



CITY OF MUKILTEO

REQUEST FOR COMMENTS

DATE: March 14, 2016

	Alderwood Water District – Dan Sheil /Lauren Balisky		Puget Sound Clean Air Agency (Beth Carper)
	Burlington Northern Santa Fe Railway (Marvinique Hill)	X	Puget Sound Energy (Dom Amor)
	City of Edmonds (Rob Chave)		Puget Sound Regional Council
	City of Everett (Allan Giffen)		Seattle Dist. Corps of Engineers (Dept. Army-Reg. Branch)
	City of Everett (Steve Ingalsbe)		Snohomish Co. Airport/Paine Field (A. Rardin/B. Dolan)
	City of Lynnwood (Paul Krauss)		Snohomish Co. Assessor’s Office (<i>Ordinances Only</i>)
	City of Mill Creek (Tom Rogers)		Snohomish Co. Conservation District
X	City of Mukilteo (Building Official)		Snohomish Co. Environmental (Cheryl Sullivan)
X	City of Mukilteo (Fire Chief)		Snohomish Co. Fire District #1 (Kevin Zweber)
X	City of Mukilteo (Fire Marshal)		Snohomish Co. Marine Res. Comm. (Kathleen Herrmann)
X	City of Mukilteo (Engineering “In-Box”)		Snohomish Co. Planning & Dev. Srvc. (Darryl Easton)
X	City of Mukilteo (Com. Dev. Dir.)(<i>Postcard/Notice only</i>)		Snohomish Co. Public Works (Deb Werdal)
X	City of Mukilteo (Charles Macklin, Cheol Kang, Colt Davis)	X	Snohomish Co. PUD: Dist. Eng. Services (Mary Wicklund)
X	Comcast of Washington (Casey Brown)	X	Snohomish Health District (Bruce A. Straughn)
	Community Transit (Kate Tourtellot)		Sound Transit Authority (Perry Weinberg)
	Dept. of Commerce (Growth Mgmt. Svcs Rev. Team)		Tulalip Tribes
	Dept. of Natural Resources (James Taylor)		Tulalip Tribes – (Richard Young)
	FAA/Air Traffic Division, ANM-0520 (Daniel Shoemaker)	X	United States Postal Service (Soon H. Kim)
	FEMA (John Graves)	X	Verizon Company of the NW, Inc. (Tim Rennick.)
	Island County MRC (Rex Porter) (<i>Shoreline Only</i>)	X	Washington Dept. of Ecology (Peg Plummer)
	Master Builders King/Sno. Counties (Jennifer Anderson)		Washington Dept of Fish & Wildlife (Jamie Bails)
X	Mukilteo Beacon (Editor) (<i>Postcard/Notice only</i>)		WSDOT (Scott Rodman)
X	Mukilteo School District (Cindy Steigerwald)		WSDOT (Ramin Pazooki)
X	Mukilteo School District (Josette Fisher)		WSDOT Ferries(Kojo Fordjour) (<i>Shoreline Only</i>)
	Mukilteo Tribune (Editor) (<i>Postcard/Notice only</i>)		WRIA 7 Water Resources
X	Mukilteo Water & Wastewater District (Jim Voetberg, Manager; Rick Matthews; Jodi Kerslake)	X	Planning Commission (<i>Postcard Only</i>)
	National Marine Fishery Service		Adjacent Property Owners
	Office of Archaeology & Historic Pres. (Allyson Brooks)	X	Applicant/Contact Person (<i>Notice Only</i>)
	Ogden, Murphy, Wallace (Angela Belbeck) (<i>Ordinances Only</i>)		Parties of Interest
	Pilchuck Audubon Society (Karen Snyder)	X	Parties of Record
	Port of Everett (Graham Anderson)	X	Property Owners within 300’ (<i>Postcard/Notice Only</i>)
			Other:

FILE NO.: SFR-RUP-HE 2014-002

PROPONENT: Greg Pianalto

PROJECT NAME: Pianalto SFR Reasonable Use Permit

PROJECT DESCRIPTION: Construction of a single-family residence with associated grading, driveway access, and drainage improvements on an existing 15,905 square foot lot in the RD 12.5(S) zoning district. The property is encumbered with wetlands therefore the applicant is asking for a reduction in the required buffer widths.

FILE NO: SFR-RUP-HE 2014-002

PROPONENT: Greg Pianalto

PROJECT NAME: Pianalto SFR Reasonable Use Permit

ATTACHED IS:

<input checked="" type="checkbox"/>	Notice of Application		Plat Map (Reduced)
	DNS ()	<input checked="" type="checkbox"/>	Site Plan (Reduced)
<input checked="" type="checkbox"/>	Environmental Checklist	<input checked="" type="checkbox"/>	Location Map
<input checked="" type="checkbox"/>	Application		Vicinity Map
<input checked="" type="checkbox"/>	Narrative Statement(s)	<input checked="" type="checkbox"/>	Other: Geotechnical Report, Critical Area Study

NOTE: _____

Please review this project as it relates to your area of concern and return your comments with this cover sheet by, March 31, 2016 to Anita Marrero, Associate Planner, City of Mukilteo, 11930 Cyrus Way, Mukilteo, WA 98275.

Anita Marrero
Anita Marrero
Associate Planner

3/14/14
Date

RESPONSE SECTION:

Comments Attached

No Comments

COMMENTS: _____

Signature

Date

Company

DO YOU WANT A COPY OF OUR NOTICE OF DECISION

YES **NO**



11930 Cyrus Way
Mukilteo, WA 98275
(425) 263-8000

Re-Notice of Application
for Pianalto Single-Family Residence
Reasonable Use Permit
at 10601 Macarthur Lane
by Greg Pianalto

Greg Pianalto applied for a single-family residence reasonable use permit with the City of Mukilteo on November 20, 2014. The application became complete on December 2, 2014. This application is being re-noticed as the scope of the project has changed. The project now meets the limits for administrative approval therefore is not required to go before the Hearing Examiner. This application and all supporting documents are available at City Hall for public viewing. (File No. SFR-RUP-HE 2014-002)

Description of Proposal: Construction of a single-family residence with associated grading, driveway access, and drainage improvements on an existing 15,905 square foot lot in the RD 12.5(S) zoning district. The property is encumbered with wetlands therefore the applicant is asking for a reduction in the required buffer widths.

Location of Proposal: CHENNAULT BEACH BLK 013 D-00 - ALL LOT 18; otherwise known as 10601 Macarthur Lane, Mukilteo, Washington.

