures 5, 6, & 7). This stream segment was visually confirmed near the intersection of SE 33rd Place and 94th Avenue SE.



Figure 4: GIS Portal watercourse and stormwater mapping showing Watercourse A flowing north into Drainage A. Note extensive drainage network conveyed into the piped sections above Drainage A.

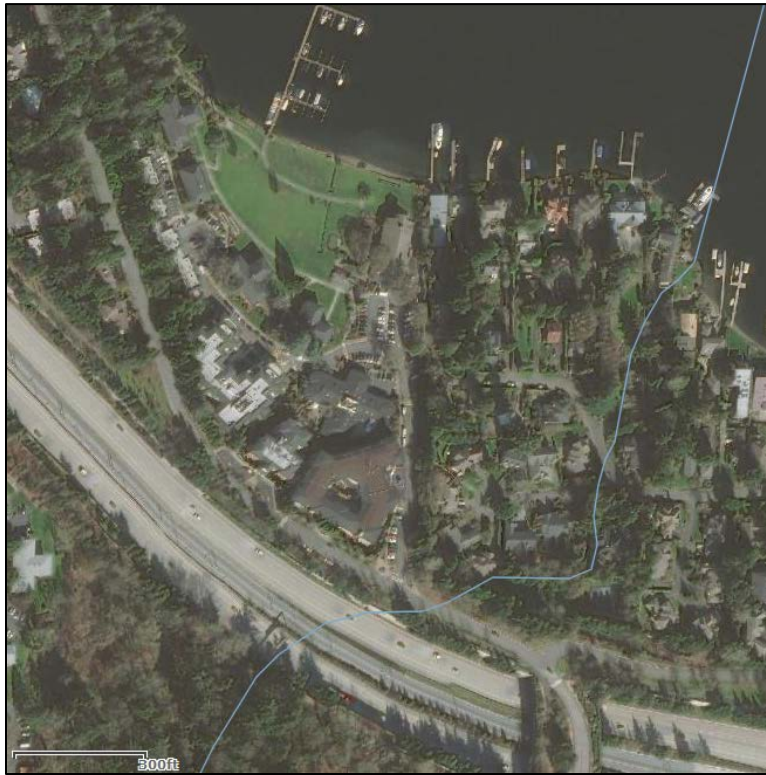


Figure 5: SWIFD mapping showing Watercourse A directed east of the subject property.



Figure 6: FPARS mapping showing Watercourse A directed east of the subject property.



Figure 7: WDFW SalmonScape mapping showing Watercourse A directed east of the subject property

The GIS Portal depiction of the piped segment of Watercourse A turning north beneath N. Mercer Way towards Drainage A is also not supported by the BRH Survey. According to the BRH Survey, there is no pipe extending north (towards Drainage A) from the connecting point beneath N. Mercer Way. Rather; the municipal stormwater pipe is, instead, directed towards the southeast beneath and in-line with N. Mercer Way. The BRH Survey does not continue off property, but the general direction of the storm pipe is similar to what is depicted by FPARS, SalmonScape, and SWIFD. The BRH Survey does depict a stormwater pipe that originates beneath the residential building in the southeast corner of the subject property; however, this pipe begins approximately 100 feet north of N. Mercer Way, and it is a six-inch diameter pipe that is far too small to convey the flow from Watercourse A. Based on the BRH Survey, the drainage feature is fed from stormwater pipes that originate on-site, with the exception of a single, eight-inch pipe that extends to a point beneath N. Mercer Way (approximately 600 feet northwest of where Watercourse A intercepts N. Mercer Way). Two trench drains are depicted on the property that capture surface runoff from adjacent impervious areas. There are no detention facilities on the property that would slowly release collected stormwater. The remaining inputs depicted on the BRH Survey come from roof drains, private and public storm drains, and catch basins.

A simple comparison of the amount of flow contained in Watercourse A versus the amount contained in Drainage A is further evidence that the two features are not connected. As described above, Watercourse A averages six to eight feet in width, with an average of four inches of flow at the time of the inspections. Drainage A averages one foot in width and contained less than one inch of flow during the September 2022 inspection. Very low flow was confirmed in the stormwater catch basins on the subject property at the time of the September 2022 inspection, which is likely the source of the extremely low flows observed in the drainage channel at that time. Based on a combination of all these factors, it does not appear that Watercourse A and Drainage A are connected.

To ascertain whether a natural stream channel existed in the location of Drainage A, historically, a review of historic aerial photographs was conducted. The subject property has been generally cleared of woody vegetation since at least 1936, which allows for clear images of the property at that time. The 1936 aerial photograph clearly shows that no stream channel was present anywhere in the vicinity at that time (Figure 8). Similarly, the feature does not appear to be present in 1990 or 1998 aerial photographs (Figures 9 & 10). The earliest aerial photograph to clearly depict the drainage channel is from 2000 and is still visible currently (Figure 11).



Figure 8: 1936 aerial photograph, no channel present (source: King County iMap)



Figure 9: 1990 aerial photograph, no channel present (source: Google Earth)



Figure 10: 1998 aerial photograph, no channel present (source: King County iMap)



Figure 11: 2021 aerial photograph, channel present (source: King County iMap)

Under MIMC 19.16.010, the definition of a jurisdictional watercourse *“does not include irrigation and drainage ditches, grass-lined swales, canals, storm water runoff devices, or other courses unless they are used by fish or to convey waters that were naturally occurring prior to construction.”* Since the contributing flow in Drainage A is derived from stormwater, and no historic watercourse channel was present in this location, it is our conclusion that Drainage A is an entirely artificial drainage channel that was constructed as a stormwater conveyance feature. Drainage A is a short, narrow channel, and while it discharges into Lake Washington, the small size, low flows, and extremely dense vegetation in the lower half combine to preclude fish use. Under the Washington Department of Natural Resources stream typing, Western Washington streams less than two feet wide are generally considered non-fish-bearing. As an entirely artificial drainage feature that is not used by fish and does not convey waters that were naturally occurring prior to construction, it is our opinion that Drainage A is not regulated as a watercourse by the City of Mercer Island.

As described above, Drainage A is densely vegetated, particularly in the lower sections. The feature, therefore, likely meets basic wetland criteria – hydrophytic vegetation community, hydric soils, and saturated soil conditions during the growing season. Similar to the regulations regarding watercourses, under MIMC 19.16.010, *“Wetlands do not include artificial wetlands, such*

as irrigation and drainage ditches, grass-lined swales, canals, landscape amenities, and detention facilities.” Therefore, as an intentionally created drainage ditch, Drainage A is not regulated as a wetland by the City.

Watercourse A, in the vicinity of the subject property, is a piped watercourse. According to MIMC 19.07.180.C.1, piped watercourses do not require a buffer. A piped watercourse, instead, requires a 45-foot building setback. Based on the available GIS inventories, it is unlikely that the 45-foot building setback would extend onto the subject property.

State and Federal Regulations

Ditches excavated from non-wetland areas, while not regulated by the City, may be regulated by the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act. The Corps may take jurisdiction over Drainage A, due to wetland characteristics within the ditch and its connectivity to Lake Washington. If direct impacts or alterations to Drainage A are proposed, Corps authorization may be required. Typical wetland mitigation criteria (e.g. Ecology mitigation ratios) do not apply to ditch wetlands, but the Corps will require verification that downstream water quality be protected during and after construction and that activity in the ditch does not result in up or downstream flooding.

Federally permitted actions that could affect endangered species may also require a biological assessment study and consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service. Application for Corps permits may also require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination from Ecology and a cultural resource study in accordance with Section 106 of the National Historic Preservation Act.

It is possible, although unlikely, that WDFW could regulate Drainage A as a water of the state; The criteria for a regulated stream under state jurisdiction are similar to those of Mercer Island. The definition of watercourse, river, or stream “*does not include irrigation ditches, canals, storm water treatment and conveyance systems, or other entirely artificial watercourses, except where they exist in a natural watercourse that has been altered by humans*” (WAC 220-660-030.145). Therefore, as an artificially constructed stormwater conveyance feature that does not contain fish, Drainage A does not satisfy any of the stream typing criteria per Washington Department of Natural Resources definitions and is not regulated by the state, in our opinion. However, we recommend providing notification to WDFW prior to commencing any activities that would divert, obstruct, or change the flow of Drainage A to confirm that a Hydraulic Project Approval is not necessary for these activities. WDFW may conduct a site visit to assess the conditions in Drainage A prior to making a determination. In general, state and federal agencies do not regulate stream buffers.

