



Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

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**CRITICAL AREA STUDY**

**AND**

**MITIGATION PLAN**

**FOR**

**NFH – 8000 SE 20<sup>th</sup> Street SFR**  
**Mercer Island, WA**

*Wetland Resources, Inc.* Project #15210

Prepared By  
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## **Executive Summary**

**Project Name:** NFH – 8000 SE 20<sup>th</sup> St SFR

**Location:** The subject property is located at 8000 SE 20<sup>th</sup> Street, in the City of Mercer Island.

**Client:**

NFH

8000 SE 20<sup>th</sup> St

Mercer Island, WA 98040

**Property Owner:**

Wells Fargo Bank, N.A., as Trustee of The Title Holding Trust

**Wetland Resources Staff:** John Laufenberg, PWS (Principal Ecologist) and Niels Pedersen (Senior Ecologist).

**Critical Areas Determination:** Regulated features located within the subject property include Lake Washington and a storm-drain pipe buried along the east property line. Lake Washington requires a 25-foot structure setback (measure from elevation 18.6' NAVD 88). The storm pipe is classified as a piped watercourse and requires a 25-foot protective buffer.

The northern two-thirds of the subject property is located within the regulated shorelands area extending two hundred feet from the ordinary high water mark (OHWM) of Lake Washington. No wetlands were observed in the vicinity of the subject property. Two known bald eagle nests are located within 660 feet of the subject property.

**Proposed Project:** The applicant proposes to reconstruct an existing single-family residence.

**Critical Areas Impacts and Mitigation:** To accommodate redevelopment of the property, the applicant proposes to reduce the standard 25-foot buffer associated with the buried storm-drain pipe to zero feet. The proposal complies with all the requirements of the Mercer Island City Code (MICC), section 19.07.070(B)(2).

Buffer reduction is proposed within existing developed areas, and will not impact critical areas because the pipe isolates the watercourse. In an effort to improve ecological conditions within the property, the applicant proposes the following:

- to construct a green roof totaling 1,081 square feet,
- to install pervious driveway totaling 1,200 square feet,
- to remove 89 lineal feet of existing bulkhead, and
- to construct 570 square feet of sandy beach.

This proposal is expected to provide a considerable lift in ecological functions over the existing condition. Proposed ecological improvements are voluntary; no critical area impacts are proposed, and therefore no mitigation is required.

Based on correspondence with US Fish and Wildlife Service staff, this project is not expected to impact nesting bald eagles. No minimization or avoidance measures are required.



## 1.0 PROPOSED PROJECT

### 1.1 PROJECT LOCATION

**Basin:** Puget Sound

**Sub-Basin:** Water Resource Inventory Area (WRIA) 8 – Cedar/Sammamish River

**Watershed:** Lake Washington

**Sub-Watershed:** Mercer Island

The NFH redevelopment project is located at 8000 SE 20<sup>th</sup> Street, in the city of Mercer Island, Washington. *Wetland Resources, Inc.* (WRI) performed a site investigation on August 14, 2015 to locate critical areas on and in proximity to this project. The site is further located as a portion of Section 1, Township 24N, Range 4E, W.M.

Access to this site is from the south via SE 20<sup>th</sup> Street. Vegetation is a mixture of lawngrass, ornamental shrubs, and trees. The property is bound by residential development to the east and west, and by Lake Washington to the north. An existing bulkhead (mixed concrete/rockery) establishes the limits of Lake Washington along the entire perimeter of the site.



Figure 1: Vicinity Map (image source: King County iMap)

### 1.2 PROJECT DESCRIPTION

The applicant proposes to construct a new single-family residence and appurtenant structures within a developed parcel. The project requires reduction of the 25-foot piped watercourse buffer to zero feet. Buffer reduction is allowed when applicants demonstrate compliance with the provisions of MICC 19.07.070(B)(2). See section 1.4 below for a more detailed discussion describing plan compliance with the MICC.

The applicant proposes to improve ecological functions within the site by installing 1,081 square feet of “green” roof in accordance with LEED standards, 1,200 square feet of pervious material for driveway construction, to provide shoreline planting within 75 percent of the area within 20 feet of the OHWM of Lake Washington, to remove 89 lineal feet of an existing bulkhead (mixed concrete/rockery), and to install 570 square feet of sandy beach. See site plan for more detailed project information. See section 1.4 below for more detailed information regarding critical areas compliance.

### **1.3 REGULATORY SETTING**

#### **Critical Areas Compliance**

The proposed project occurs in the vicinity of waters of the state, regulated watercourses, wildlife habitat conservation areas, associated shorelands and critical area buffers. The applicant proposes to construct a new house within 660 feet of a bald eagle nest, and also to reduce the buffer associated with the piped watercourse.

The City of Mercer Island requires that applicants submit a critical area report for all development activities that require buffer width reductions or when alterations are proposed within wildlife habitat conservation areas.

This report meets the minimum requirements for critical area reports as defined in Mercer Island City Code (MICC) section 19.07.050.

#### **Shoreline Master Program Compliance**

The subject property is located within the Urban Residential shoreline environment (source: Appendix F Mercer Island Shoreline Master Program). Pursuant to MICC 19.07.110(D) *Table A*, Single-family dwellings, including accessory uses and structures are considered categorically exempt development. No shoreline substantial development permit has been prepared for this project.

MICC 19.07.110(E)(1) *Table C* states specific requirements for development in the vicinity of the OHWM, including structure setbacks, height limits, maximum impervious surface coverage, etc. No structures are located within 25 feet of the OHWM, or in excess of 35 feet in height. Impervious surface coverage is less than 10 percent from 0-25 feet from the OHWM, and less than 30 percent between 25 and 50 feet. This project complies with all bulk standards set forth in the shoreline master program.

MICC 19.07.110(E)(9)(d)(i) states that new development adding over 1,000 square feet of additional gross floor area or impervious surface is required to provide native vegetation coverage over 75 percent of the area from 0-20 feet from the OHWM. The applicant proposes to plant this required area. See *Appendix D - Critical Area Study Maps*.

#### **Other Agency Jurisdiction**

In addition to local regulations, the project is subject to federal and state regulations pertaining to aquatic environments and bald eagle habitat. Federal regulations related to streams and deepwater habitats include Sections 404 and 401 of the Clean Water Act (US Code, Title 33, Section 1344 [22 USC 1344]). The U.S. Army Corps of Engineers (USACE) regulates rivers, wetlands, streams, and drainage features that meet federal criteria to be classified as waters of the United States. In Washington State, the Department of Ecology (Ecology) administers Section

401 of the Clean Water Act (Water Quality Certification). US Fish and Wildlife Service (USFWS) authority to regulate eagle habitat is based on the Bald and Golden Eagle Protection Act. Certain projects require “take” permits, which are issued by USFWS.

The Washington Dept. of Fish and Wildlife (WDFW) regulates activities within state waters pursuant to the Revised Code of Washington (RCW), Hydraulic Code (Chapter 77, Section 55). The state delegates authority to WDFW to protect and prevent damage to Washington State’s fish, shellfish, and their habitat. The law requires that any construction activity impacting the bed or flow of state waters be conducted under the terms of Hydraulic Project Approval (HPA). State waters include all marine waters and fresh waters of the state, with the exception of artificial watercourses such as irrigation ditches, canals, and stormwater runoff devices. Furthermore, the beds of most navigable freshwater rivers and streams are under the jurisdiction of the Washington Department of Natural Resources (WDNR).