Environmental Documents Prepared for the Proposal:

- SEPA Checklist dated November 19, 2014
- Critical Area Study and Buffer Mitigation Plan prepared by Wetland Resources, Inc. dated October 20, 2014 and October 22, 2015
- Geotechnical Report prepared by HWA Geosciences dated August 7, 2013

List of Required Permits:

- Reasonable Use Permit
- SEPA Determination
- Building Permit
- Engineering Permit
- Any State and Federal Permits, if applicable

Applicable Policies and Requirements

The project will be reviewed for consistency with the following policies, standards and regulations:

- | | |
|--|--|
| <input type="checkbox"/> Possession Shores Master Plan | <input type="checkbox"/> Sector Plan & Amendments |
| <input checked="" type="checkbox"/> Comprehensive Plan, Shoreline Master Plan | <input checked="" type="checkbox"/> Mukilteo Municipal Code |
| <input checked="" type="checkbox"/> International Building Code (2012 Edition) | <input checked="" type="checkbox"/> City of Mukilteo Development Standards |
| <input checked="" type="checkbox"/> International Fire Code (2012 Edition) | |

Comment Period

The application and supporting documents are available for review at the City of Mukilteo, 11930 Cyrus Way, Mukilteo, WA 98275. Contact: Anita Marrero, Associate Planner at (425) 263-8044 or amarrero@mukilteowa.gov. The public is invited to comment on the project by submitting written comments to the Planning Department at the above address by 4:30 p.m. on the date noted below.

Notice of Application Issued: Thursday, March 17, 2016

End of Comment Period: Thursday, March 31, 2016

The City will not act on this application until the end of the 14-day public comment period. Upon completion of project review the proposed application will be administratively approved, approved with conditions, or denied. You may request a copy of the final decision on the project by making a written request to the City contact person named below.

Public Hearing

There will not be a public hearing conducted on this project.

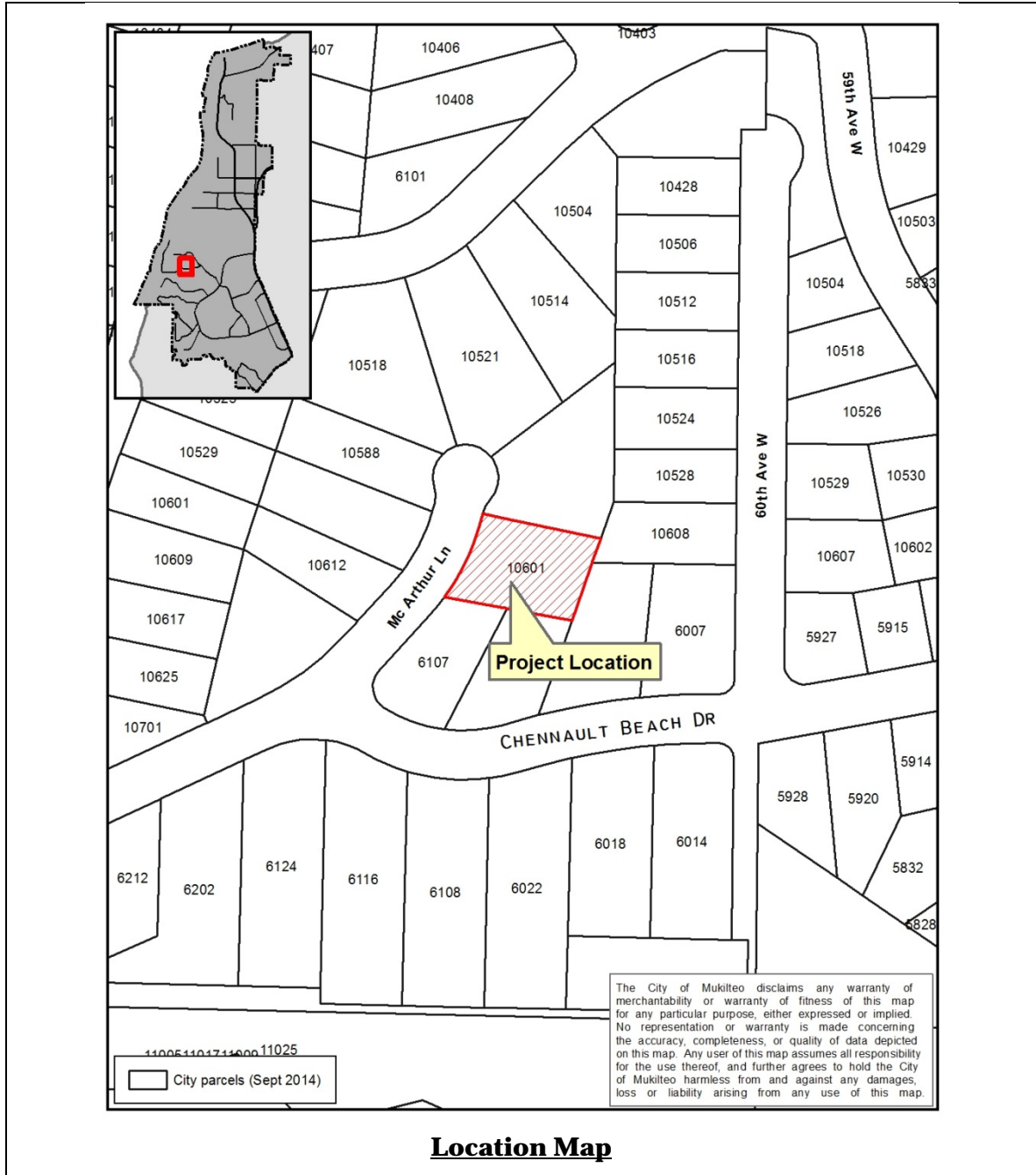
Appeals

The final decision on this project is administratively appealable. An appeal must be filed within 14 days after the final decision on the project is issued. Only persons who file written comments on the project in response to the Notice of Application are considered parties of record who may appeal the decision. If you do not file written comments within the comment period, you may not appeal the final decision.