Disclaimer

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

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

Sincerely,

A handwritten signature in blue ink, appearing to read "R. Kahlo". The signature is fluid and cursive, with the first letter of each name being significantly larger and more stylized.

Ryan Kahlo, PWS
Senior Ecologist

Enclosures: Survey Markup

Appendix B

Army Corps of Engineers Wetland Determination Data Forms (S1-S2)

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

Project/Site: Covenant Living at the Shores City/County: Mercer Island/King Sampling Date: 1/17/25
 Applicant/Owner: Covenant Living Communities & Services State: WA Sampling Point: S1
 Investigator(s): EP, JG Section, Township, Range: S7, T24N, R05E
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): slope Slope (%): 8
 Subregion (LRR): LRR-A Lat: 47.582345 Long: -122.215104 Datum: WGS84
 Soil Map Unit Name: Kitsap silt loam, 2 to 8 percent slopes NWI classification: None

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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Remarks: | |

VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status | |
|--|------------------|-------------------|------------------|---|
| Tree Stratum (Plot size: 5 ² m) | | | | |
| 1. <u>None</u> | - | - | - | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| | 0 | = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: 3 ² m) | | | | |
| 1. <u>None</u> | - | - | - | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = 0 FACW species _____ x 2 = 0 FAC species _____ x 3 = 0 FACU species _____ x 4 = 0 UPL species _____ x 5 = 0 Column Totals: 0 (A) 0 (B) Prevalence Index = B/A = _____ |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| Herb Stratum (Plot size: 1 ² m) | | | | |
| 1. <u>Lawn grasses</u> | 100 | N | Varies | Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <u>Ranunculus repens</u> | 2 | N | FAC | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| 11. _____ | _____ | _____ | _____ | |
| | 102 | = Total Cover | | |
| Woody Vine Stratum (Plot size: 1 ² m) | | | | |
| 1. <u>None</u> | - | - | - | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 2. _____ | _____ | _____ | _____ | |
| | 0 | = Total Cover | | |
| % Bare Ground in Herb Stratum <u>0</u> | | | | |

Remarks:
 The vegetation across Wetland A and the adjacent upland is maintained lawn that undergoes regular and routine maintenance and does not represent a natural plant community.

SOIL

Sampling Point: S1

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

| Depth (inches) | Matrix | | Redox Features | | | Loc ² | Texture | Remarks |
|----------------|---------------|-----|----------------|---|-------------------|------------------|------------|------------------|
| | Color (moist) | % | Color (moist) | % | Type ¹ | | | |
| 0 - 4 | 10YR2/2 | 100 | | | | | loamy sand | moist |
| 4 - 10 | 2.5Y3/1 | 97 | 5YR4/6 | 3 | C | M | loamy sand | saturated @ 7 in |
| 10 - 12 | 2.5Y4/1 | 100 | | | | | sand | saturated |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

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

| | | |
|--|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | Indicators for Problematic Hydric Soils³: |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | |
| | | |
| | | |

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

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

Restrictive Layer (if present):
 Type: gravel
 Depth (inches): 12

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

| | |
|---|---|
| Primary Indicators (minimum of one required; check all that apply) | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks) |
| | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7) |

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): -10

Saturation Present? (includes capillary fringe) Yes No Depth (inches): -7

Wetland Hydrology Present? Yes No

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

Remarks:

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

Project/Site: Covenant Living at the Shores City/County: Mercer Island/King Sampling Date: 1/17/25
 Applicant/Owner: Covenant Living State: WA Sampling Point: S2
 Investigator(s): EP, JG Section, Township, Range: S7, T24N, R05E
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): slope Slope (%): 8
 Subregion (LRR): LRR-A Lat: 47.582293 Long: -122.215065 Datum: WGS84
 Soil Map Unit Name: Kitsap silt loam, 2 to 8 percent slopes NWI classification: None

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 <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Remarks: | |

VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status | | |
|--|------------------|-------------------|------------------|--|--|
| Tree Stratum (Plot size: 5 ² m) | | | | | |
| 1. <u>None</u> | <u>-</u> | <u>-</u> | <u>-</u> | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) | |
| 2. _____ | _____ | _____ | _____ | | |
| 3. _____ | _____ | _____ | _____ | | |
| 4. _____ | _____ | _____ | _____ | | |
| | <u>0</u> | = Total Cover | | | |
| Sapling/Shrub Stratum (Plot size: 3 ² m) | | | | | |
| 1. <u>None</u> | <u>-</u> | <u>-</u> | <u>-</u> | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____ | |
| 2. _____ | _____ | _____ | _____ | | |
| 3. _____ | _____ | _____ | _____ | | |
| 4. _____ | _____ | _____ | _____ | | |
| 5. _____ | _____ | _____ | _____ | | |
| | <u>0</u> | = Total Cover | | | |
| Herb Stratum (Plot size: 1 ² m) | | | | | |
| 1. <u>Lawn grasses</u> | <u>100</u> | <u>N</u> | <u>Varies</u> | | |
| 2. _____ | _____ | _____ | _____ | | |
| 3. _____ | _____ | _____ | _____ | | |
| 4. _____ | _____ | _____ | _____ | | |
| 5. _____ | _____ | _____ | _____ | | |
| 6. _____ | _____ | _____ | _____ | | |
| 7. _____ | _____ | _____ | _____ | | |
| 8. _____ | _____ | _____ | _____ | | |
| 9. _____ | _____ | _____ | _____ | | |
| 10. _____ | _____ | _____ | _____ | | |
| 11. _____ | _____ | _____ | _____ | | |
| | <u>100</u> | = Total Cover | | | |
| Woody Vine Stratum (Plot size: 1 ² m) | | | | | |
| 1. <u>None</u> | <u>-</u> | <u>-</u> | <u>-</u> | | |
| 2. _____ | _____ | _____ | _____ | | |
| | <u>0</u> | = Total Cover | | | |
| % Bare Ground in Herb Stratum <u>0</u> | | | | | |

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation
 Dominance Test is >50%
 Prevalence Index is ≤3.0¹
 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes No

Remarks:
 The vegetation across Wetland A and the adjacent upland is maintained lawn that undergoes regular and routine maintenance and does not represent a natural plant community.

SOIL

Sampling Point: S2

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|----|----------------|---|-------------------|------------------|------------|---------|
| Depth (inches) | Matrix | | Redox Features | | | Loc ² | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | | | |
| 0 - 8 | 10YR4/2 | 97 | 10YR3/6 | 3 | C | M | loamy sand | moist |
| 8 - 12 | 2.5Y4/2 | 94 | 10YR3/6 | 3 | C | M | loamy sand | moist |
| 8 - 12 | 2.5Y5/1 | 3 | | | | | sand | moist |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | Indicators for Problematic Hydric Soils ³ : |
|--|--|--|
| <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) |

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

| | |
|--|---|
| Restrictive Layer (if present): Type: <u>gravel</u> Depth (inches): <u>12</u> | Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|--|---|

Remarks:

HYDROLOGY

| Wetland Hydrology Indicators: | |
|---|---|
| Primary Indicators (minimum of one required; check all that apply) | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7) | |

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

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

Remarks:

Appendix C

Department of Ecology Wetland Rating Forms for Western Washington
(Wetland A)

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Covenant Living - Wetland A Date of site visit: 1/17/2025

Rated by EP, JG Trained by Ecology? Yes ___ No Date of training 9/2015

HGM Class used for rating Depressional Wetland has multiple HGM classes? Y ___ N

NOTE: Form is not complete without the required figures (figures can be combined).

Source of base aerial photo/map King County

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

Category IV – Total score = 9 - 15

| FUNCTION | Improving Water Quality | | | Hydrologic | | | Habitat | | | |
|---------------------------------------|-------------------------|---------------------------------------|---------------------------------------|------------|---------------------------------------|---------------------------------------|----------|---------------------------------------|---------------------------------------|-----------|
| <i>Circle the appropriate ratings</i> | | | | | | | | | | |
| Site Potential | H | M | <input checked="" type="checkbox"/> L | H | <input checked="" type="checkbox"/> M | L | H | M | <input checked="" type="checkbox"/> L | |
| Landscape Potential | H | <input checked="" type="checkbox"/> M | L | H | <input checked="" type="checkbox"/> M | L | H | M | <input checked="" type="checkbox"/> L | |
| Value | H | <input checked="" type="checkbox"/> M | L | H | M | <input checked="" type="checkbox"/> L | H | <input checked="" type="checkbox"/> M | L | |
| Score Based on Ratings | 5 | | | 5 | | | 4 | | | 14 |

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

9 = H, H, H

8 = H, H, M

7 = H, H, L

7 = H, M, M

6 = H, M, L

6 = M, M, M

5 = H, L, L

5 = M, M, L

4 = M, L, L

3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

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Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

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 (<i>can be added to another figure</i>) | R 2.4 | |
| Plant cover of trees, shrubs, and herbaceous plants | R 1.2, R 4.2 | |
| Width of unit vs. width of stream (<i>can be added to another figure</i>) | 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 total 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 (<i>can be added to another figure</i>) | L 2.2 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total 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 | 1 |
| Hydroperiods | H 1.2 | 1 |
| Plant cover of dense trees, shrubs, and herbaceous plants | S 1.3 | 5 |
| Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to figure above</i>) | S 4.1 | 5 |
| Boundary of 150 ft buffer (<i>can be added to another figure</i>) | S 2.1, S 5.1 | 1 |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat | H 2.1, H 2.2, H 2.3 | 2 |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | S 3.1, S 3.2 | 3 |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | S 3.3 | 4 |

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 sheet flow, 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).