#### **1.4 CRITICAL AREA IMPACTS AND MITIGATION**

To accommodate the proposed single-family residence and appurtenant structures, the standard 25-foot piped watercourse buffer must be reduced. MICC 19.07.060(B)(1) states that the minimum buffer width for piped watercourses is “determined by the code official.” In the absence of specific guidance (defined minimum buffer width), the applicant proposes to reduce the buffer to zero feet. No permanent structures will be built over the piped watercourse; future opportunities to restore the piped watercourse are preserved.

Buffer reduction is allowed only after the applicant has demonstrated compliance with specific requirements set forth in MICC 19.07.060(B)(2)(a). The following narrative supports the buffer width reduction proposal. All relevant code sections are re-stated (indented, italicized), immediately followed by the applicant’s response (normal font).

*The code official may allow the standard buffer width to be reduced to not less than the above listed minimum width in accordance with an approved critical area study when he/she determines that a smaller area is adequate to protect the watercourse,*

The regulated critical area is a buried pipe. The ground surface within 25 feet of the pipe’s location provides no ecological benefit to the pipe, because the pipe isolates it. Any alteration of the area within 25 feet of the buried pipe would have no impact on the watercourse. Therefore, a smaller buffer width does not change the current level of protection, and would be considered adequate to protect the watercourse.

*the impacts will be mitigated by using combinations of the below mitigation options [referencing 19.070.070(B)(2)(b)(i)-(x)],*

MICC 19.16 states that buffers are *a designated area adjoining a critical area intended to protect the critical area from degradation*. The applicant asserts that buffers exist to protect critical areas, and that mitigation is required to offset direct impacts to critical areas. In this case, proposed buffer width reduction does not alter the condition or functions of the piped watercourse. Development within 25 feet would have no effect on the critical area, because it is isolated. This project does not propose impacts to critical areas, and therefore the imperative to provide mitigation is absent.

The applicant’s dedication to environmental stewardship is demonstrated by the proposal to improve habitat function within the site using a combination of the options presented in MICC 19.070.070(B)(2)(b)(i)-(x), specifically 19.070.070(B)(2)(b)(vi) installation of pervious material for

driveway or road construction, and 19.070.070(B)(2)(b)(vii) use of “green” roofs in accordance with the standards of the LEED Green Building Rating System.

Additionally, the applicant proposes to install native plants between zero and 20 feet from the OHWM of Lake Washington that will provide 75 percent coverage (as required mitigation for the increase in the footprint of the new home). The applicant also proposes to remove 89 lineal feet of bulkhead (mixed concrete/rockery), and will install 570 square feet of sandy beach. These actions are expected to improve ecological functions relative to the pre-development condition.

*and the proposal will result in no net loss of watercourse and buffer functions.*

The area proposed for buffer reduction consists of open water (Lake Washington), maintained lawn, impervious surface, ornamental shrubs, and a vegetable garden. Lake Washington is currently regulated and protected by MICC 19.07.110. As previously stated, the ground surface landward of the OHWM provides no ecological protection to the buried pipe. Therefore the existing condition and proposed reduction are equivalent in terms of their impact to watercourse and buffer functions. The proposed development, being equivalent to the existing condition, will result in no net loss of watercourse and buffer functions.

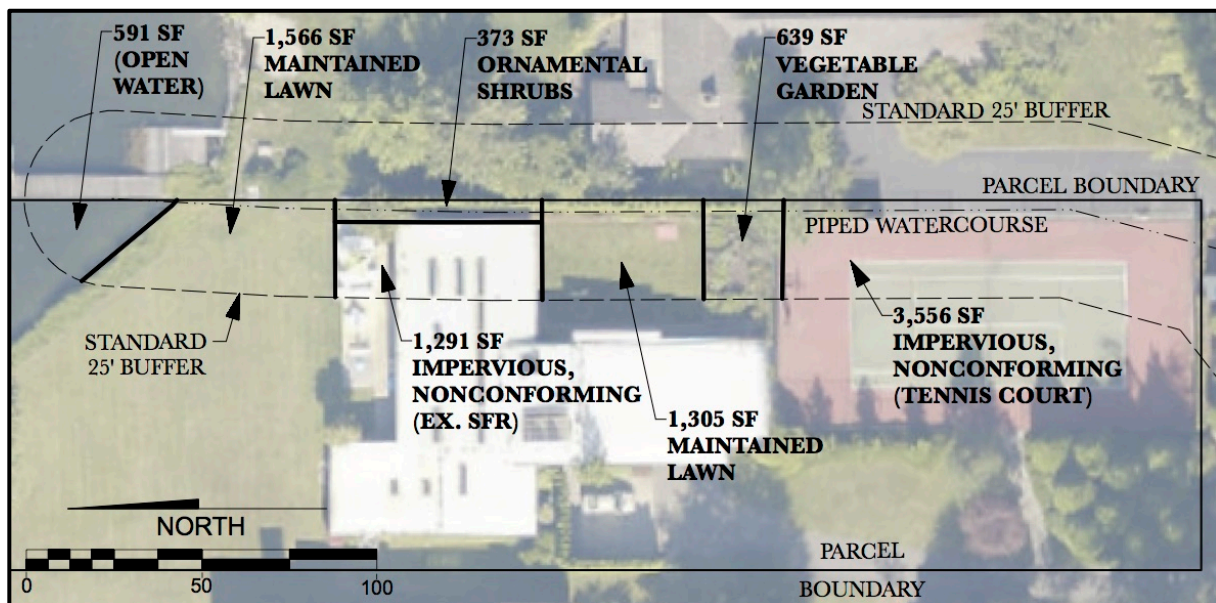


Figure 2: Piped Watercourse Buffer Area Overview

*However, in no case shall a reduced buffer contain a steep slope.*

Not applicable. No steep slopes are present within the proposed buffer reduction area.

The buffer width reduction proposal unambiguously meets or exceeds all MICC standards, and should be allowed.

### 1.5 PROPOSED ECOLOGICAL IMPROVEMENTS

The applicant proposes to remove 89 lineal feet of the existing bulkhead along Lake Washington. A new sand beach will be installed totaling 570 square feet of the shoreline. See Figure 3 below.