Contact Person: Anita Marrero, Associate Planner (425) 263-8044

Signature: 
Anita Marrero, Associate Planner

Date: 3/14/16



Date Issued: Thursday, March 17, 2016
Date Advertised: Thursday, March 17, 2016
End Comment Period: Thursday, March 31, 2016

pc: Applicant/Representative
 Reviewing Agencies
 Interested Parties

CDD Director
 Permit Services Supervisor
 Permit Services Assistants (2)

Property File

NOV 20 2014



CITY OF MUKILTEO

11930 Cyrus Way Mukilteo, WA 98275
Fax (425) 212-2068

Land Use Permit Application

PPR # _____
SEPA # _____
Misc # _____

Applicant: Gregory Piana lto Owner: Gregory Piana lto
Address: 11702 Marine dr Address: 11702 Marine Dr
Phone: 360.652.7134 Phone: 360.652.7134
Tulalip WA 98271 Tulalip WA 98271

Project Address: 10601 Macarthur Ln

Legal Description of Property: Sect 20 Tshp 28N Rng 4E W.M

Key Contact Person: Greg Piana lto Phone: 360 652 7134
Fax: _____

Project Type:

- Commercial
- Multi-Family
- Industrial
- Shoreline* (JARPA)
- Conditional Use*
- Variance*
- Preliminary Subdivision*
- Final Subdivision*
- Preliminary Short Plat*
- Final Short Plat*
- Sector Plan Amendment
- Waterfront Development
- Single Family Residence
- Special Use Permit*
- Reasonable Use
- Lot Line Adjustment*
- Grading*
- Binding Site Plan
- Project Rezone
- Other, Specify _____

* Need to fill out supplemental application form with project.

Project Resume:

Existing Use: vacant lot Proposed Use: SFR

Total Site Area: 15,905 sq' Water District: Mukilteo

Building Foot Print Area: 4710 sq' Sewer District: Mukilteo

Lot Coverage: 30% # of Proposed Units: 1

No. of Parking Stalls Provided: Garage Building Height: ?

Comp Plan Designation: _____ Zoning: SFR 12.55

Gross Floor Area by Uses: 1st 2700
2nd 1000

Electric Vehicle Charging Units Provided: Yes _____ No X If Yes, How Many? _____

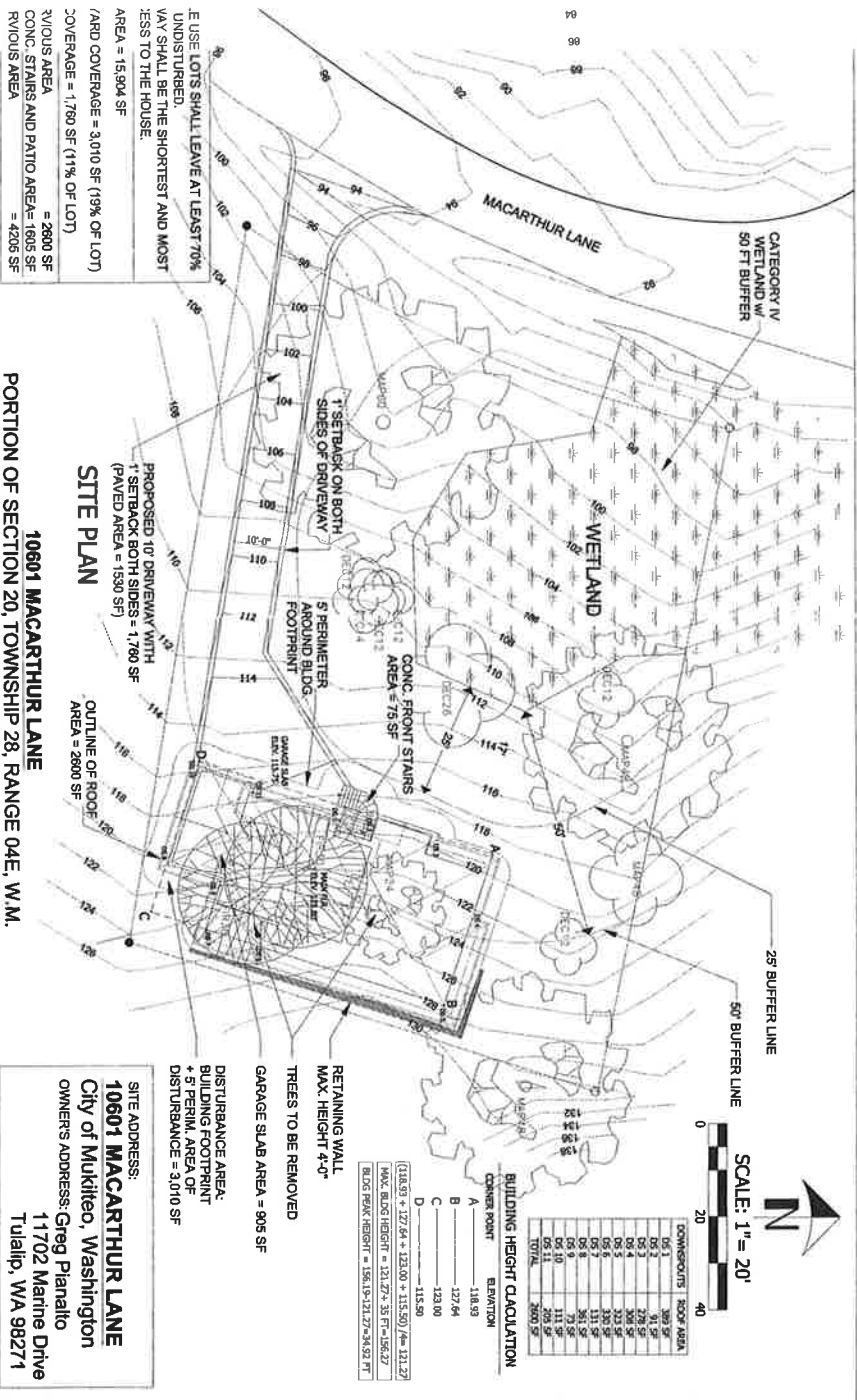
Solar Panels being installed: Yes _____ No X If Yes, How Many _____

Pre-application Meeting Held: (Y/N; date) Y

The information given is said to be true under the penalty of perjury by the laws of the State of Washington.

Greg Piana lto _____
Applicant/Authorized Agent Signature Date 11/19/14

Greg Piana lto _____
Owners Signature Date 11/19/14



USE LOTS SHALL LEAVE AT LEAST 70% UNDISTURBED. WAY SHALL BE THE SHORTEST AND MOST NEAR TO THE HOUSE.
 AREA = 15,904 SF
 (YARD COVERAGE = 3,010 SF (19% OF LOT)
 COVERAGE = 1,780 SF (11% OF LOT)
 CONC. STAIRS AND PATIO AREA = 1,605 SF
 CONC. STAIRS AND PATIO AREA = 1,605 SF
 CONC. STAIRS AND PATIO AREA = 1,605 SF
 CONC. STAIRS AND PATIO AREA = 1,605 SF

PROPOSED 10' DRIVEWAY WITH 1" SETBACK BOTH SIDES = 1,780 SF (PAVED AREA = 1530 SF)
 CONC. FRONT STAIRS AREA = 75 SF
 5' PERIMETER AROUND BLDG FOOTPRINT
 CONC. STAIRS AREA = 1,605 SF
 CONC. STAIRS AND PATIO AREA = 1,605 SF
 CONC. STAIRS AND PATIO AREA = 1,605 SF
 CONC. STAIRS AND PATIO AREA = 1,605 SF