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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.

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 | <input type="checkbox"/> | Riverine |
| Slope + Depressional | <input checked="" type="checkbox"/> | Depressional |
| Slope + Lake Fringe | <input type="checkbox"/> | Lake Fringe |
| Depressional + Riverine along stream within boundary of depression | <input type="checkbox"/> | Depressional |
| Depressional + Lake Fringe | <input type="checkbox"/> | Depressional |
| Riverine + Lake Fringe | <input type="checkbox"/> | Riverine |
| Salt Water Tidal Fringe and any other class of freshwater wetland | <input type="checkbox"/> | 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.

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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. <u>Characteristics of surface water outflows from the wetland:</u> | | |
| <input type="checkbox"/> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 | | 2 |
| <input checked="" type="checkbox"/> Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 | | |
| <input type="checkbox"/> Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 | | |
| <input type="checkbox"/> Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1 | | |
| D 1.2. <u>The soil 2 in. below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0 | | 0 |
| D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> | | |
| <input type="checkbox"/> Wetland has persistent, ungrazed plants > 95% of area points = 5 | | 0 |
| <input type="checkbox"/> Wetland has persistent, ungrazed plants > ½ of area points = 3 | | |
| <input type="checkbox"/> Wetland has persistent, ungrazed plants ≥ 1/10 of area points = 1 | | |
| <input checked="" type="checkbox"/> Wetland has persistent, ungrazed plants < 1/10 of area points = 0 | | |
| D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> | | |
| <input type="checkbox"/> Area seasonally ponded is > ½ total area of wetland points = 4 | | 0 |
| <input type="checkbox"/> Area seasonally ponded is ≥ ¼ total area of wetland points = 2 | | |
| <input checked="" type="checkbox"/> Area seasonally ponded is < ¼ total area of wetland points = 0 | | |
| Total for D 1 | | 2 |

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

| | | |
|--|--|----------------|
| D 2.0. Does the landscape have the potential to support the water quality function of the site? | | |
| D 2.1. Does the wetland unit receive stormwater discharges? | | Yes = 1 No = 0 |
| D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? | | Yes = 1 No = 0 |
| D 2.3. Are there septic systems within 250 ft of the wetland? | | Yes = 1 No = 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 <u>Canada Goose droppings</u> | | Yes = 1 No = 0 |
| Total for D 2 | | 2 |

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

| | | |
|--|--|----------------|
| D 3.0. Is the water quality improvement provided by the site valuable to society? | | |
| D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? | | Yes = 1 No = 0 |
| 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 |
| 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 in development or in effect for the basin in which the unit is found.) | | Yes = 2 No = 0 |
| Total for D 3 | | 1 |

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

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: | | |
| <input type="checkbox"/> Wetland is a depression or flat depression with no surface water leaving it (no outlet) | points = 4 | 2 |
| <input checked="" type="checkbox"/> Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet | points = 2 | |
| <input type="checkbox"/> Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch | points = 1 | |
| <input type="checkbox"/> 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. | | |
| <input type="checkbox"/> Marks of ponding are 3 ft or more above the surface or bottom of outlet | points = 7 | 0 |
| <input type="checkbox"/> Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet | points = 5 | |
| <input type="checkbox"/> Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet | points = 3 | |
| <input type="checkbox"/> The wetland is a "headwater" wetland | points = 3 | |
| <input type="checkbox"/> Wetland is flat but has small depressions on the surface that trap water | points = 1 | |
| <input checked="" type="checkbox"/> 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 area of the wetland unit itself. | | |
| <input checked="" type="checkbox"/> The area of the basin is less than 10 times the area of the unit | points = 5 | 5 |
| <input type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit | points = 3 | |
| <input type="checkbox"/> The area of the basin is more than 100 times the area of the unit | points = 0 | |
| <input type="checkbox"/> Entire wetland is in the Flats class | points = 5 | |
| Total for D 4 | | 7 |

Rating of Site Potential If score is: 12-16 = H ✓ 6-11 = M 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 <input type="checkbox"/> No = <input type="checkbox"/> | 0 |
| D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? | Yes = <input type="checkbox"/> No = <input type="checkbox"/> | 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 = <input type="checkbox"/> No = <input type="checkbox"/> | 1 |
| Total for D 5 | | 2 |

Rating of Landscape Potential If score is: 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. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. <u>Choose the highest score if more than one condition is met.</u> | | |
| The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): | | |
| <input type="checkbox"/> • Flooding occurs in a sub-basin that is immediately downgradient of unit. | points = 2 | 0 |
| <input type="checkbox"/> • Surface flooding problems are in a sub-basin farther downgradient. | points = 1 | |
| <input type="checkbox"/> • Flooding from groundwater is an issue in the sub-basin. | points = 1 | |
| <input type="checkbox"/> • The existing or potential outflow from the wetland is so constricted by human or natural conditions that the water stored by the wetland cannot reach areas that flood. <i>Explain why</i> _____ | points = 0 | |
| <input checked="" type="checkbox"/> • 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 <input type="checkbox"/> No = <input type="checkbox"/> |
| Total for D 6 | | 0 |

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

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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 if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac.

- Aquatic bed 4 structures or more: points = 4
 - 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/groundcover) 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 if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 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
- Saturated only **1 type present: points = 0**
- Permanently flowing stream or river in, or adjacent to, the wetland
- Intermittently or 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 ft². 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, Canada thistle**

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

0

H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersions 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

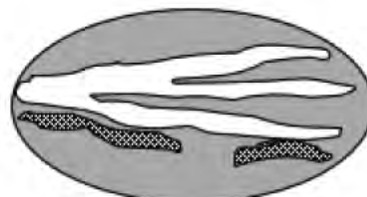


Moderate = 2 points



0

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



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| | | |
|---|-----------------------------------|----------|
| <p>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.</p> <p><input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long).</p> <p><input type="checkbox"/> Standing snags (dbh > 4 in.) within the wetland</p> <p><input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)</p> <p><input type="checkbox"/> 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)</p> <p><input type="checkbox"/> 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)</p> <p><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)</p> | | 1 |
| Total for H 1 | Add the points in the boxes above | 1 |

Rating of Site Potential If score is: 15-18 = H 7-14 = M ✓ 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? | | |
| <p>H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland. <i>Calculate:</i> % relatively undisturbed habitat <u>0</u> + [(% moderate and low intensity land uses)/2] <u>0</u> = <u>0</u> % Total accessible habitat is:</p> <p><input type="checkbox"/> > 1/3 (33.3%) of 1 km Polygon points = 3</p> <p><input type="checkbox"/> 20-33% of 1 km Polygon points = 2</p> <p><input type="checkbox"/> 10-19% of 1 km Polygon points = 1</p> <p><input checked="" type="checkbox"/> < 10% of 1 km Polygon points = 0</p> | | 0 |
| <p>H 2.2. Total habitat in 1 km Polygon around the wetland. <i>Calculate:</i> % relatively undisturbed habitat <u>6</u> + [(% moderate and low intensity land uses)/2] <u>20</u> = <u>26</u> %</p> <p><input type="checkbox"/> Total habitat > 50% of Polygon points = 3</p> <p><input type="checkbox"/> Total habitat 10-50% and in 1-3 patches points = 2</p> <p><input checked="" type="checkbox"/> Total habitat 10-50% and > 3 patches points = 1</p> <p><input type="checkbox"/> Total habitat < 10% of 1 km Polygon points = 0</p> | | 1 |
| <p>H 2.3. Land use intensity in 1 km Polygon:</p> <p><input checked="" type="checkbox"/> > 50% of 1 km Polygon is high intensity land use points = (- 2)</p> <p><input type="checkbox"/> ≤ 50% of 1 km Polygon is high intensity points = 0</p> | | -2 |
| Total for H 2 | Add the points in the boxes above | -1 |

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? | | |
| <p>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose only the highest score that applies to the wetland being rated.</i></p> <p>Site meets ANY of the following criteria: points = 2</p> <p><input type="checkbox"/> It has 3 or more Priority Habitats within 100 m (see next page)</p> <p><input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)</p> <p><input type="checkbox"/> It is mapped as a location for an individual WDFW Priority Species</p> <p><input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources data</p> <p><input type="checkbox"/> 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</p> <p><input checked="" type="checkbox"/> Site has 1 or 2 Priority Habitats (listed on next page) within 100 m points = 1</p> <p><input type="checkbox"/> Site does not meet any of the criteria above points = 0</p> | | 1 |

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

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WDFW Priority Habitats

See complete descriptions of Priority Habitats listed by WDFW, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008 (current year, as revised). Priority Habitat and Species List.¹³³ This list was updated for consistency with guidance from WDFW.