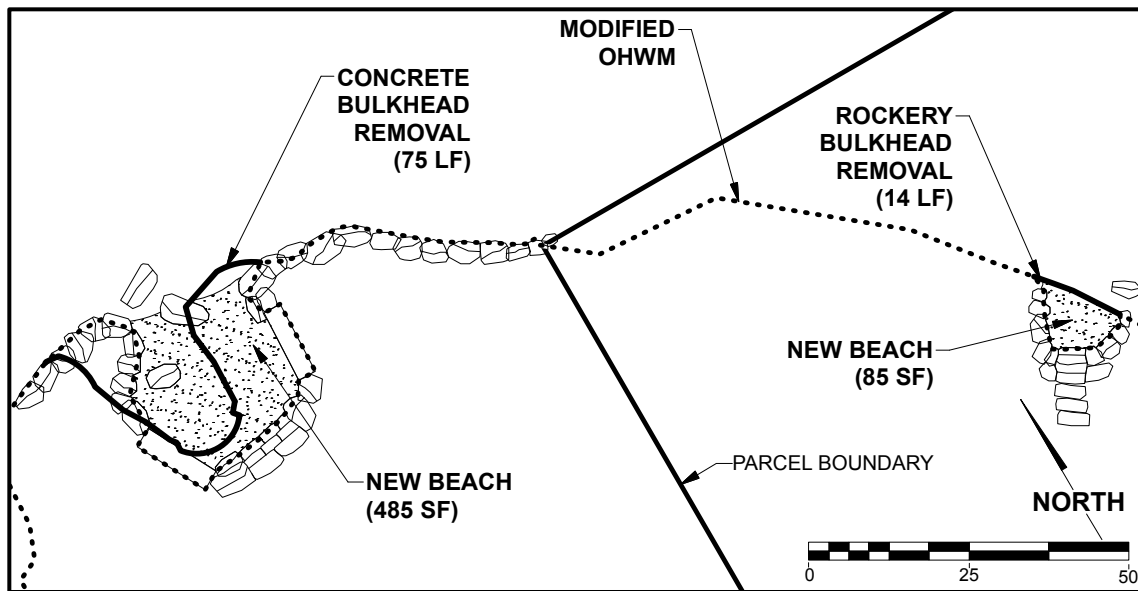


Figure 3: Proposed Bulkhead Removal Overview

## 2.0 METHODOLOGY

### 2.1 LIMIT OF STUDY

The proposed project occurs within one 0.86-acre parcel (8000 SE 20<sup>th</sup> Street). The property owner also owns the adjacent parcel to the west (7840 SE 20<sup>th</sup> Street) Lack of legal access to additional parcels in the vicinity of the subject property prevents Wetland Resources, Inc. (WRI) staff from performing routine wetland/OHWM determinations in surrounding areas. Critical area boundaries depicted outside of the owned parcels are estimated using best professional judgment, and are based on visual observation from the edge of legal access.

### 2.2 CRITICAL AREAS CLASSIFICATION

Critical areas were classified in accordance with the standards set forth in MICC 19.07.070 for watercourses, section 19.07.080 for wetlands, 19.07.090 for wildlife habitat conservation areas, and 19.07.110 for shoreline areas. Identification of geologic hazard areas is beyond the scope of this report. Buffers are measured horizontally in a landward direction from the critical area boundary.

### 2.3 WETLAND DETERMINATION AND DELINEATION

Wetland boundaries were determined using the routine determination 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), as required by MICC 19.07.080(A). Under the routine methodology, the process for making a wetland determination is based on three steps:

- 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

The following criteria must be met in order to make a positive wetland determination.



## **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**

Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on the characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively. The strongest indicators include the presence of surface water, a high water table, and/or soil saturation within at least 12 inches of the soil surface.

## **2.4 WETLAND DETERMINATION DISCUSSION**

No wetlands were observed within the subject property during the August site visit. An additional site visit was conducted in December to verify the accuracy of this finding based on review third-party review comments. Soils were sampled in the three wettest areas of the site during the December site visit. Wetland hydrology was absent from all sample point locations during both the August and December site visits. Further discussion is provided below in the section titled *Wetland Determination Findings*.

## **2.5 WATERCOURSE DETERMINATION**

All watercourses observed within the project area were located in the field and are depicted on the attached maps (Appendix D). The OHWM of Lake Washington was delineated in the field using the methodology described in the Washington State Department of Ecology document Determining the Ordinary High Water Mark on Streams in Washington State (Second Review Draft) (Olson and Stockdale 2010).

MICC 19.16.010 – *definitions* states that for determining structure setbacks, the OHWM is tied to 18.6’ NAVD 88. The attached maps depict the survey-based OHWM only, as the goal of this project is to determine structure setbacks.

## **2.6 WATERCOURSE DETERMINATION DISCUSSION**

The Army Corps of Engineers controls the surface elevation of Lake Washington so that winter levels are approximately two feet lower than summer levels. The final fill target (highest surface

elevation) is typically reached in the beginning of June, to meet increased demand for water use. Field investigation occurred on August 14, 2015. Therefore the site investigation occurred at the same time as peak surface elevation for the lake.

Based on observations made during the August 14, 2015 site visit, the ordinary high water mark of Lake Washington clearly lies at the face of the existing bulkhead along the northern portion of the property. The location of the bulkhead was surveyed as part of the scope of this work. All attached maps use the face of the bulkhead as the point of offset for required buffers. However, as previously stated the 25-foot building setback is based on the lake elevation 18.6' NAVD 88.

An existing storm-drain pipe in the eastern portion of the site is classified as a piped watercourse. The alignment of the pipe was surveyed as part of the scope of this work. The centerline of the pipe is the basis for offsetting required buffers. No formal ordinary high water mark delineation methodology exists for piped watercourses.

## **2.7 WILDLIFE HABITAT CONSERVATION DISCUSSION**

Areas used by bald eagles for nesting, breeding, feeding and survival are designated by the City of Mercer Island as wildlife habitat conservation areas. Two known bald eagle nests are located in the western portion of Luther Burbank Park (near Calkins Point). The nests are at no point closer than 485 feet from the edge of the subject property. It is not known if a clear line of sight exists between the nest and the subject property. For the purpose of this study it is conservatively presumed that a direct line of sight exists.

MICC 19.07.090(B) states that buffers may be established for wildlife habitat conservation areas listed by the state Department of Fish and Wildlife as threatened or endangered species. Based on the 2012 Annual Report for Threatened and Endangered Wildlife (WDFW 2013a), the state listing status for bald eagles was downgraded from threatened to sensitive in 2008. Therefore it is expected that the City of Mercer Island does not require buffers to protect bald eagles. Furthermore, state bald eagle protection rules were amended in 2011 to apply to eagles only when they are listed as threatened or endangered. State bald eagle management plans are no longer required.

Bald eagles are still protected by federal law under the Bald and Golden Eagle Protection Act. The Act grants permit authority to the US Fish and Wildlife Service over activities conducted in the vicinity of an eagle's nest and/or roost. For building and home construction, a project may require a federal permit if certain specific criteria are met. That criteria is described on the USFWS website, Pacific Region, under *Eagles in the Pacific Northwest*. Generally, eagles are thought to be more sensitive to disturbance during the nesting period (January 1<sup>st</sup> to August 31<sup>st</sup>). When work is proposed during this period, minimization/avoidance measures are prescribed by USFWS on a case-by-case basis.

The proposed project occurs between 485 and 700 feet from the known nest locations (based on the City of Mercer Island IGS map titled *Properties Affected by Bald Eagles - 4/26/16*). See Figure 4 below. The project is scheduled to take between 10 and 24 months to complete. Work is proposed through up to two nesting seasons. Based on email communication with USFWS staff Mark Miller (USFWS Washington Wildlife Office), no permit is required for this project. Furthermore, no avoidance/minimization measures are required by USFWS. Documentation of

this correspondence is provided as Appendix A *USFWS Bald Eagle Impact Minimization Correspondence*.

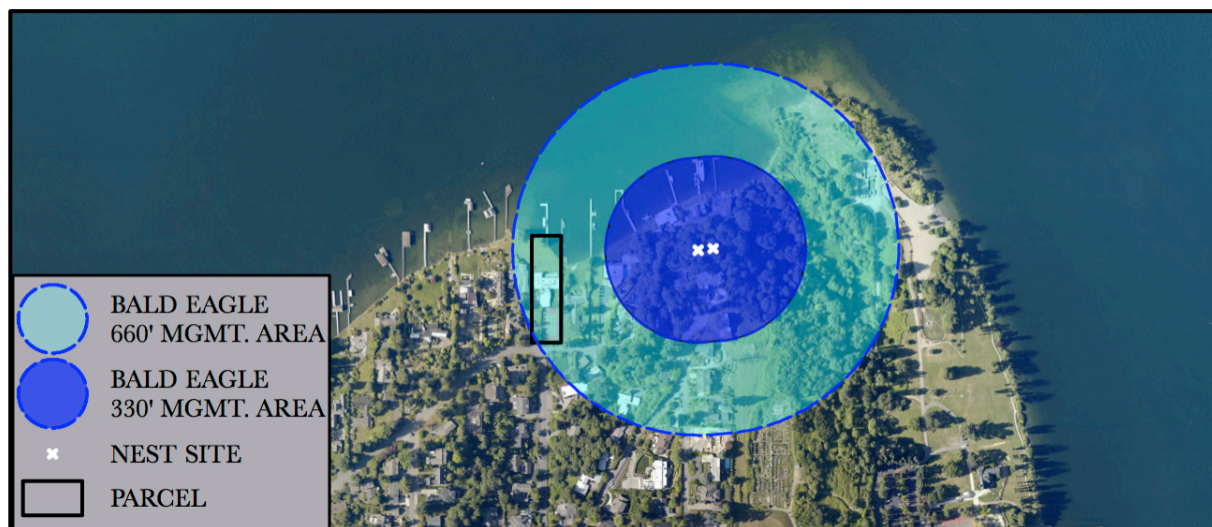


Figure 4: USFWS Eagle Disturbance Thresholds (image source: King County GIS)