RETAINING WALL MAX. HEIGHT 4'-0"
 TREES TO BE REMOVED
 GARAGE SLAB AREA = 905 SF
 DISTURBANCE AREA: BUILDING FOOTPRINT + 5' PERIM. AREA OF DISTURBANCE = 3,010 SF

SITE ADDRESS:
10601 MACARTHUR LANE
 City of Mukitago, Washington
 OWNER'S ADDRESS: Greg Planalto
 11702 Marine Drive
 Tulalip, WA 98271

BUILDING HEIGHT CALCULATION

CONVERTIBLES	ROOM AREA
05.1	308 SF
05.2	91 SF
05.3	278 SF
05.4	328 SF
05.5	336 SF
05.6	336 SF
05.7	131 SF
05.8	261 SF
05.9	261 SF
05.10	111 SF
05.11	205 SF
TOTAL	2695 SF

BUILDING HEIGHT CALCULATION

OWNER ROOF	ELEVATION
A	118.93
B	122.64
C	123.00
D	115.50

(123.00 + 122.64 + 123.00 + 115.50) / 4 = 121.27
 MAX. BLDG HEIGHT = 121.27' - 35' FT = 86.27'
 BLDG PEAK HEIGHT = 126.15' - 21' = 105.15' FT

SCALE: 1" = 20'



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 FEB 3 4 2006
 CITY OF MUKITAGO

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NOV 20 2014

CITY OF MUKILTEO

**Project Narrative
FOR
PIANALTO SFR
10601 MacArthur Lane, Mukilteo WA**

Basic Description of Project:

Disclaimer:

At the time of submittal, this permit application is solely for submitting the Wetland Critical Mitigation plan to the City of Mukilteo for review and approval. No house plans or designs currently exist due to the risk of the wetland. Therefore, any references to square footage, foundation, grading / excavation and schedule throughout this document are rough estimates. Upon approval of the Wetland Critical Mitigation plan, full design plans will be drafted and submitted.

Square footage, number of buildings and intended use:

Planned construction entails a 3700 +/- 100 sq foot single family residence situated on the upper (eastern) portion of the lot so as to mitigate the wetland area at the bottom (NorthWestern) corner. Driveway will hug the North side of property line so as to mitigate same wetland area. At this point no Building plans exist, only rough draft sketches are available. We have chosen not to proceed with full up drawings and plans due to the risk associated with wetland mitigation plan approval.

Number of parking spaces:

The foundation will most likely consist of a combination of traditional excavation/concrete footings will be used on the North end where the 2 car Garage is planned with pin piles used for the remainder of the structure. This would allow a more natural hydrologic process directly above the wetland to maintain the wetland in its natural state.

Proposed Landscaping:

Wet propose enhancing 5,400 square feet of the remaining buffer areas on this site. Prior to planting, invasive plants should be removed by the roots and exported off-site.
Ref: WRI Wetland Mitigation Plan

Location:

10601 MacArthur Lane, Mukilteo WA

Legal Description:

Tax-ID: 004086-013-018-00 Parcel ID: 00408601301800 Alt. Tax-ID: 408601-3-018-00-02 Tax Area: 0667 Legal Description: CHENNAULT BEACH BLK 013 D-00 - ALL LOT 18
Lot Acres: 0.35 Lot Area: 15,218

Surrounding Neighborhood:

Access to the site is from the west via Macarthur Lane. Topography consists of a west-facing slope with an average grade of about 20%. The site is undeveloped and consists of scattered trees and shrubs throughout. Surrounding land use consists of single-family residences averaging 3694 sq feet in size.

Ref: SnoCo Assessment records

Existing Characteristics:

Topography:

Topography consists of a west-facing slope with an average grade of about 20%. The site is undeveloped and consists of scattered trees and shrubs throughout.

Critical Area:

Wetland Resources, Inc. (WRI) conducted a site investigation on the subject .35-acre property located at 10601 Macarthur Lane in the city of Mukilteo, WA (a portion of Section 20, Township 28N, Range 4E, W.M.). The purpose of the investigation was to identify and delineate regulated wetlands and/or streams on the subject site with respect to a proposal to construct a new single-family residence.

WRI identified a single Category IV wetland with a 50-foot regulated buffer on the site. No other critical areas were identified in the vicinity.

The on-site wetland and its regulated buffers occupy most of the usable area on the property. In order to construct a reasonable development on the site, the applicant will apply for a variance to eliminate much of the buffer. The remainder of this report provides a detailed analysis of the existing conditions and proposed mitigation measures needed to achieve a reasonable development on the site. Due to its sloped nature and limited habitat functions, this wetland receives a total relatively low score of 24 points for functions on the DOE Wetland Rating Form for Western Washington (version 2008), including 10 points for habitat functions. This wetland shall be classified as a Category IV wetland with a 50-foot buffer.

Existing Vegetation:

Dominant species on the site includes: red alder (*Alnus rubra*), Scouler's willow (*Salix scouleriana*), big leaf maple (*Acer macrophyllum*), and Douglas fir (*Pseudotsuga menziesii*) in the canopy with salmonberry (*Rubus spectabilis*), Himalayan blackberry (*Rubus armeniacus*), ocean spray (*Holodiscus discolor*), oso-berry (*Oemleria cerasiformis*), bracken fern (*Pteridium aquilinum*), and sword fern (*Polystichum munitum*) in the understory.

The onsite wetland is hydrogeomorphically classified as a slope wetland with a mix of native and non-native species.

BUFFER ENHANCEMENT PLAN

The applicant proposes to enhance 3,136 square feet of the remaining buffer areas on this site. Prior to planting, invasive plants should be removed by the roots and exported off-site. These include, but are not limited to, Himalayan blackberry and creeping nightshade. The designated areas will be enhanced with native shrubs spaced on 6-foot centers. The plantings will tolerate sloped conditions with variable light exposure. They will be marked with brightly colored ribbon for easy identification during maintenance and monitoring. The following list of plantings is recommended for this site.

WETLAND ENHANCEMENT PLAN

The applicant proposes to enhance 3,000 square feet of the wetland areas on this site. Prior to planting, invasive plants should be removed by the roots and exported off-site. These include, but are not limited to, Himalayan blackberry and creeping nightshade. The designated areas will be enhanced with native species on 6-foot centers. The plantings will be shade tolerant and will be marked with brightly colored ribbon for easy identification during maintenance and monitoring. The following list of plantings is recommended for this site.