This question is independent of the land use between the wetland unit and the Priority Habitat. All vegetated wetlands are by definition a Priority Habitat but are not included in this list because they are addressed by this rating system.

Count how many of the following Priority Habitats are within 330 ft (100 m) of the wetland unit:

- 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. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.
- 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.
- Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).
- Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- 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. Do not select if Fresh Deepwater habitat is also present.
- Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.
- 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) diameter at breast height (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.

¹³³ <http://wdfw.wa.gov/publications/00165/wdfw00165.pdf>
Wetland Rating System for Western WA: 2014 Update
Rating Form – Version 2, July 2023

Wetland name or number A

- Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, WDFW's Management Recommendations for Oregon White Oak¹³⁴ provides more detail for determining if they are Priority Habitats
- Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- 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.
- 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.
- Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

¹³⁴ <https://wdfw.wa.gov/publications/00030/wdfw00030.pdf>
Wetland Rating System for Western WA: 2014 Update
Rating Form – Version 2, July 2023

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

| Wetland Type | Category |
|--|-------------------------------------|
| <i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i> | |
| <p>SC 1.0. Estuarine wetlands</p> <p>Does the wetland meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal,</p> <p><input type="checkbox"/> Vegetated, and</p> <p><input type="checkbox"/> With a salinity greater than 0.5 ppt</p> <p style="text-align: right;">Yes – Go to SC 1.1 No = Not an estuarine wetland</p> | |
| <p>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?</p> <p style="text-align: right;">Yes = Category I No – Go to SC 1.2</p> | Cat. I |
| <p>SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions?</p> <p><input type="checkbox"/> 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 <i>Spartina</i>, see chapter 4.8 in the manual.</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland.</p> <p><input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p> <p style="text-align: right;">Yes = Category I No = Category II</p> | Cat. I Cat. II |
| <p>SC 2.0. Wetlands of High Conservation Value (WHCV)</p> <p>SC 2.1. Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer?¹³⁵</p> <p style="text-align: right;">Yes = Category I No – Go to SC 2.2</p> <p>SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements.</p> <p style="text-align: right;">Yes – Submit data to WA Natural Heritage Program for determination,¹³⁶ Go to SC 2.3 No = Not a WHCV</p> <p>SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria?</p> <p style="text-align: right;">Yes = Category I No = Not a WHCV</p> | Cat. I |
| <p>SC 3.0. Bogs</p> <p>Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES, you will still need to rate the wetland based on its functions.</i></p> <p>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?</p> <p style="text-align: right;">Yes – Go to SC 3.3 No – Go to SC 3.2</p> <p>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?</p> <p style="text-align: right;">Yes – Go to SC 3.3 No = Not a bog</p> <p>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?</p> <p style="text-align: right;">Yes = Category I bog No – Go to SC 3.4</p> <p>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.</p> <p>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?</p> <p style="text-align: right;">Yes = Category I bog No = Not a bog</p> | Cat. I |

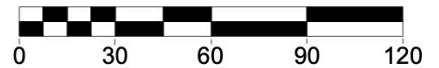
¹³⁵ <https://www.dnr.wa.gov/NHPdata>

¹³⁶ https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf




COVENANT LIVING AT THE SHORES
WETLAND RATING FIGURE 1- WETLAND A



Scale 1" = 60'



LEGEND

-  EMERGENT VEGETATION
-  SATURATED ONLY
-  150' FROM WL BOUNDARY

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Fax: (425) 337-3045
Email: mailbox@wetlandresources.com

WETLAND RATING
Wetland A

Figure A-1
WRI Job # 24361
Rated by: EP

COVENANT LIVING AT THE SHORES
 WETLAND RATING FIGURE 2- WETLAND A



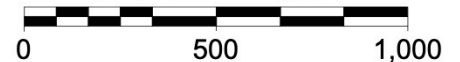
LEGEND

-  RELATIVELY UNDISTURBED
-  LOW/MOD. INTENSITY
-  HIGH INTENSITY
-  ACCESSIBLE HABITAT
-  WETLAND
-  1 KM FROM WETLAND CONTRIBUTING BASIN
-  CONTRIBUTING BASIN

**CONTRIBUTING BASIN
 AREA RELATIVE TO
 WETLAND UNIT IS 6:1**



Scale 1" = 1,000'



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**WETLAND RATING
 Wetland A**


Figure A-2
 WRI Job # 24361
 Rated by: EP

COVENANT LIVING AT THE SHORES
WETLAND RATING FIGURE 3- WETLAND A



LEGEND

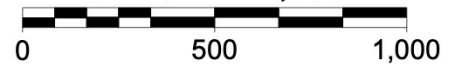
 WETLAND

 AQUATIC RESOURCES ON THE 303(d) LIST

**NO AQUATIC RESOURCES
ON THE 303(d) LIST**



Scale 1" = 1,000'



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**WETLAND RATING
Wetland A**

Figure A-3
WRI Job # 24361
Rated by: EP

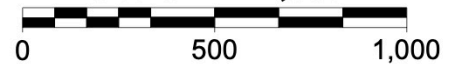
COVENANT LIVING AT THE SHORES
WETLAND RATING FIGURE 4- WETLAND A



**NO TMDL OR OTHER WATER
QUALITY IMPROVEMENT PROJECTS**



Scale 1" = 1,000'



LEGEND

| | |
|--|--------------------------------|
|  | WETLAND |
|  | AREA OF TMDL IN DEVELOPMENT |
|  | AREA OF APPROVED TMDL |

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**WETLAND RATING
Wetland A**