### 3.0 WETLAND AND STREAM DELINEATION REPORT

WRI was contracted by NFH to delineate and catalogue regulated features within and in the vicinity of the subject property. No wetlands were observed in the study area. Two regulated features were observed: Lake Washington and a piped watercourse (storm drain). These features are depicted in the attached critical area study maps (See Appendix B). Lake Washington is a shoreline of statewide significance, and requires a 25-foot structure setback from the OHWM (survey-based, 18.6' NAVD 88). The piped watercourse is a buried storm drain, and requires a 25-foot protective buffer in the City of Mercer Island.

#### 3.1 REVIEW OF EXISTING INFORMATION

Prior to conducting the on-site investigations, public resources information was reviewed to gather background information on the project study area and surrounding areas in regards to wetlands, streams, and other critical areas.

#### USFWS National Wetlands Inventory

No wetlands are depicted in the vicinity of the project area.

#### King County Soils

The Natural Resources Conservation Service (NRCS) web soil survey and the 2014 national hydric soil list by state were used to identify soil types in the project area, and state their hydric properties. Kitsap silt loam is the only mapped soil type in the project area. The following table describes the hydric component percentage found in the mapped soil type. The likelihood that a given map unit is a hydric soil is partly based on the percentage of hydric components found in the soil type.

Map Unit Name	Hydric Component	Component Percentage
Kitsap silt loam	Bellingham	3



	Tukwila	1
	Seattle	1

Table 1: Mapped Soils in the Project Area

### **Fish Presence**

The Washington Department of Fish and Wildlife (WDFW), Pacific States Marine Fisheries Commission (PSMFC), and the Washington Dept. of Natural Resources (WADNR) are the primary agencies that provide publicly available information used for making fish presence determinations consistent with the water typing rules set forth in WAC 222-16-030. The following information represents the findings from each source.

### **WDFW SalmonScape Map Tool**

SalmonScape is an online GIS database that contains publicly available resource information for fish population studies and general species distribution (both documented and modeled presence).

Within Lake Washington, the following species are depicted:

- fall chinook (documented presence),
- coho salmon (documented presence),
- winter steelhead trout (documented presence),
- sockeye salmon (documented presence),
- bull trout (documented rearing),
- kokanee salmon (documented presence),

### **PSMFC StreamNet Map Tool**

StreamNet is a fish distribution database maintained by the PSMFC as a regional clearinghouse for fish data. In the vicinity of the project area, fish presence is only depicted within Lake Washington. StreamNet states the presence of the following species:

- fall chinook (migration only)
- summer chinook (spawning and rearing)
- coho salmon (migration only)
- chum salmon (migration only)
- pink salmon (migration only)
- sockeye salmon (migration only)
- summer steelhead trout (migration only)
- winter steelhead trout (migration only)
- bull trout (migration only)

### **WDNR Forest Practices Activity Mapping Tool (FPAMT)**

FPAMT is an online GIS database that aids the process of submitting a Forest Practices Permit application. The tool is useful for the purposes of this study because WADNR models fish presence. FPAMT depicts the occurrence of the following species within Lake Washington:

- fall chinook (migration)
- coho (migration only)
- sockeye salmon (migration only)
- winter steelhead (migration only)

- bull trout (rearing and migration)

### **City of Mercer Island Critical Areas**

In the vicinity of the project area, the City of Mercer Island depicts the subject property within 660 feet of two bald eagle nests.

### **WDFW Priority Habitat and Species (PHS) Maps**

WDFW PHS maps depicts priority bald eagle nesting habitat and wetland habitat several hundred feet east of the subject property. No further discussion of the depicted wetlands is provided given the large physical distance from the subject property.

### **Field Investigation**

Field delineation occurred on August 14, 2015. An additional site visit was conducted on December 15, 2016 to assess conditions between the existing house and the Lake Washington shoreline.

### **3.2 WETLAND DETERMINATION FINDINGS**

The third-party reviewer hired by the City of Mercer Island for this project (ESA) conducted a site visit on November 23, 2016, to aid in review of the applicant's proposal. ESA staff drafted a review letter (date: 12.7.16, subject line: Proposed NFH Single Family Residence (CA016-002) – Environmental Review) noting areas to the west, northwest, and north of the existing residence with soils saturated to the surface. The letter requests additional documentation of existing conditions, including formal data plots, and a map that indicates data plot locations. Formal Corps Wetland Determination Data Forms are provided (S1-S3) as Appendix B. Data plot locations are depicted in Figure 5 below.

Wetland Resources staff (Scott Brainard, Niels Pedersen) conducted a site visit on December 15, 2016 to document soil, vegetation, and hydrologic conditions within the lawn area. In response to the concerns expressed by ESA staff, formal data plot locations were selected in the three wettest areas of the site; in localized minor depressions where soils exhibited the greatest compression-and-rebound effect underfoot. These areas are depicted in Figure 5 below. Data points were located in the field using high-accuracy Trimble GPS, and are overlaid on a geo-referenced aerial image of the subject property (Figure 5). GPS point accuracy was very high; 60% of all GPS positions were accurate to 5-15 centimeters.



Figure 5: Data Plot Locations

Vegetation within the lawn consisted entirely of regularly maintained grasses and forbs (labeled *Agrostis* sp. on the data forms). The absence of flowering bodies prevented staff from identifying grasses to species, a necessary component when making a formal hydrophytic vegetation determination. The 2010 Western Mountains, Valleys, and Coast (WMVC) Regional Supplement describes procedures for specific problematic hydrophytic vegetation determinations in disturbed areas (in this case managed plant communities). The guidance ultimately recommends making the wetland determination based on indicators of hydric soil and wetland hydrology.

The lawn is in close proximity to the current OHWM of Lake Washington. It is generally accepted that construction of the Chittenden Locks lowered the historic lake elevation by 8.8 feet. It is presumed that the study area was either waterward of the OHWM of Lake Washington prior to 1916, or within a hyporheic zone at the fringe of the lake. This fact confounds the

documented presence of hydric soil indicators, because the soil profile formed under very different hydrologic conditions than currently exist. The 2010 WMVC Regional Supplement describes procedures for difficult situations, including problematic hydric soil indicators (in this case soils with relict hydric soil indicators). The guidance ultimately states that where indicators of hydrophytic vegetation and wetland hydrology are present, hydric soil indicators can be assumed to be contemporary. All sample points (S1-S3) met hydric soil indicator F3-Depleted Matrix. Sample points S2 and S3 also met indicator F6-Redox Dark Surface. The investigators assert that hydric soil indicators are met based on historic and not contemporary conditions. This assessment is further supported by the absence of hydrology during the site visit.