Ref: WRI Wetland Mitigation Plan and HWA GeoTech report

Existing Improvement or Structures:

None

Ownership:

Property Owners and responsible parties:

Greg Pinalto and Svetlana Pinalto, who are currently residing at 11702 Marine Drive, Tulalip, WA 98271.

Infrastructure

Access is provided via Macarthur Lane

Gas is provided by: PSE

Electricity is provided by: SnoCo PUD

Water and Sewer is provided by: City of Mukilteo

No other utilities are planned on this site.

Ref: ASPI Survey

Storm water runoff will be collected in the existing ditch and street drain adjacent to Macarthur lane. No treatment is expected.

Grading:

Prior to beginning any development or BUFFER ENHANCEMENT PLAN The applicant proposes to enhance 3,136 square feet of the remaining buffer areas on this site. Prior to planting, invasive plants should be removed by the roots and exported off-site. These include, but are not limited to, Himalayan blackberry and creeping nightshade. The designated areas will be enhanced with native shrubs spaced on 6-foot centers. The plantings will tolerate sloped conditions with variable light exposure. They will be marked with brightly colored ribbon for easy identification during maintenance and monitoring.

Grading quantities:

Grading quantities are dependent upon foundation design. At this point it is assumed that a combination of traditional excavation/concrete footings will be used on the North end with pin piles used for the remainder of the structure. Excavation of the Garage area would amount to approximately 8040 cubic yards of soil, a portion of which would be used to backfill the front of the structure due to the slope involved.

Erosion control:

French drains will be constructed on the upslope sides of the house and foundation and extend to a level below the foundation footings in order to intercept groundwater and route it into the existing wetland. Erosion control fencing will be installed as described in the grading plan construction drawings.

Schedule:

It is desirable to have the wetland mitigation plan approved and being Construction on or about August of 2015 with occupancy permit granted approximately one year later on or about August 2016.



11930 Cyrus Way, Mukilteo, WA 98275
(425) 263-8000
Fax (425) 212-2068

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CITY OF MUKILTEO

ENVIRONMENTAL CHECKLIST

PURPOSE OF CHECKLIST

The State Environmental Policy Act (SEPA), Chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

INSTRUCTION FOR APPLICANTS

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply". Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

USE OF CHECKLIST FOR NONPROJECT PROPOSALS

Complete this checklist for non-project proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (PART D).

For non-project actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

Part Eleven WAC 197-11-960 Environmental Checklist

**CITY OF MUKILTEO
ENVIRONMENTAL CHECKLIST**

A. BACKGROUND

1. Name of proposed project, if applicable:

Pianalto SFR

2. Name of applicant:

Greg Pianalto

3. Address and phone number of applicant and contact person:

11702 Marine Dr. Tulalip, WA 98271 - 425 876 2964 - Greg Pianalto

4. Date checklist prepared:

11/20/14

5. Agency requesting checklist:

City of Mukilteo

6. Proposed timing or schedule (including phasing, if applicable):

Start Aug 2015 - End May 2016

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain:

NO

8. List any environmental information you know about that has been prepared or will be prepared, directly related to this proposal:

wetland Mitigation Plan

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain:

NO

10. List any government approvals or permits that will be needed for your proposal, if known:

wetland Mitigation plan approval
Building Permit approval

Part Eleven WAC 197-11-960 Environmental Checklist

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description):

3700 sq' SFR - 3 car garage

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist:

10601 Macarthur Ln
Mukilton WA 98275

TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

B. ENVIRONMENTAL ELEMENTS:

1. EARTH

- a. General description of this site (circle one): Flat, rolling, hilly, steep

slopes, mountainous, other slope :

- b. What is the steepest slope on the site (approximately percent slope)?

20%

- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland:

Colluvium, Weathered drift & Whidbey formation

- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe:

no

- e. Describe the purpose, type and approximate quantities of any filling or

excavation of Garage (Daylight) / Grade Driveway

Part Eleven WAC 197-11-960 Environmental Checklist

TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

grading proposed. Indicate source of fill:

any filling of pin pile wall will be accomplished with excavated material

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe:

possible erosion of graded Driveway

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

30%

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

erosion control measures are part of the welland Mitigation plan

2. AIR

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known:

exhaust from excavator

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe:

no

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:

none

3. WATER

Part Eleven WAC 197-11-960 Environmental Checklist

TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

a. Surface:

- (1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into:

class / cat IV wetland on NW corner of property

- (2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans:

yes

- (3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material:

0

- (4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known:

no

- (5) Does the proposal lie within a 100-year flood plain? If so, note location on the site plan:

no

- (6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge:

no

b. Ground:

- (1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known:

no

- (2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be

Part Eleven WAC 197-11-960 Environmental Checklist

TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

served (if applicable), or the number of animals or humans the system(s) are expected to serve.

c. Water Runoff (including storm water):

- (1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe:

rainwater runoff to splash plates or sewer system

- (2) Could waste materials enter ground or surface waters? If so, generally describe:

no

- d. Proposed measures to reduce or control surface, ground and runoff water impact, if any:

wetland & Buffer enhancement plan

4. PLANTS

- a. Check or circle types of vegetation found on the site:

Deciduous tree: alder, maple, aspen, other

Evergreen tree: fir, cedar, pine, other

Shrubs

Grass

Pasture

Crop or grain

Wet soil plants: cattail, buttercup, bullrush, skunk, cabbage, other

Water plants: water lily, eelgrass, milfoil, other

Other types of vegetation

- b. What kind and amount of vegetation will be removed or altered?

invasive species & trees

- c. List threatened or endangered species known to be on or near the site.

none

Part Eleven WAC 197-11-960 Environmental Checklist

TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Buffer enhancement described in wetland mitigation plan

5. ANIMALS

- a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

Birds: hawk, heron, eagle, songbirds, other:

Mammals: deer, bear, elk, beaver, other:

Fish: bass, salmon, trout, herring, shellfish, other:

- b. List any threatened or endangered species known to be on or near the site:

None

- c. Is the site part of a migration route? If so, explain:

No

- d. Proposed measures to preserve or enhance wildlife, if any:

Buffer enhancement

6. ENERGY AND NATURAL RESOURCES

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

light & heat only - no manufacturing will occur on site

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe:

no

- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

LED lighting - Heat pump

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TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

7. ENVIRONMENTAL HEALTH

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe:

no

- (1) Describe special emergency services that might be required:

none

- (2) Proposed measures to reduce or control environmental health hazards, if any:

- b. Noise:

- (1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

normal construction noise for the 9 month duration

- (2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

excavator, nail gun, compressors, vehicle (contractor)
generator
8AM - 4PM

- (3) Proposed measures to reduce or control noise impacts, if any:

8. LAND AND SHORELINE USE

- a. What is the current use of the site and adjacent properties?

vacant - SFR's

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TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

b. Has the site been used for agriculture? If so, describe:

no

c. Describe any structures on the site:

none

d. Will any structures be demolished? If so, what?

no

e. What is the current zoning classification of the site?

residential

f. What is the current comprehensive plan designation of the site?

g. If applicable, what is the current shoreline master program designation of the site?