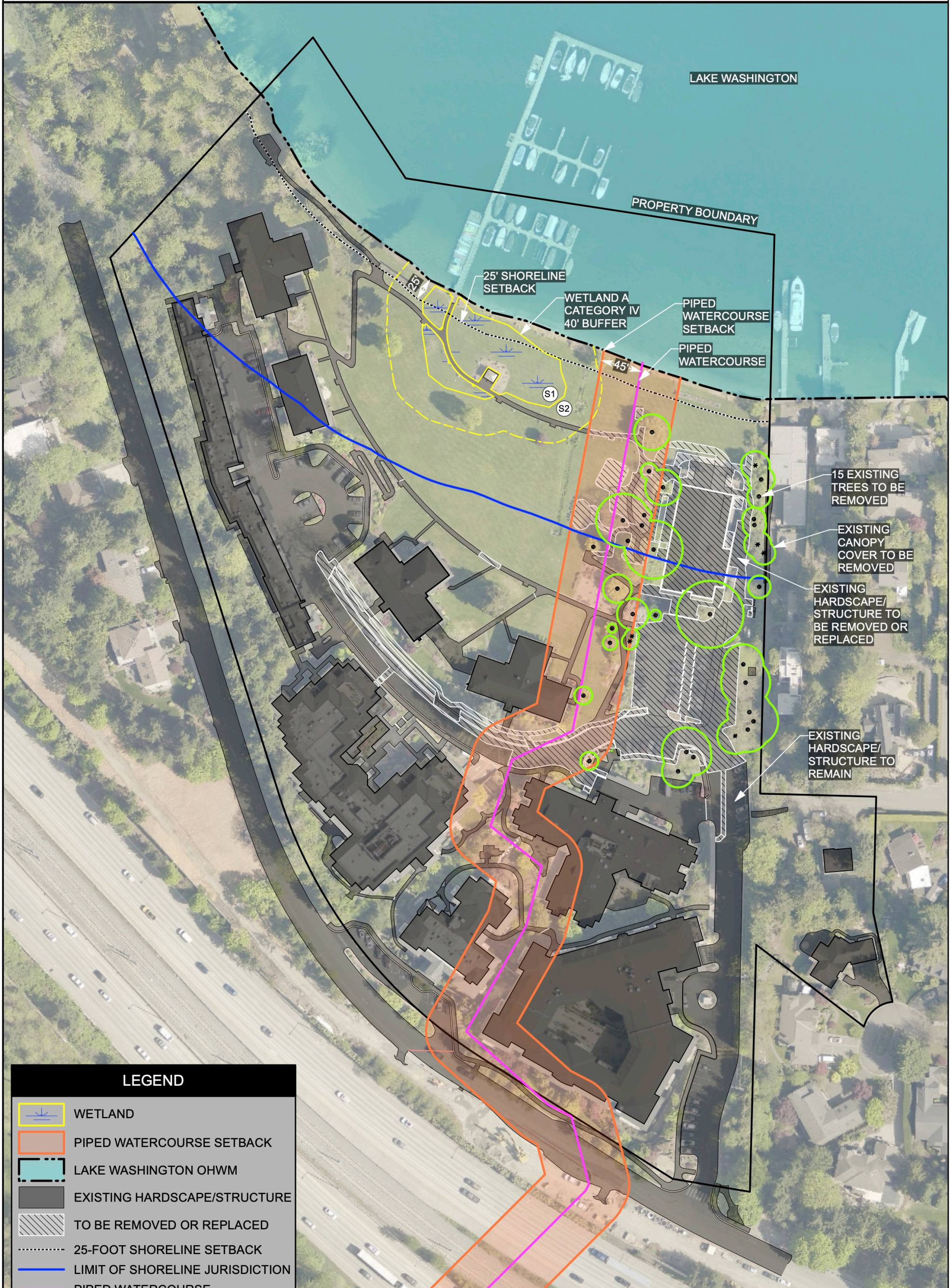
Figure A-4
WRI Job # 24361
Rated by: EP

Appendix D




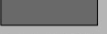
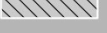






Critical Area Study and No Net Loss Plan Maps (Sheets 1/3 to 3/3)

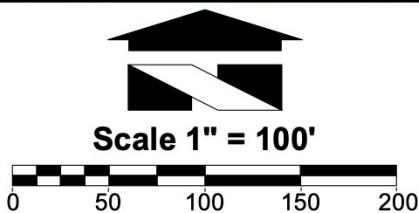
CRITICAL AREA STUDY AND NO NET LOSS PLAN MAPS **COVENANT LIVING AT THE SHORES**

EXISTING CONDITIONS AND FEATURES TO BE REMOVED



LEGEND

-  WETLAND
-  PIPED WATERCOURSE SETBACK
-  LAKE WASHINGTON OHWM
-  EXISTING HARDSCAPE/STRUCTURE
-  TO BE REMOVED OR REPLACED
-  25-FOOT SHORELINE SETBACK
-  LIMIT OF SHORELINE JURISDICTION
-  PIPED WATERCOURSE
-  WETLAND BUFFER
-  EX. TREE/CANOPY TO BE REMOVED
-  DATA SITES



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CAS and No Net Loss Plan Map
Covenant Living at the Shores
 Ex. Conditions and Features to be Removed

Covenant Living
 Communities & Services
 Attn: Randy Gross
 5700 Old Orchard Rd
 Skokie, IL 60077

Sheet 1/3
 WRI Job#: 24361
 Drawn by: NP
 Revision 1: 2.6.2026

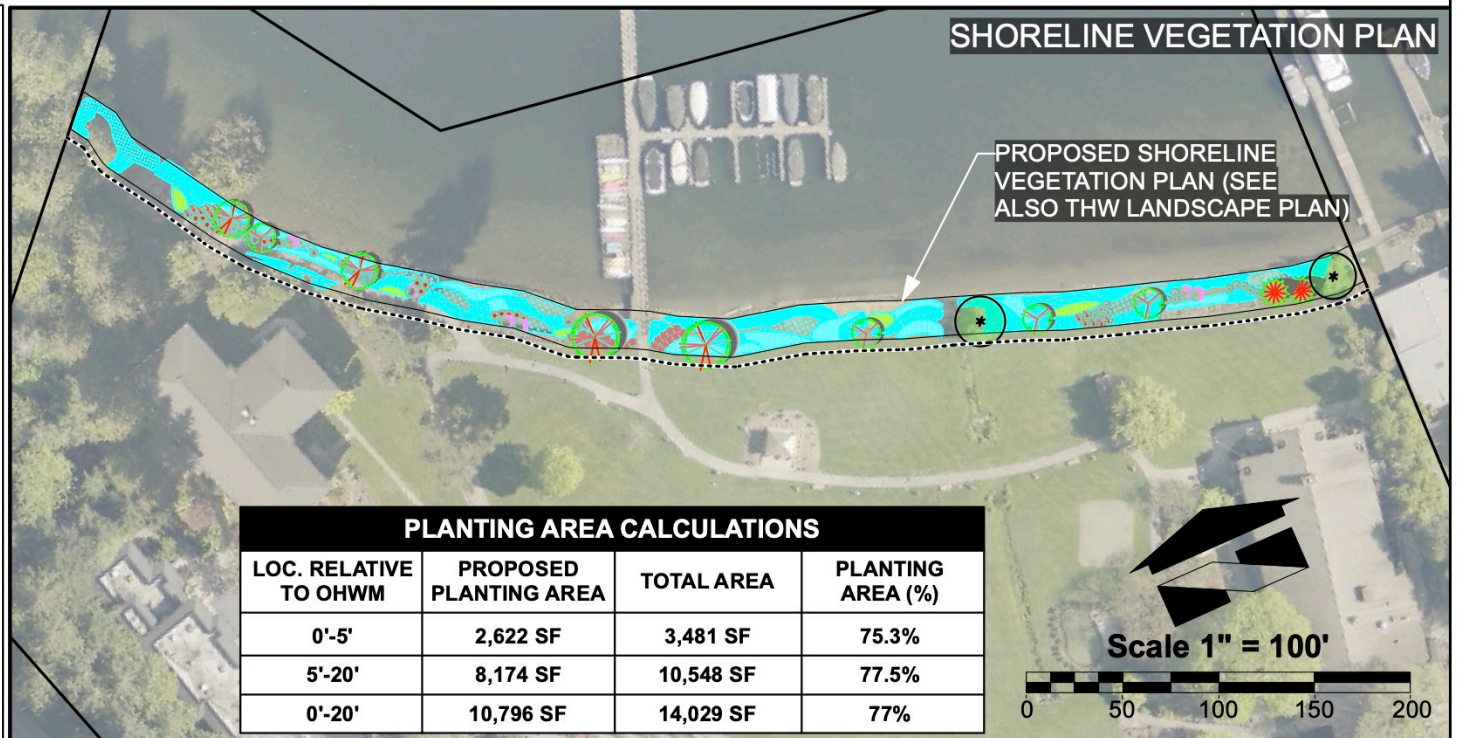
CRITICAL AREA STUDY AND NO NET LOSS PLAN MAPS