Sample points S1-S3 were consistently moist in the upper part (from the surface to 4-8 inches below the mineral soil surface) and dry below. Soils were not saturated during the site visit. No water table was observed beneath the moist areas. Photos were taken at each soil pit approximately 10 minutes after excavation. See *Appendix C - Sample Point Photos*. No indicators of wetland hydrology were observed during the December site visit within any of the three sample pits.

A hydrophytic vegetation determination was not possible due to the ongoing disturbance regime at the site (regular lawn maintenance). A defensible hydric soils determination is not possible due to the landscape position of the study area and the site's history. The study area presents a difficult wetland determination situation based on disturbed vegetation and problematic soils.

Despite the difficulties associated with this determination, the investigators did have the benefit of visiting the site during a very wet period in the water year. To substantiate a non-wetland determination based on hydrology only, analysis of weather conditions leading up to the site visit is critical.

The 2010 WMVC Regional Supplement directs the user to consider the possibility that a site visit occurred during a period where rainfall was not "normal." The method described on page 118 of the Supplement employs precipitation data from the historic record for the "two to three months preceding the site visit." The user is asked to compare observed precipitation data from the same period to determine whether precipitation is below normal, normal, or above normal.

Historic precipitation data was obtained from The WETS table for the weather station located closest to the subject property (Sand Point weather station, accessed via <http://agacis.rcc-acis.org/?fips=53033>). This data is presented as Table 2 below. Current Precipitation data for the two months preceding the site visit was obtained from the National Weather Service Forecast Office (Sand Point weather station, accessed via <http://w2.weather.gov/climate/index.php?wfo=sew>). This data is presented as Table 3 below.

USDA Field Office Climate Data									
WETS Station : SEATTLE SAND PT WSFO, WA290					Creation Date: 06/22/2016				
Latitude: 4741			Longitude: 12215		Elevation: 00060				
State FIPS/County(FIPS): 53033				County Name: King					
Start yr. - 1971		End yr. - 2000							
Month	Temperature (Degrees F.)			Precipitation (Inches)					
	avg daily max	avg daily min	avg	avg	less than	30% chance will have	more than	avg # of days w/.1 or more	total snow fall
January	46.4	35.2	40.8	4.49	3.07	5.36	12	0.4	
February	49.7	36.2	43.0	3.67	2.43	4.40	8	0.4	
March	53.6	38.1	45.9	3.84	2.95	4.45	11	0.0	
April	58.3	41.8	50.1	2.84	2.04	3.36	9	0.0	
May	64.5	47.3	55.9	2.10	1.49	2.49	7	0.0	
June	69.4	51.7	60.6	1.68	0.99	2.04	5	0.0	
July	75.0	55.4	65.2	0.97	0.49	1.19	3	0.0	
August	75.8	56.5	66.2	0.97	0.43	1.18	3	0.0	
September	70.5	52.4	61.5	1.71	0.59	2.05	4	0.0	
October	60.2	46.3	53.3	3.32	1.85	4.04	8	0.0	
November	51.5	40.2	45.9	4.92	3.59	5.80	13	0.0	
December	46.0	35.4	40.7	5.45	3.86	6.45	11	2.1	
Annual					32.57	38.86			
Average	60.1	44.7	52.4						
Average				35.96			79	0.3	

Table 2: WETS Table for Sand Point WSFO

October 2016			
Weather Parameter	Total For Month	Normal Value	Departure From Normal
Precipitation (Inches)	10.30	3.41	6.89

November 2016			
Weather Parameter	Total For Month	Normal Value	Departure From Normal
Precipitation (Inches)	7.71	5.84	1.87

Table 3: Observed Precipitation (Sand Point WFO)

The Supplement describes the upper limits of “normal” as the column labeled “Precipitation (Inches)” → “30% chance will have” → “more than” → X. Based on analysis of observed versus historic precipitation, it is apparent that precipitation is far “above normal” for the month of October, and easily “above normal” for the month of November. In the first two weeks of December leading up to the WRI site visit, an additional 1.5 inches of precipitation fell, with no measurable precipitation for two consecutive days prior to the site visit. It is also worth noting that ESA conducted their site visit after four consecutive days of measurable rainfall, with a statistically significant 0.66 inches of precipitation falling in the 24-hour period prior to the site visit.

Precipitation in the period leading up to the site visit was above normal from a statistical perspective. The absence of hydrology indicators during the December 15 site visit, in consideration of climatic conditions, strongly supports the non-wetland determination made at sample points S1-S3. No wetlands are present within the subject property.

### **3.3 WATERCOURSE DETERMINATION FINDINGS**

#### **Lake Washington**

**Jurisdiction:** USACE, City of Mercer Island, WDFW, Ecology, DNR

**Cowardin Class:** Lacustrine, Limnetic, Unconsolidated Bottom

**Classification:** Shoreline of Statewide Significance

**City of Mercer Island Setback Requirement:** 25 feet

Lake Washington is a 21,600-acre waterbody that drains much of WRIA 8. Waterbodies that exceed 1,000 acres in total size are recognized as shorelines of statewide significance (WAC 173-20). The area extending 200 feet from the ordinary high water mark of Lake Washington is considered the shoreland area, and development within this zone is subject to the provisions of the Mercer Island Shoreline Master Program (MICC 17.09.110). In Mercer Island, Lake Washington requires a 25-foot structure setback, measured from elevation 18.6’ (NAVD 88).

Lake Washington provides habitat for many aquatic species, including: bull trout, pink salmon, sockeye salmon, summer steelhead, winter steelhead, chum salmon, coho salmon, fall Chinook, and summer Chinook. Lake Washington is a primary association area for federally listed threatened and endangered species (chinook, bull trout).

#### **Stream A (Storm Drain Pipe)**

**Jurisdiction:** City of Mercer Island

**Cowardin Class:** N/A

**Watercourse Type (MICC):** Piped Watercourse

**City of Mercer Island Standard Buffer Requirement:** 25 feet

Stream A is a piped channel located along the east side of the subject property. The pipe outlets directly to Lake Washington. The watercourse is mapped by the City of Mercer Island as a piped watercourse. In the City of Mercer Island, piped watercourses require 25-foot protective buffers.

## 4.0 OTHER CRITICAL AREAS

### 4.1 GEOLOGIC HAZARD AREAS

Geologic Hazard Areas are regulated pursuant to MICC 19.07.060. Identification of geologic hazard areas is beyond the scope of this work.

#### **Geologic Hazard Areas:**

Areas susceptible to erosion, sliding, earthquake, or other geological events based on a combination of slope (gradient or aspect), soils, geologic material, hydrology, vegetation, or alterations, including landslide hazard areas, erosion hazard areas and seismic hazard areas.

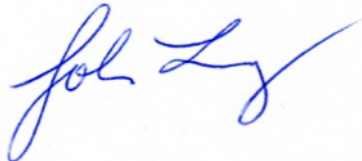
## 5.0 USE OF THIS REPORT

This Critical Area Study and Mitigation Plan is supplied to NFH as a means of determining critical area conditions, as required by the City of Mercer Island during the permitting process. 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 wetlands 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.*



John Laufenberg  
*Principal Ecologist, PWS #1742*

*Wetland Resources, Inc.*



Niels Pedersen  
*Senior Ecologist*



## 6.0 REFERENCES

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## Appendix A

USFWS Bald Eagle Impact Minimization Correspondence

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**APPENDIX A - CORRESPONDENCE WITH USFWS STAFF  
REGARDING BALD EAGLE MINIMIZATION REQUIREMENTS FOR  
*NFH - 8000 SE 20TH ST SFR***

From: Miller, Mark [[mailto:mark\\_miller@fws.gov](mailto:mark_miller@fws.gov)]  
Sent: Friday, August 05, 2016 12:09 PM  
To: Nanda Patel <[Nanda@allworthdesign.com](mailto:Nanda@allworthdesign.com)>  
Subject: Re: Project on Mercer Island

Good Afternoon Nanda

**NO RESTRICTIONS OR  
MINIMIZATIONS REQUIRED**



I have reviewed the site plans for construction of a single family residence at 8000 SE 20th St. on Mercer Island, WA in the WDFW PHS database and in Google Earth. Based on the plans and our phone conversation, you may proceed with the project with no restrictions or minimization measures for nesting bald eagles.