N/A

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify:

yes east IV wetland on NW corner of property

i. Approximately how many people would reside or work in the completed project?

3 residents

j. Approximately how many people would the completed project displace?

0

k. Proposed measures to avoid or reduce displacement impacts, if any:

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TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

1. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

9. HOUSING

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing:

1 - middle

- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing:

0

- c. Proposed measures to reduce or control housing impacts, if any:

10. AESTHETICS

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

unknown
lap or stone siding

- b. What views in the immediate vicinity would be altered or obstructed?

none

- c. Proposed measures to reduce or control aesthetic impacts, if any:

Design submittal to City of Mukilteo

11. LIGHT AND GLARE

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

unknown - evenings

- b. Could light or glare from the finished project be a safety hazard or interfere with views?

no

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TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

c. What existing off-site sources of light or glare may affect your proposal?
none

d. Proposed measures to reduce or control light and glare impacts, if any:

12. RECREATION

a. What designated and informal recreational opportunities are in the immediate vicinity?
Unknown

b. Would the proposed project displace any existing recreational uses? If so describe:
no

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

13. HISTORIC AND CULTURAL PRESERVATION

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe:
no

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site:
none

c. Proposed measures to reduce or control impacts, if any:

14. TRANSPORTATION

Part Eleven WAC 197-11-960 Environmental Checklist

TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

- a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any:

Chenault Beach Dr - MacArthur Ln.

- b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

unknown

- c. How many parking spaces would the completed project have? How many would the project eliminate?

parking will be in garage - 0 spaces eliminated

- d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

no

- e. Describe the existing condition of the proposed access road, including width of easement, width of pavement or roadway, curbs, gutters, and/or sidewalks.

18' asphalt

- f. Will the project use (or occur in the immediate vicinity of) water, rail or air transportation? If so, generally describe.

no

- g. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

2 per day Max of 4 per day

7AM - 4PM

- h. Proposed measures to reduce or control transportation impacts, if any:

15. PUBLIC SERVICES

- a. Would the project result in an increased need for public services (for

Part Eleven WAC 197-11-960 Environmental Checklist

TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

example: fire protection, police protection, health care, schools, other)?

If so, generally describe:

Fire/Police - 1 more residence
Daughter already attending Kamiak High

- b. Proposed measures to reduce or control direct impacts on public services, if any:

16. UTILITIES

- a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

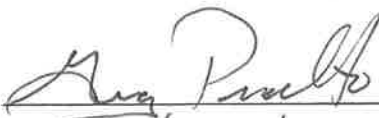
- b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed:

electric

Gas
~~Phone~~

C. SIGNATURE

I certify under penalty of perjury under the laws of the State of Washington that the above answers provided in the Environmental Checklist (including Supplement for Non-project Actions, if applicable) are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 
Date Submitted: 11/19/14

Agency Evaluation completed by: _____ Date: _____

Note: boxes () are checked to indicate agency review of items in checklist.

Part Eleven WAC 197-11-960 Environmental Checklist

SUPPLEMENT FOR NON-PROJECT ACTIONS

(Do Not Use This Sheet For Project Actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, to aware of the extent the proposal, of the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

unlikely

Proposed measures to avoid or reduce such increases are:

erosion controls

2. How would the proposal be likely to affect plants, animals, fish or marine life?

covered in mitigation plan

Proposed measures to protect or conserve plants, animals, fish, or marine life are

covered in mitigation plan

3. How would the proposal be likely to deplete energy or natural resources

unlikely

Proposed measures to protect or conserve energy and natural resources are: ?

4. How would the proposal be likely to use or affect environmentally

Part Eleven WAC 197-11-960 Environmental Checklist

TO BE COMPLETED BY APPLICANT:

EVALUATION FOR
AGENCY USE ONLY

sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Covered in mitigation plan

Proposed measures to protect such resources or to avoid or reduce impacts are:

Covered in mitigation plan

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land uses incompatible with existing plans?

Buffer enhancement described in mitigation plan

Proposed measures to avoid or reduce shoreline and land use impacts are:

Covered in mitigation plan

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

1-SFR

Proposed measures to reduce or respond to such demand(s) are:

LED lighting / Heat Pump / alarm syst

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

wetland Cat IV

Proposed measures to protect or conserve energy and natural resources are:

Covered in mitigation plan

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HWA GEOSCIENCES INC.

Geotechnical & Pavement Engineering · Hydrogeology · Geoenvironmental · Inspection & Testing

August 7, 2013
HWA Project No. 2012-061-21

Mr. Greg Pianalto
11702 Marine Drive
Tulalip, Washington 98271

RECEIVED

NOV 20 2014

CITY OF MUKILTEO

Subject: **GEOTECHNICAL PRE-PURCHASE INVESTIGATION**
10601 McArthur Lane
Mukilteo, Washington

Dear Mr. Pianalto:

Per your request, HWA conducted a pre-purchase investigation of the undeveloped property at the subject address in Mukilteo, Washington. The purpose of this investigation was to evaluate site conditions in regards to geotechnical feasibility of site development for a single-family residence. This work was performed in general accordance with our scope of work dated July 2, 2013. For this study we visually evaluated surface conditions of the site as well as advanced a single subsurface exploration. A vicinity map is shown on Figure 1, and an air photo / topo site map from Snohomish County SnoScape web site is shown on Figure 2.

FIELD INVESTIGATION

An HWA engineering geologist, Brad Thurber, met you at the site on July 22, 2013. The field exploration consisted of a site reconnaissance to observe surficial features, in regards to potential site development, particularly regarding slope stability. Also, one borehole was drilled to a depth of 41.5 feet, at approximately 54 feet from the edge of pavement of McArthur Lane. The borehole was drilled by Environmental Drilling Inc. of Snohomish, Washington under subcontract to HWA. The borehole location is shown on the Site and Exploration Plan, Figure 2.