COVENANT LIVING AT THE SHORES

PROPOSED SHORELINE DEVELOPMENT

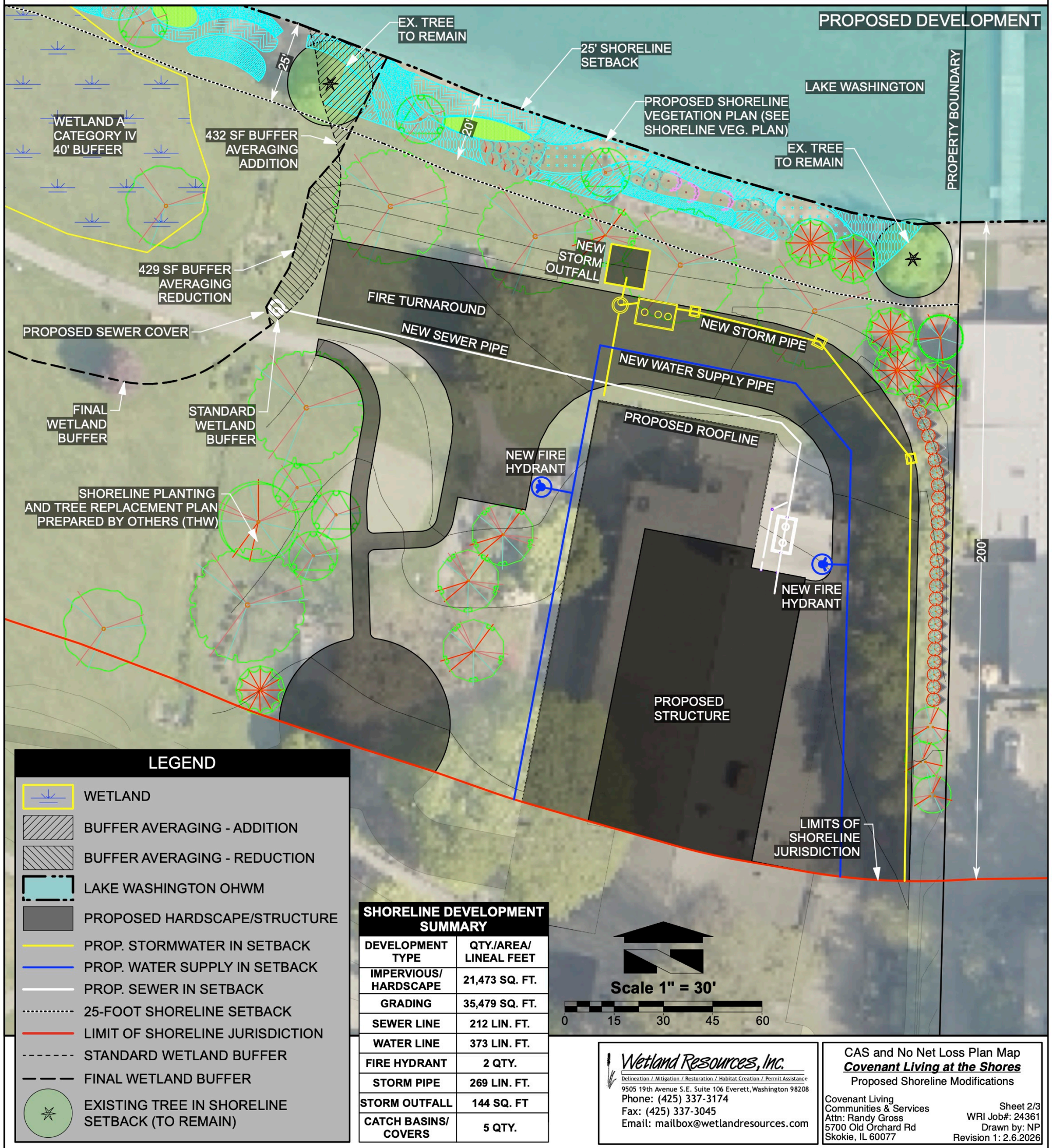
Shoreline Planting Plan (10,796 square feet)

| Common Name | Latin Name | Qty. |
|-----------------------|--------------------------------|--------------|
| Pacific dogwood | <i>Cornus nuttallii</i> | 2 |
| shore pine | <i>Pinus contorta</i> | 2 |
| serviceberry | <i>Amelanchier alnifolia</i> | 2 |
| vine maple | <i>Acer circinatum</i> | 4 |
| red osier dogwood | <i>Cornus sericea</i> | 4 |
| Oregon grape | <i>Mahonia nervosa</i> | 13 |
| red flowering currant | <i>Ribes sanguineum</i> | 6 |
| baldhip rose | <i>Rosa gymnocarpa</i> | 14 |
| subalpine spiraea | <i>Spiraea densiflora</i> | 24 |
| snowberry | <i>Symphoricarpos albus</i> | 16 |
| evergreen huckleberry | <i>Vaccinium ovatum</i> | 16 |
| common yarrow | <i>Achillea millefolium</i> | 296 |
| nodding onion | <i>Allium cernuum</i> | 464 |
| western columbine | <i>Aquilegia formosa</i> | 111 |
| kinnikinnick | <i>Arctostaphylos uva-ursi</i> | 55 |
| sea thrift | <i>Armeria maritima</i> | 990 |
| goat's beard | <i>Aranucus sylvester</i> | 69 |
| wild ginger | <i>Asarum caudatum</i> | 382 |
| lady fern | <i>Athyrium cyclosorum</i> | 192 |
| slough sedge | <i>Carex obnupta</i> | 93 |
| coastal strawberry | <i>Fragaria chiloensis</i> | 479 |
| salal | <i>Gaultheria shallon</i> | 208 |
| Total | | 3,442 |



PLANTING AREA CALCULATIONS

| LOC. RELATIVE TO OHWM | PROPOSED PLANTING AREA | TOTAL AREA | PLANTING AREA (%) |
|-----------------------|------------------------|------------|-------------------|
| 0'-5' | 2,622 SF | 3,481 SF | 75.3% |
| 5'-20' | 8,174 SF | 10,548 SF | 77.5% |
| 0'-20' | 10,796 SF | 14,029 SF | 77% |



LEGEND

- WETLAND
- BUFFER AVERAGING - ADDITION
- BUFFER AVERAGING - REDUCTION
- LAKE WASHINGTON OHWM
- PROPOSED HARDSCAPE/STRUCTURE
- PROP. STORMWATER IN SETBACK
- PROP. WATER SUPPLY IN SETBACK
- PROP. SEWER IN SETBACK
- 25-FOOT SHORELINE SETBACK
- LIMIT OF SHORELINE JURISDICTION
- STANDARD WETLAND BUFFER
- FINAL WETLAND BUFFER
- EXISTING TREE IN SHORELINE SETBACK (TO REMAIN)

SHORELINE DEVELOPMENT SUMMARY

| DEVELOPMENT TYPE | QTY./AREA/ LINEAL FEET |
|----------------------|------------------------|
| IMPERVIOUS/HARDSCAPE | 21,473 SQ. FT. |
| GRADING | 35,479 SQ. FT. |
| SEWER LINE | 212 LIN. FT. |
| WATER LINE | 373 LIN. FT. |
| FIRE HYDRANT | 2 QTY. |
| STORM PIPE | 269 LIN. FT. |
| STORM OUTFALL | 144 SQ. FT. |
| CATCH BASINS/COVERS | 5 QTY. |

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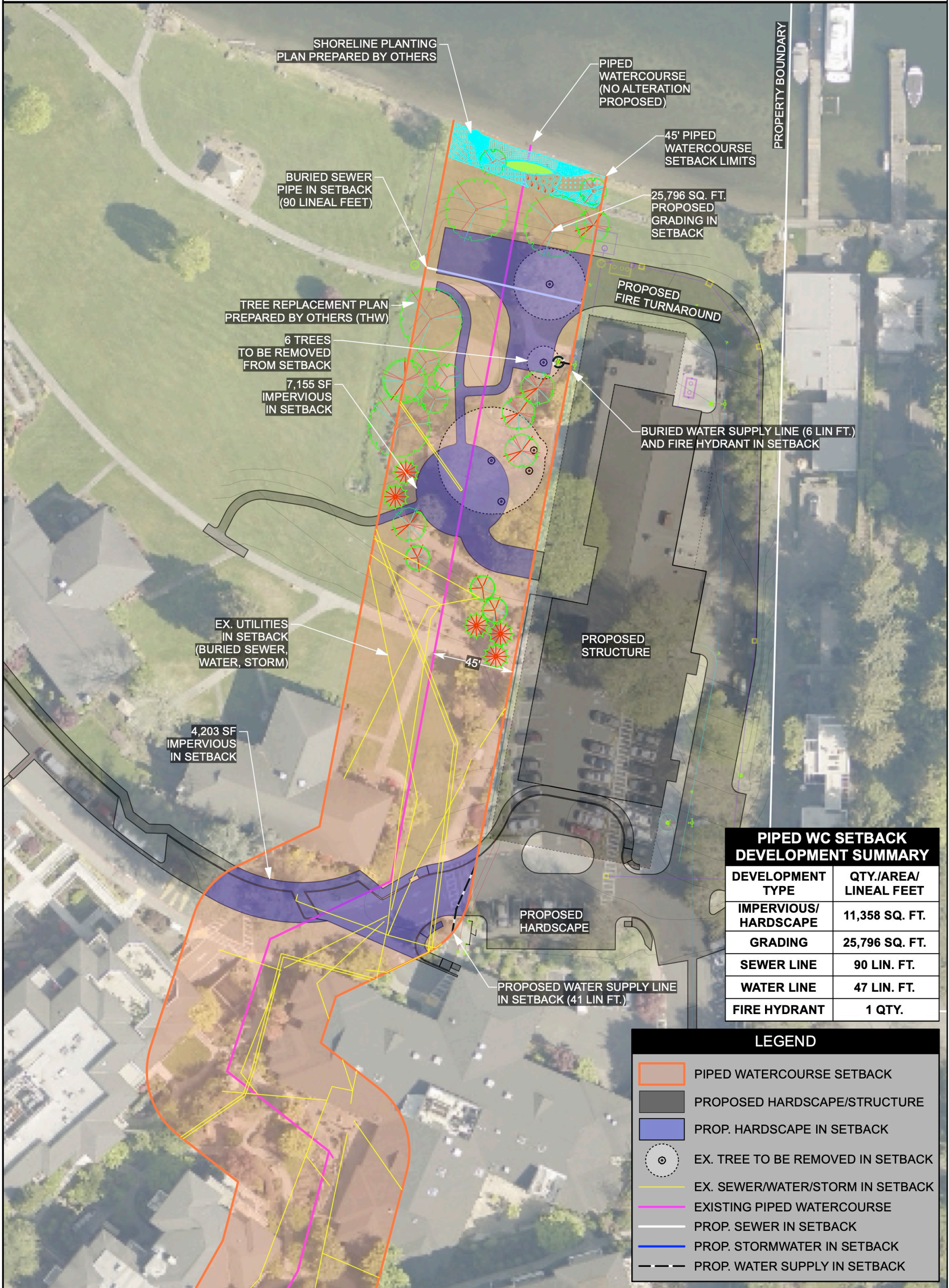
CAS and No Net Loss Plan Map
Covenant Living at the Shores
 Proposed Shoreline Modifications