If you have questions or the project changes, please contact me.

Thank you for your efforts to conserve bald eagles.

Mark

Mark G. Miller  
Washington Fish and Wildlife Office  
510 Desmond Dr.  
Lacey, WA 98503  
(360) 534-9347

On Tue, Oct 6, 2015 at 4:56 PM, Nanda Patel  
<[Nanda@allworthdesign.com](mailto:Nanda@allworthdesign.com)<<mailto:Nanda@allworthdesign.com>>> wrote:  
Hello Mark,

We are a landscape architecture firm in Seattle and are doing code search for a potential project on Mercer Island. The address is 8000 SE 20th St. Mercer Island, WA, 98040.

On the bald eagle nest plan there are two nest #1 and #2 within the 660 feet buffer zone. When I look at the bald eagle territory history, nest #1 mentions "destroyed" in 2006 and nest #2 "unoccupied, no birds, nest unrepaired" in 2012 (report attached). Does that mean there are no bald eagles in these two nests?

If there is going to be construction activity on site, do we still need to follow any precautions, restrictions on any construction activities during certain times of the year etc.?

Thank you very much for your response.

Sincerely,

nanda patel, LEED AP  
allworth design  
206.623.7396

[www.allworthdesign.com](http://www.allworthdesign.com)<<http://www.allworthdesign.com>>

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Appendix B

Army Corps Wetland Determination Data Forms  
(S1-S3)

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

Project/Site: NFH - SE 20th St City/County: Mercer Island/King County Sampling Date: 12/15/2016  
 Applicant/Owner: Conard Romano Architects/NFH State: WA Sampling Point: S-1  
 Investigator(s): Niels Pedersen, Scott Brainard Section, Township, Range: S1, T24N, R04E, WM  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): >3  
 Subregion (LRR): A Lat: 47.593328 Long: -122.231661 Datum: NAD83  
 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 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: The sample area is regularly maintained. The unmanaged vegetation condition cannot be determined. Observed soils are consistent with relict conditions. Absence of hydrology during the wet season supports a non-wetland determination.	

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

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: 5m <sup>2</sup> )					
1. <u>None</u>				<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>0</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)	
2. _____					
3. _____					
4. _____					
	<u>0</u>	= Total Cover			
<b>Sapling/Shrub Stratum</b> (Plot size: 3m <sup>2</sup> )					
1. <u>None</u>				<b>Prevalence Index worksheet:</b> 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			
<b>Herb Stratum</b> (Plot size: 3m <sup>2</sup> )					
1. <u>Agrostis sp.</u>	<u>100</u>	<u>Y</u>	<u>No ID</u>		
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
	<u>100</u>	= Total Cover			
<b>Woody Vine Stratum</b> (Plot size: 3m <sup>2</sup> )					
1. <u>None</u>					
2. _____					
	<u>0</u>	= Total Cover			
<b>% Bare Ground in Herb Stratum</b> <u>0</u>					

Remarks:  
 Agrostis on the site is a managed plant community (mowed) and was not identified to species due to the absence of flowering bodies. The unmanaged condition cannot be determined. The wetland determination is based on hydrology.

**SOIL**

Sampling Point: S-1

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

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-4	2.5Y 3/2	95	10YR 4/6	5	C	M	sandy loam	moist, fine-grain
4-15	10Y 5/1	70	10YR 4/6	30	C	M	sandy loam	dry

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

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <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)	<p> <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 checked="" type="checkbox"/> Redox Dark Surface (F6)  <input type="checkbox"/> Depleted Dark Surface (F7)  <input type="checkbox"/> Redox Depressions (F8)         </p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <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)
--	--	---

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

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

Remarks:  
 S-1 is likely below the historic OHWM of Lake Washington. It is the assertion of the investigators that observed hydric soil indicators represent historic conditions. If indicators of wetland hydrology were present, it could be assumed that hydric soil indicators are contemporary; their absence during the wet season supports a relict indicator determination.

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p>Primary Indicators (minimum of one required; check all that apply)</p> <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)		<p> <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)         </p>	<p>Secondary Indicators (2 or more required)</p> <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)
---	--	--	---

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

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

Remarks:  
 Observed soils were not saturated and no water table was present. No oxidized rhizospheres along living roots were present. Observed precipitation compared with WETS data suggests that above normal precipitation occurred in Oct. '16 and Nov. '16. Precip. was below normal in the two weeks prior to the investigation (2.70" normal, 1.63" observed).



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

Project/Site: NFH - SE 20th St City/County: Mercer Island/King County Sampling Date: 12/15/2016  
 Applicant/Owner: Conard Romano Architects/NFH State: WA Sampling Point: S-2  
 Investigator(s): Niels Pedersen, Scott Brainard Section, Township, Range: S1, T24N, R04E, WM  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): >3  
 Subregion (LRR): A Lat: 47.593328 Long: -122.231661 Datum: NAD 83  
 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 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: The sample area is regularly maintained. The unmanaged vegetation condition cannot be determined. Observed soils are consistent with relict conditions. Absence of hydrology during the wet season supports a non-wetland determination.	

## VEGETATION – Use scientific names of plants.

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

Remarks:  
 Agrostis on the site is a managed plant community (mowed) and was not identified to species due to the absence of flowering bodies. The unmanaged condition cannot be determined. The wetland determination is based on hydrology.

**SOIL**

Sampling Point: S-2

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

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-8	2.5Y 3/2	85	10YR 4/6	15	C	M	silt loam	Moist, gravelly
8-15	5Y 4/1	85	10YR 4/6	15	C	M	silt loam	Dry, not gravelly

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: 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)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<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 checked="" 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)

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

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes  No

Remarks:  
 S-2 is likely below the historic OHWM of Lake Washington. It is the assertion of the investigators that observed hydric soil indicators represent historic conditions. If indicators of wetland hydrology were present, it could be assumed that hydric soil indicators are contemporary; their absence during the wet season supports a relict indicator determination.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<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): _____	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	

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

Remarks:  
 Observed soils were not saturated and no water table was present. No oxidized rhizospheres along living roots were present. Observed precipitation compared with WETS data suggests that above normal precipitation occurred in Oct. '16 and Nov. '16. Precip. was below normal in the two weeks prior to the investigation (2.70" normal, 1.63" observed).

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

Project/Site: NFH - SE 20th St City/County: Mercer Island/King County Sampling Date: 12/15/2016  
 Applicant/Owner: Conard Romano Architects/NFH State: WA Sampling Point: S-3  
 Investigator(s): Niels Pedersen, Scott Brainard Section, Township, Range: S1, T24N, R04E, WM  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): >3  
 Subregion (LRR): A Lat: 47.593328 Long: -122.231661 Datum: NAD83  
 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 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: The sample area is regularly maintained. The unmanaged vegetation condition cannot be determined. Observed soils are consistent with relict conditions. Absence of hydrology during the wet season supports a non-wetland determination.	

## VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: 5m <sup>2</sup> )					
1. <u>None</u>				<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>0</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)	
2. _____					
3. _____					
4. _____					
	<u>0</u>	= Total Cover			
<b>Sapling/Shrub Stratum</b> (Plot size: 3m <sup>2</sup> )					
1. <u>None</u>				<b>Prevalence Index worksheet:</b> 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			
<b>Herb Stratum</b> (Plot size: 3m <sup>2</sup> )					
1. <u>Agrostis sp.</u>	<u>100</u>	<u>Y</u>	<u>No ID</u>		
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
	<u>100</u>	= Total Cover			
<b>Woody Vine Stratum</b> (Plot size: 3m <sup>2</sup> )					
1. <u>None</u>				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants <sup>1</sup> <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <small><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>	
2. _____					
	<u>0</u>	= Total Cover			
<b>% Bare Ground in Herb Stratum</b> <u>0</u>					
Remarks: Agrostis on the site is a managed plant community (mowed) and was not identified to species due to the absence of flowering bodies. The unmanaged condition cannot be determined. The wetland determination is based on hydrology.					

**SOIL**

Sampling Point: S-3

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

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-15	2.5Y 4/1	90	10YR 4/4	10	C	M, PL	sandy loam	moist in upper part

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

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <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)	<p> <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)             </p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <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)
--	---	---

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

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

Remarks:  
 S-3 is likely below the historic OHWM of Lake Washington. It is the assertion of the investigators that observed hydric soil indicators represent historic conditions. If indicators of wetland hydrology were present, it could be assumed that hydric soil indicators are contemporary; their absence during the wet season supports a relict indicator determination.

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p>Primary Indicators (minimum of one required; check all that apply)</p> <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)		<p>Secondary Indicators (2 or more required)</p> <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)	<p> <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)             </p>
<p><b>Field Observations:</b></p> 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? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____		<p><b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	

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

Remarks:  
 Observed soils were not saturated and no water table was present. No oxidized rhizospheres along living roots were present. Observed precipitation compared with WETS data suggests that above normal precipitation occurred in Oct. '16 and Nov. '16. Precip. was below normal in the two weeks prior to the investigation (2.70" normal, 1.63" observed).

## Appendix C

Sample Point Soil Photos

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***NFH - 8000 SE 20TH ST SFR***

**APPENDIX C**

**SAMPLE POINT SOIL PHOTOS P1 (12.15.16)**

**Sample Point S-1**



P1 LOCATION



**Sample Point S-2**



P2 LOCATION



*Wetland Resources, Inc.*  
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance  
9505 19th Avenue S.E., Suite 106 Everett, Washington 98208  
Phone: (425) 337-3174  
Fax: (425) 337-3045  
Email: mailbox@wetlandresources.com

**NFH - 8000 20th St SE SFR**  
**Appendix C**  
**Sample Point Soil Photos P1**

NFH  
8000 SE 20th St  
Mercer Isl., WA 98040

Figure 1/2  
Drawn by: NP  
WRI# 15210



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***NFH - 8000 SE 20TH ST SFR***

**APPENDIX C**

**SAMPLE POINT SOIL PHOTOS P2 (12.15.16)**

**Sample Point S-3**



P3 LOCATION



**Typical subsoils  
(Sample Point S-3)**



P4 LOCATION



***Wetland Resources, Inc.***  
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**NFH - 8000 20th St SE SFR  
Appendix C  
Sample Point Soil Photos P2**

NFH  
8000 SE 20th St  
Mercer Isl., WA 98040

Figure 2/2  
Drawn by: NP  
WRI# 15210



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## Appendix D

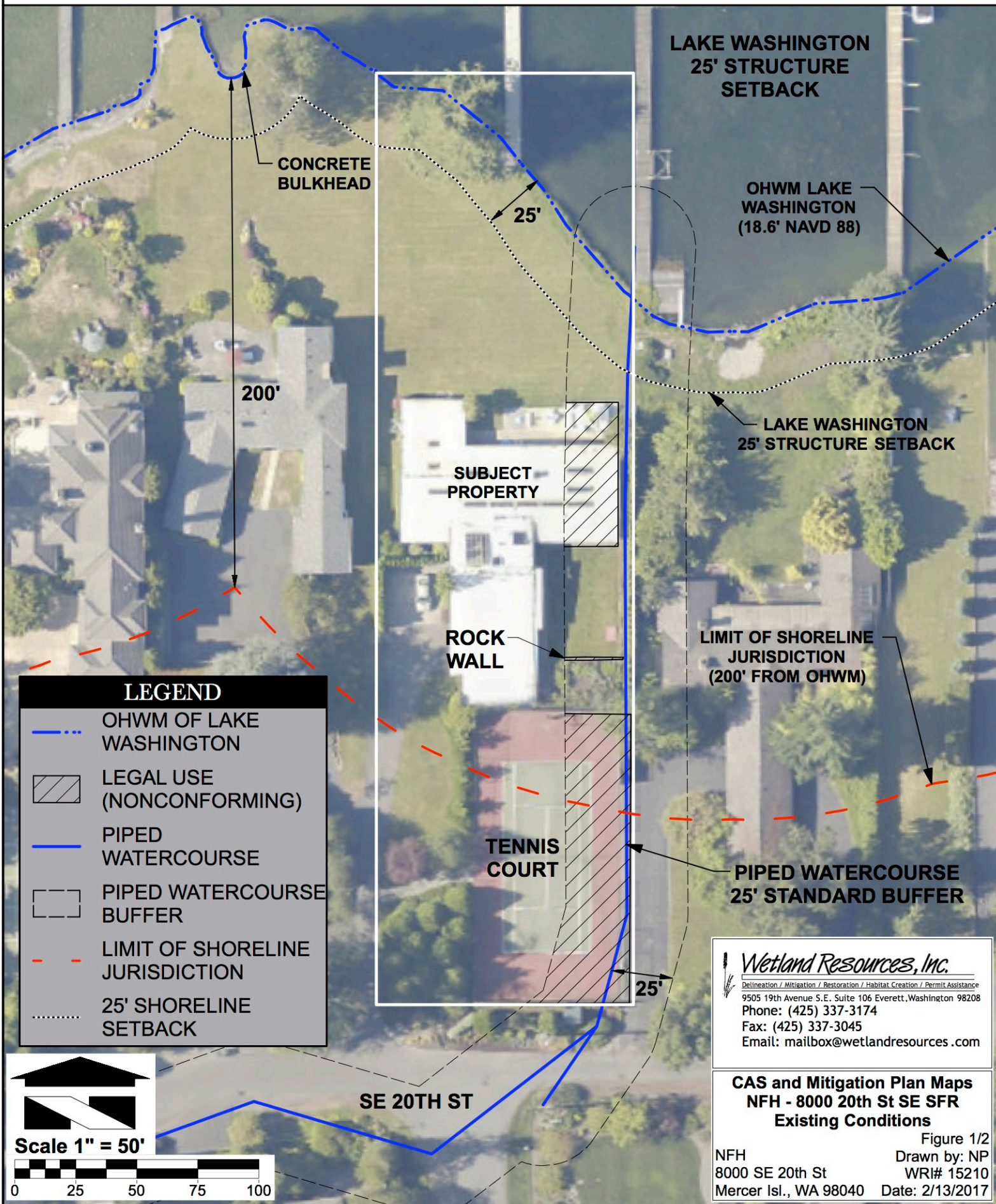
Critical Area Study and Mitigation Plan Maps  
(Existing Conditions, Proposed Ecological Improvements)