The borehole was drilled to a depth of 41.5 feet, using hollow-stem augers, with a rubber-tracked Simco 4000 drill rig. Soil samples were collected at 2 ½- to 5-foot intervals using Standard Penetration Test (SPT) sampling methods, which consisted of using a 2-inch outside diameter, split-spoon sampler driven with a 140-pound hammer. During the test, a sample is obtained by driving the sampler 18 inches into the soil with the hammer free-falling 30 inches per stroke. The number of blows required for each 6 inches of penetration is recorded. The standard penetration resistance of the soil is calculated as the number of blows required for the final 12 inches of penetration. If a total of 50 blows is recorded within a single 6-inch interval, the test is terminated, and the blow count is recorded as 50 blows/number of inches of penetration. This resistance provides an indication of the relative density of granular soils and the relative consistency of cohesive soils.

21312 30th Drive SE
Suite 110
Bothell, WA 98021.7010

Tel: 425.774.0106

Fax: 425.774.2714

www.hwageo.com

August 7, 2013
HWA Project No. 2013-061-21

The exploration was advanced under the full-time supervision of an HWA engineering geologist. Soil samples obtained from the explorations were classified in the field and representative portions were placed in plastic bags. These soil samples were then taken to our Bothell, Washington, laboratory for further examination and testing.

Pertinent information including soil sample depths, stratigraphy, soil engineering characteristics, and ground water occurrence was recorded and used to develop a log of the borehole. A legend of the terms and symbols used on the borehole log is presented on Figure 3, and the borehole log is presented in Figure 4.

The stratigraphic contacts shown on the borehole log represent the approximate boundaries between soil types; actual transitions may be more gradual. The ground water conditions depicted are only for the specific dates and location reported, and therefore, are not necessarily representative of other locations and times.

LABORATORY TESTING

Representative soil samples obtained from the subsurface exploration were taken to the HWA laboratory for further examination and testing. Laboratory tests were conducted on selected soil samples to characterize engineering properties of the soils. Laboratory tests, as described below, included moisture content determination, grain size distribution and Atterberg limits.

Moisture Content of Soil: The moisture content (percent by dry mass) of selected soil samples was determined in accordance with ASTM D 2216. The results are shown at the sampled intervals on the borehole log, Figure 4.

Particle Size Analysis of Soils: Selected soil samples were tested to determine the particle size distribution of material in accordance with ASTM D422. The results are summarized on the attached Grain Size Distribution Report, Figure 5, which also provides information regarding the classification of the samples and the moisture content at the time of testing.

Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits): Selected samples were tested using method ASTM D 4318, multi-point method. The results are reported on the attached Liquid Limit, Plastic Limit, and Plasticity Index of Soils report, Figure 6.

SITE CONDITIONS

The undeveloped lot measures approximately 104 feet along McArthur Lane and extends eastward and upslope. The lot is situated on a broad slope that descends from the plateau to the east upon which Paine Field and the main commercial area of Mukilteo is placed, and the crest of a steep bluff to the west above Puget Sound. Topography across the site is overall gently sloping from east to west, and descends approximately 25 feet. Overall slope inclinations are on the order of 4H:1V to 5H:1V (Horizontal:Vertical), with localized steeper areas of 2.5H:1V to

3H:1V over a few feet of elevation. Ground water seepage was observed at the surface in a broad north-south swath along contour, just west of the middle of the site. The seepage saturated the ground on either side of a multi-trunked maple or alder, where the ground was higher and seepage was not apparent. This seepage area prevented the drill rig from advancing farther upslope for an additional exploration. The site was vegetated with two second-growth Douglas Firs at the upper portion of the lot, measuring 30 to 36 inches in diameter. Smaller Bigleaf Maples and Red Alders were scattered throughout the site, some of which had been recently topped. Native brush, some invasive blackberry bushes, and native ground vegetation were present in the remainder of the lot, other than in limited areas cleared for surveying.

Upslope from the lot, to the east, there was more vacant land between the lot and the developed portions of the adjacent lots. A steeper slope at the edge of the adjacent yards approximately 10 feet high may explain why the adjacent development ended there.

We did not observe any signs of recent slope instability on the site, despite the presence of ground water seepage during extended dry weather. Also the adjacent homes and properties did not display any obvious signs of recent slope instability.

GENERAL GEOLOGIC CONDITIONS

Geologic information for the project area was obtained from the map titled *Geologic Map of the Mukilteo Quadrangle, Washington* (Smith, 1975). According to the map, the near-surface deposits in the vicinity of the project consist of Esperance Sand over the Whidbey Formation. The Whidbey Formation consists of sand, silt, and clay deposited by non-glacial rivers prior to the latest continental glaciation. The Esperance Sand was deposited from glacial meltwater deposits in front of the advancing Puget Lobe of the Cordilleran Ice Sheet during the latest glaciation. The Esperance Sand and underlying Whidbey Formation were subsequently overridden by approximately 3,000 to 4,000 feet of ice, and thus glacially overconsolidated to a very compact condition. Glacial till was deposited on top, and is present on the plateau above. During retreat of the Puget Lobe, melt water from receding ice eroded some of the terrain, exposing the underlying Pre-Fraser glacial and non-glacial deposits, such as the Whidbey Formation. The melt-water also deposited recessional outwash (generally sand and gravel) from the glacier.

SUBSURFACE CONDITIONS

Soils

Our interpretations of subsurface conditions are based on the results of the field exploration, review of available geologic data, and our general experience in similar geologic settings. The soil units are described below, with materials interpreted as being youngest in origin and nearest the surface described first.

- **Topsoil** – Loose, dark brown, organic rich topsoil was observed at the ground surface and extended to a depth of approximately 1.5 to 2 feet.
- **Colluvium** – Loose, gravelly, silty sand was encountered below the topsoil and in the upper 7 feet or so of the boring. This soil was likely formed from weathering of the glacial deposits, and downslope erosion or sloughing.
- **Weathered Drift** – Loose to medium dense, gravelly, silty sand was encountered below the colluvium. This soil formed from mechanical and chemical weathering of the glacial deposits, likely from the Esperance Sand.
- **Whidbey Formation** – Dense to very dense, non-plastic sandy silt with layers of silty sand was encountered below a depth of approximately 12 feet to the full depth explored of 41.5 feet.

Ground Water

Ground water was observed in the boring at a depth of approximately 5 ½ feet, with all soil samples below this depth appearing to be saturated. Also, ground water seepage was observed at the ground surface in a broad swath, as noted above.

We expect ground water levels will vary depending on location, season, and the relative abundance of precipitation.

CONCLUSIONS

In our opinion it is geotechnically feasible to develop the property for a single-family residence. The general area is mapped as a Seismic Liquefaction Hazard, and our subsurface exploration and surface observations confirm the mapping. In order to develop a single-family residence on the property, French-drains will need to be constructed on the upslope sides of the house footprint. The purpose of French drains will be to intercept ground water and draw down the localized water table and to minimize liquefaction of soils beneath the house during a seismic event. The French drains should extend to a level below the house footings and drain to an appropriate outlet.