Covenant Living Communities & Services
 Attn: Randy Gross
 5700 Old Orchard Rd
 Skokie, IL 60077

Sheet 2/3
 WRI Job#: 24361
 Drawn by: NP
 Revision 1: 2.6.2026

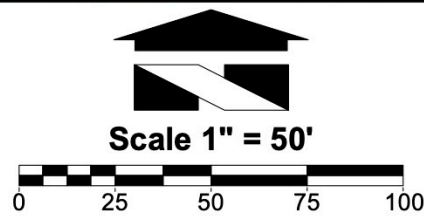
CRITICAL AREA STUDY AND NO NET LOSS PLAN MAPS COVENANT LIVING AT THE SHORES

PIPED WATERCOURSE SETBACK DEVELOPMENT



| PIPED WC SETBACK DEVELOPMENT SUMMARY | |
|--------------------------------------|------------------------|
| DEVELOPMENT TYPE | QTY./AREA/ LINEAL FEET |
| IMPERVIOUS/HARDSCAPE | 11,358 SQ. FT. |
| GRADING | 25,796 SQ. FT. |
| SEWER LINE | 90 LIN. FT. |
| WATER LINE | 47 LIN. FT. |
| FIRE HYDRANT | 1 QTY. |

| LEGEND | |
|--------|-----------------------------------|
| | PIPED WATERCOURSE SETBACK |
| | PROPOSED HARDSCAPE/STRUCTURE |
| | PROP. HARDSCAPE IN SETBACK |
| | EX. TREE TO BE REMOVED IN SETBACK |
| | EX. SEWER/WATER/STORM IN SETBACK |
| | EXISTING PIPED WATERCOURSE |
| | PROP. SEWER IN SETBACK |
| | PROP. STORMWATER IN SETBACK |
| | PROP. WATER SUPPLY IN SETBACK |



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 Fax: (425) 337-3045
 Email: mailbox@wetlandresources.com

CAS and No Net Loss Plan Map
Covenant Living at the Shores
 Piped Watercourse Setback Development

Covenant Living Communities & Services
 Attn: Randy Gross
 5700 Old Orchard Rd
 Skokie, IL 60077

Sheet 3/3
 WRI Job#: 24361
 Drawn by: NP
 Revision 1: 2.6.2026

Appendix E

Impact Minimization Implementation Table (Sheet 1/1)

| Disturbance | Required Measures to Minimize Impacts | Project Actions |
|--|---|---|
| Lights | Direct lights away from wetland | Exterior building lights and light poles directly facing Wetland A will utilize cutoffs. |
| Noise | Locate activity that generates noise away from wetland | The portion of the proposed development that is located closest to the wetland is the firetruck turnaround. This will receive minimal usage, as it is intended to be used only when required for emergency vehicle access. This use is the least noise-generating portion of the development. |
| | If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source | Buffer enhancement is not warranted as a noise-mitigating measure due to the volume and frequency of noise associated with a retirement community. |
| Toxic Runoff | For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10-foot heavily vegetated buffer strip immediately adjacent to the outer wetland buffer | Not applicable. No continuous disruptive noise such as heavy industry or mining will occur. |
| | Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered | Proposed development is almost entirely outside of the contributing basin to Wetland A; the wetland will not be dewatered. All new, untreated runoff will be routed away from Wetland A. |
| Storm Water Runoff | Establish covenants requiring the use of integrated pest management techniques to limit the use of pesticides within 150 feet of wetland | Not applicable. Areas within 150 feet of Wetland A do not typically require pesticide use. |
| | Retrofit storm water detention and treatment for roads and existing adjacent development | Detention is not required because the receiving body's outlet is controlled. Runoff from new and replaced pollution-generating surfaces will be routed to an enhanced water quality treatment system prior to discharge to Lake Washington. See Navix storm drainage plan for additional information. |
| | Prevent channelized flow from lawns that directly enters the buffer | Not applicable. No channelized flow directly enters the wetland in either the existing or proposed condition. |
| Changes in Water Regime | Use low impact development techniques | Low impact development techniques (e.g. post-construction soil quality and depth) will be implemented where feasible. |
| | Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns | Not applicable. No new runoff from impervious surfaces and lawns will enter the buffer. |
| Pets and Human Disturbance | Protect wetlands and associated buffers with conservation or native growth protection easements | Not applicable. Wetland A and its buffer are a maintained lawn. The area they occupy is central to the recreational enjoyment of the waterfront property. It is not practical to eliminate use of this area by residents. The project will not change the use or condition of the wetland or its buffer. |
| Dust | Use best management practices to control dust | Best management practices (BMPs) to control dust will be implemented during construction. These measures, along with all other appropriate BMPs, will be implemented based on the stormwater pollution and prevention plan prepared during the construction permit phase of the project. |
| Disruption of Corridors or Connections | Maintain connections to off-site areas that are undisturbed | Not applicable. There are no existing connections to undisturbed off-site areas. |
| | Restore corridors or connections to off-site habitats by replanting | Not applicable. There is no nearby off-site habitat. |

Appendix F

Bond Quantity Worksheet



Department of Permitting and
Environmental Review
35030 SE Douglas Str, Suite 210
Snoqualmie, WA 98065-9266
206-296-6600 TTY Relay: 711

**Critical Areas Mitigation
Bond Quantity Worksheet**

C24 09/09/2015
Is-wks-sensareaBQ.xls
Is-wks-sensareaBQ.pdf

King County

Project Name: Covenant Living at the Shores Date: 2.6.26 Prepared by: WRI Staff - Niels Pedersen

Project Number: Project Description: Shoreline Vegetation Planting Plan

Location: 9150 Fortuna Drive, Mercer Island, WA Applicant: Covenant Living Phone:

PLANT MATERIALS (includes labor cost for plant installation)

| Type | Unit Price | Unit | Quantity | Description | Cost |
|--|------------|------|----------|-------------|---------------------|
| PLANTS: Potted, 4" diameter, medium | \$5.00 | Each | | | \$ - |
| PLANTS: Container, 1 gallon, medium soil | \$11.50 | Each | 3339.00 | | \$ 38,398.50 |
| PLANTS: Container, 2 gallon, medium soil | \$20.00 | Each | 89.00 | | \$ 1,780.00 |
| PLANTS: Container, 5 gallon, medium soil | \$36.00 | Each | 10.00 | | \$ 360.00 |
| PLANTS: Seeding, by hand | \$0.50 | SY | | | \$ - |
| PLANTS: Slips (willow, red-osier) | \$2.00 | Each | 2.00 | | \$ 4.00 |
| PLANTS: Stakes (willow) | \$2.00 | Each | | | \$ - |
| PLANTS: Stakes (willow) | \$2.00 | Each | | | \$ - |
| PLANTS: Flats/plugs | \$2.00 | Each | | | \$ - |
| TOTAL | | | | | \$ 40,542.50 |