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# CRITICAL AREA STUDY AND MITIGATION PLAN MAPS

## NFH - 8000 SE 20TH ST SFR

### EXISTING CONDITIONS



**LEGEND**

- · - · - OHWM OF LAKE WASHINGTON
- / / / / / LEGAL USE (NONCONFORMING)
- PIPED WATERCOURSE
- PIPED WATERCOURSE BUFFER
- - - - - LIMIT OF SHORELINE JURISDICTION
- · - · - 25' SHORELINE SETBACK

**Scale 1" = 50'**

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**CAS and Mitigation Plan Maps**  
**NFH - 8000 20th St SE SFR**  
**Existing Conditions**

Figure 1/2  
 Drawn by: NP  
 WR# 15210

NFH  
 8000 SE 20th St  
 Mercer Isl., WA 98040

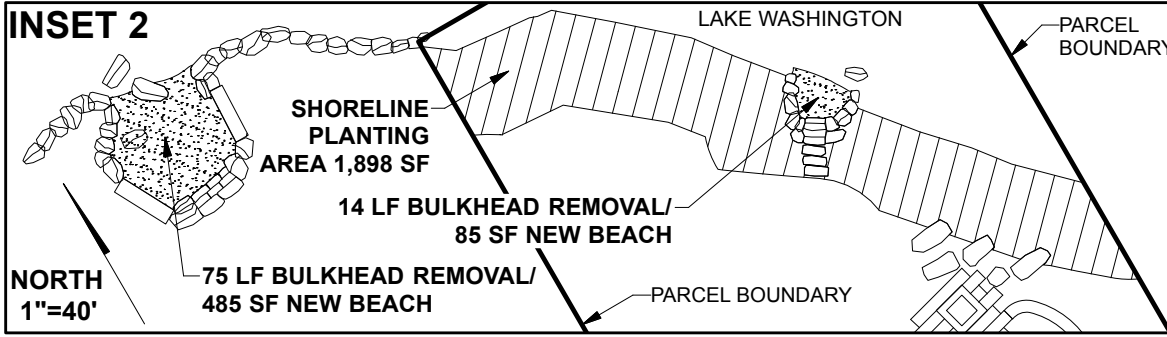
Date: 2/13/2017

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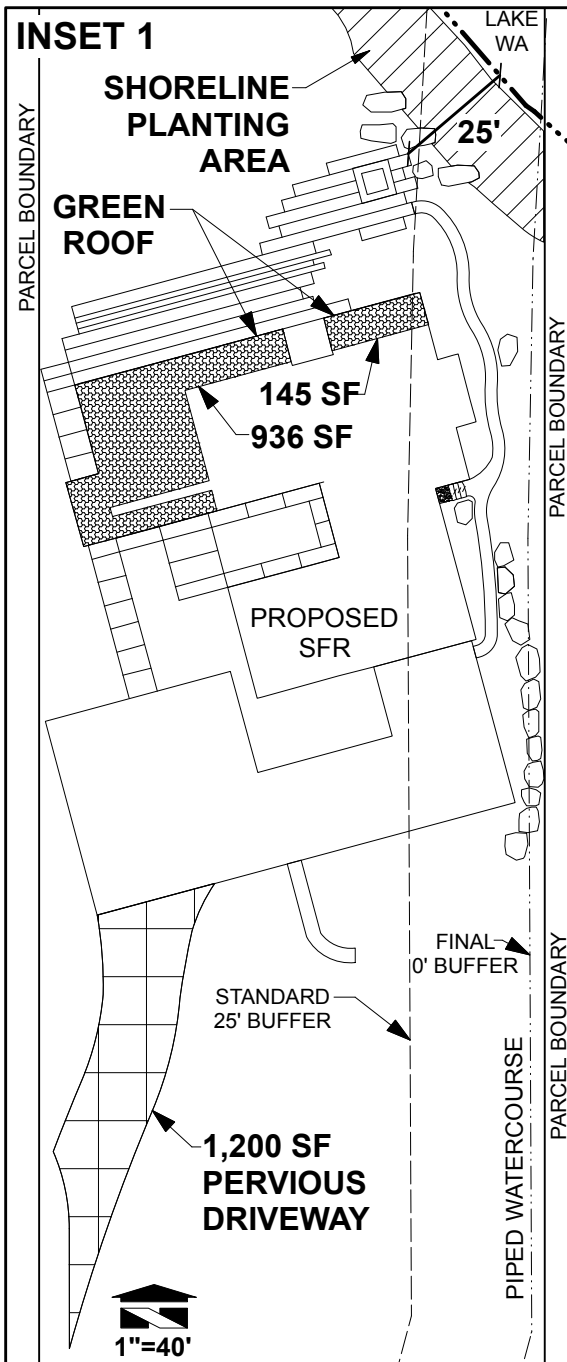
# CRITICAL AREA STUDY AND MITIGATION PLAN MAPS

## NFH - 8000 SE 20TH ST SFR

### PROPOSED ECOLOGICAL IMPROVEMENTS



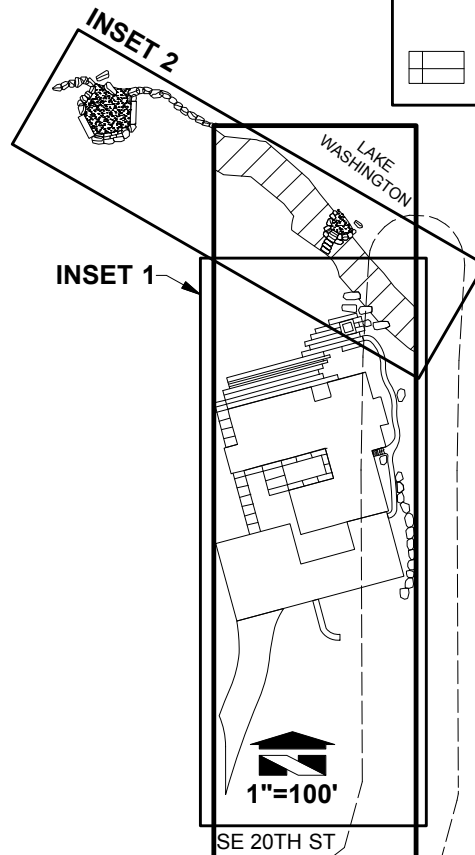
**NOTE: APPLICANT PROPOSES TO REDUCED THE STANDARD 25' PIPED WATERCOURSE BUFFER TO 0 FEET**



ECOLOGICAL IMPROVEMENTS	
TYPE	QTY.
GREEN ROOF	1,081 SF
PERVIOUS DRIVEWAY	1,200 SF
BULKHEAD REMOVAL	89 LF
SAND BEACH	570 SF
SHORELINE PLANTING	1,898 SF

BUFFER REDUCTION SUMMARY	
REDUCTION AREA (SF)	GROUNDCOVER TYPE
2,871	MAINTAINED LAWN
4,847	IMPERVIOUS (EX. SFR, TENNIS CT.)
591	OPEN WATER (LAKE WA)
373	ORNAMENTAL SHRUBS
639	VEGETABLE GARDEN

LEGEND			
	OHWM OF LAKE WASHINGTON		STANDARD BUFFER
	PIPED WATERCOURSE		GREEN ROOF
	PERVIOUS DRIVEWAY		SHORELINE PLANTING



Scale 1" = 40'



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**CAS and Mitigation Plan Maps**  
**NFH - 8000 20th St SE SFR**

**Proposed Ecological Improvements** Figure 2/2

NFH Drawn by: NP  
 8000 SE 20th St WRI# 15210  
 Mercer Isl., WA 98040 Date: 2/13/2017

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