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

| Type | Unit Price | Unit | Quantity | Description | Cost |
|--|------------|------|----------|-------------|--------------------|
| Compost, vegetable, delivered and spread | \$37.88 | CY | 1.00 | | \$ 37.88 |
| Decompacting till/hardpan, medium, to 6" depth | \$1.57 | CY | 200.00 | | \$ 314.00 |
| Decompacting till/hardpan, medium, to 12" depth | \$1.57 | CY | 1.00 | | \$ 1.57 |
| Hydroseeding | \$0.51 | SY | | | \$ - |
| Labor, general (landscaping other than plant installation) | \$40.00 | HR | 20.00 | | \$ 800.00 |
| Labor, general (construction) | \$40.00 | HR | 20.00 | | \$ 800.00 |
| Labor: Consultant, supervising | \$55.00 | HR | 20.00 | | \$ 1,100.00 |
| Labor: Consultant, on-site re-design | \$95.00 | HR | 20.00 | | \$ 1,900.00 |
| Rental of decompacting machinery & operator | \$70.00 | HR | 20.00 | | \$ 1,400.00 |
| Sand, coarse builder's, delivered and spread | \$42.00 | CY | | | \$ - |
| Staking material (set per tree) | \$7.00 | Each | | | \$ - |
| Surveying, line & grade | \$250.00 | HR | | | \$ - |
| Surveying, topographical | \$250.00 | HR | | | \$ - |
| Watering, 1" of water, 50' soaker hose | \$3.62 | MSF | | | \$ - |
| Irrigation - temporary | \$3,000.00 | Acre | 0.25 | | \$ 743.53 |
| Irrigation - buried | \$4,500.00 | Acre | | | \$ - |
| Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep | \$1.02 | SY | | | \$ - |
| TOTAL | | | | | \$ 7,096.98 |

HABITAT STRUCTURES*

| ITEMS | Unit Cost | Unit | Quantity | Description | Cost |
|---|------------|------|----------|-------------|-------------|
| Fascines (willow) | \$ 2.00 | Each | | | \$ - |
| Logs (cedar), w/ root wads, 16"-24" diam., 30' long | \$1,000.00 | Each | | | \$ - |
| Logs (cedar) w/o root wads, 16"-24" diam., 30' | \$400.00 | Each | | | \$ - |
| Logs, w/o root wads, 16"-24" diam., 30' long | \$245.00 | Each | | | \$ - |
| Logs w/ root wads, 16"-24" diam., 30' long | \$460.00 | Each | | | \$ - |
| Rocks, one-man | \$60.00 | Each | | | \$ - |
| Rocks, two-man | \$120.00 | Each | | | \$ - |
| Root wads | \$163.00 | Each | | | \$ - |
| Spawning gravel, type A | \$22.00 | CY | | | \$ - |
| Weir - log | \$1,500.00 | Each | | | \$ - |
| Weir - adjustable | \$2,000.00 | Each | | | \$ - |
| Woody debris, large | \$163.00 | Each | | | \$ - |
| Snags - anchored | \$400.00 | Each | | | \$ - |
| Snags - on site | \$50.00 | Each | | | \$ - |
| Snags - imported | \$800.00 | Each | | | \$ - |
| TOTAL | | | | | \$ - |

* All costs include delivery and installation

EROSION CONTROL

| ITEMS | Unit Cost | Unit | Quantity | Description | Cost |
|------------------------------------|-----------|------|----------|-------------|------|
| Backfill and Compaction-embankment | \$ 4.89 | CY | | | \$ - |
| Crushed surfacing, 1 1/4" minus | \$30.00 | CY | | | \$ - |
| Ditching | \$7.03 | CY | | | \$ - |
| Excavation, bulk | \$4.00 | CY | | | \$ - |
| Fence, silt | \$1.60 | LF | | | \$ - |

| | | | | | |
|---|------------|------|-------|--------------|--------------------|
| Jute Mesh | \$1.26 | SY | | \$ | - |
| Mulch, by hand, straw, 2" deep | \$1.27 | SY | | \$ | - |
| Mulch, by hand, wood chips, 2" deep | \$3.25 | SY | 67.00 | \$ | 217.75 |
| Mulch, by machine, straw, 1" deep | \$0.32 | SY | | \$ | - |
| Piping, temporary, CPP, 6" | \$9.30 | LF | | \$ | - |
| Piping, temporary, CPP, 8" | \$14.00 | LF | | \$ | - |
| Piping, temporary, CPP, 12" | \$18.00 | LF | | \$ | - |
| Plastic covering, 6mm thick, sandbagged | \$2.00 | SY | | \$ | - |
| Rip Rap, machine placed, slopes | \$33.98 | CY | | \$ | - |
| Rock Constr. Entrance 100'x15'x1' | \$3,000.00 | Each | | \$ | - |
| Rock Constr. Entrance 50'x15'x1' | \$1,500.00 | Each | | \$ | - |
| Sediment pond riser assembly | \$1,695.11 | Each | | \$ | - |
| Sediment trap, 5' high berm | \$15.57 | LF | | \$ | - |
| Sediment trap, 5' high berm w/spillway incl. riprap | \$59.60 | LF | | \$ | - |
| Sodding, 1" deep, level ground | \$5.24 | SY | | \$ | - |
| Sodding, 1" deep, sloped ground | \$6.48 | SY | | \$ | - |
| Straw bales, place and remove | \$600.00 | TON | | \$ | - |
| Hauling and disposal | \$20.00 | CY | | \$ | - |
| Topsoil, delivered and spread | \$35.73 | CY | 67.00 | \$ | 2,393.91 |
| | | | | TOTAL | \$ 2,611.66 |

GENERAL ITEMS

| ITEMS | Unit Cost | Unit | | Cost | |
|--|-----------|------|--|--------------|-------------|
| Fencing, chain link, 6' high | \$18.89 | LF | | \$ - | |
| Fencing, chain link, corner posts | \$111.17 | Each | | \$ - | |
| Fencing, chain link, gate | \$277.63 | Each | | \$ - | |
| Fencing, split rail, 3' high (2-rail) | \$10.54 | LF | | \$ - | |
| Fencing, temporary (NGPE) | \$1.20 | LF | | \$ - | |
| Signs, sensitive area boundary (inc. backing, post, install) | \$28.50 | Each | | \$ - | |
| | | | | TOTAL | \$ - |

OTHER

| ITEMS | Percentage of Construction Cost | Unit | | Cost | |
|--------------|---------------------------------|------|--|--------------|---------------------|
| Mobilization | 10% | 1 | | \$ 5,025.11 | |
| Contingency | 30% | 1 | | \$ 15,075.34 | |
| | | | | TOTAL | \$ 20,100.45 |

MAINTENANCE AND MONITORING

NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintenance ranges may be assessed anywhere from 5 to 10 years.

| Maintenance, annual (by owner or consultant) | | | | | |
|--|-------------|------|------|--|--------------------|
| Less than 1,000 sq.ft. and buffer mitigation only | \$ 1.08 | SF | | (3 X SF total for 3 annual events; Includes monitoring) \$ - | |
| Less than 1,000 sq.ft. with wetland or aquatic area mitigation | \$ 1.35 | SF | | (3 X SF total for 3 annual events; Includes monitoring) \$ - | |
| Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of buffer mitigation | \$ 180.00 | EACH | | (4hr @ \$45/hr) \$ - | |
| Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or aquatic area mitigation | \$ 270.00 | EACH | | (6hr @ \$45/hr) \$ - | |
| Larger than 5,000 sq.ft. but < 1 acre -buffer mitigation only | \$ 360.00 | EACH | 5.00 | (8 hrs @ 45/hr) \$ 1,800.00 | |
| Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation | \$ 450.00 | EACH | | (10 hrs @ \$45/hr) \$ - | |
| Larger than 1 acre but < 5 acres - buffer and /or wetland or aquatic area mitigation | \$ 1,600.00 | DAY | | (WEC crew) \$ - | |
| Larger than 5 acres - buffer and /or wetland or aquatic area mitigation | \$ 2,000.00 | DAY | | (1.25 X WEC crew) \$ - | |
| Monitoring, annual (by owner or consultant) | | | | | |
| Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation | \$ 720.00 | EACH | | (8 hrs @ 90/hr) \$ - | |
| Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts | \$ 900.00 | EACH | 5.00 | (10 hrs @ \$90/hr) \$ 4,500.00 | |
| Larger than 1 acre but < 5 acres - buffer and /or wetland or aquatic area impacts | \$ 1,440.00 | DAY | | (16 hrs @ \$90/hr) \$ - | |
| Larger than 5 acres - buffer and /or wetland or aquatic area impacts | \$ 2,160.00 | DAY | | (24 hrs @ \$90/hr) \$ - | |
| | | | | TOTAL | \$ 6,300.00 |

Total

\$76,651.59