Also, the house foundation should either consist of concrete spread footings extending to dense soils (below 12 feet from existing ground surface at the boring), or pin piles driven through the loose surficial soils and into dense underlying soils. Excavation of a daylight basement / garage to accommodate the house to the slope would facilitate extension of a concrete foundation to the dense soils.

August 7, 2013
HWA Project No. 2013-061-21

CONDITIONS AND LIMITATIONS

We have prepared this report for Mr. Greg Pianalto for use in assessing the feasibility of developing the property. Further geotechnical explorations and analyses will be required for design.

The conclusions and interpretations presented herein should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and ground water conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study of this nature.

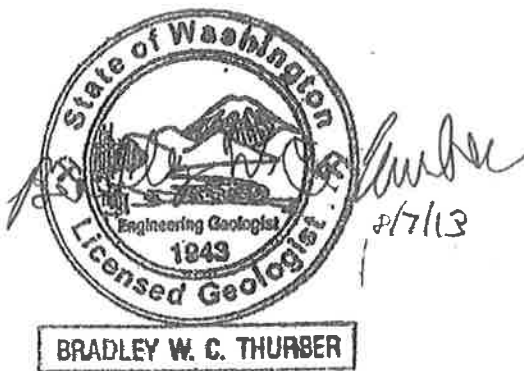
Within the limitations of scope, schedule and budget, HWA attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, express or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or ground water at this site.



We appreciate the opportunity to provide geotechnical services on this project. Should you have any questions, or if we may be of further service, please call.

Sincerely,

HWA GEOSCIENCES INC.



Brad W. Thurber, L.G., L.E.G.
Senior Engineering Geologist



Bryan K. Hawkins, P.E.
Senior Geotechnical Engineer

August 7, 2013
HWA Project No. 2013-061-21

Attachments:

Figure 1	Vicinity Map
Figure 2	Site and Exploration Plan
Figure 3	Legend of Terms and Symbols
Figure 4	Borehole Log BH-1
Figure 5	Particle Size Analysis of Soils
Figure 6	Liquid Limit, Plastic Limit and Plasticity Index of Soils

References:

Smith, Mackey, 1975, *Preliminary Surficial Geologic Map of the Mukilteo and Everett Quadrangles, Snohomish County, Washington*, Geologic Map GM-20.

PROJECT SITE

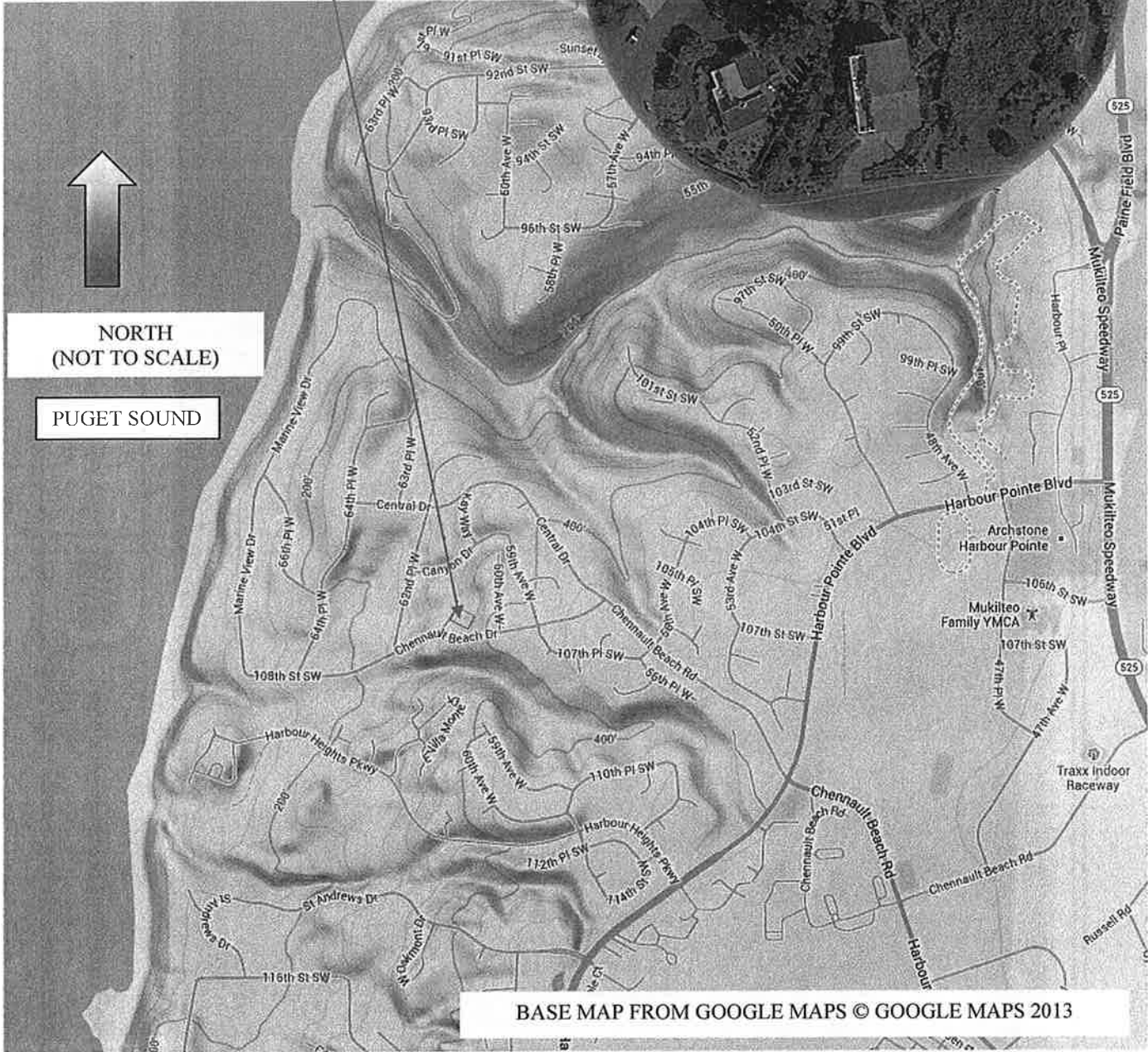


McArthur Ln



NORTH
(NOT TO SCALE)

PUGET SOUND



BASE MAP FROM GOOGLE MAPS © GOOGLE MAPS 2013

VICINITY MAP

GEOTECHNICAL PRE-PURCHASE INVESTIGATION
10601 MCARTHUR LANE
MUKILTEO, WASHINGTON

FIGURE NO.

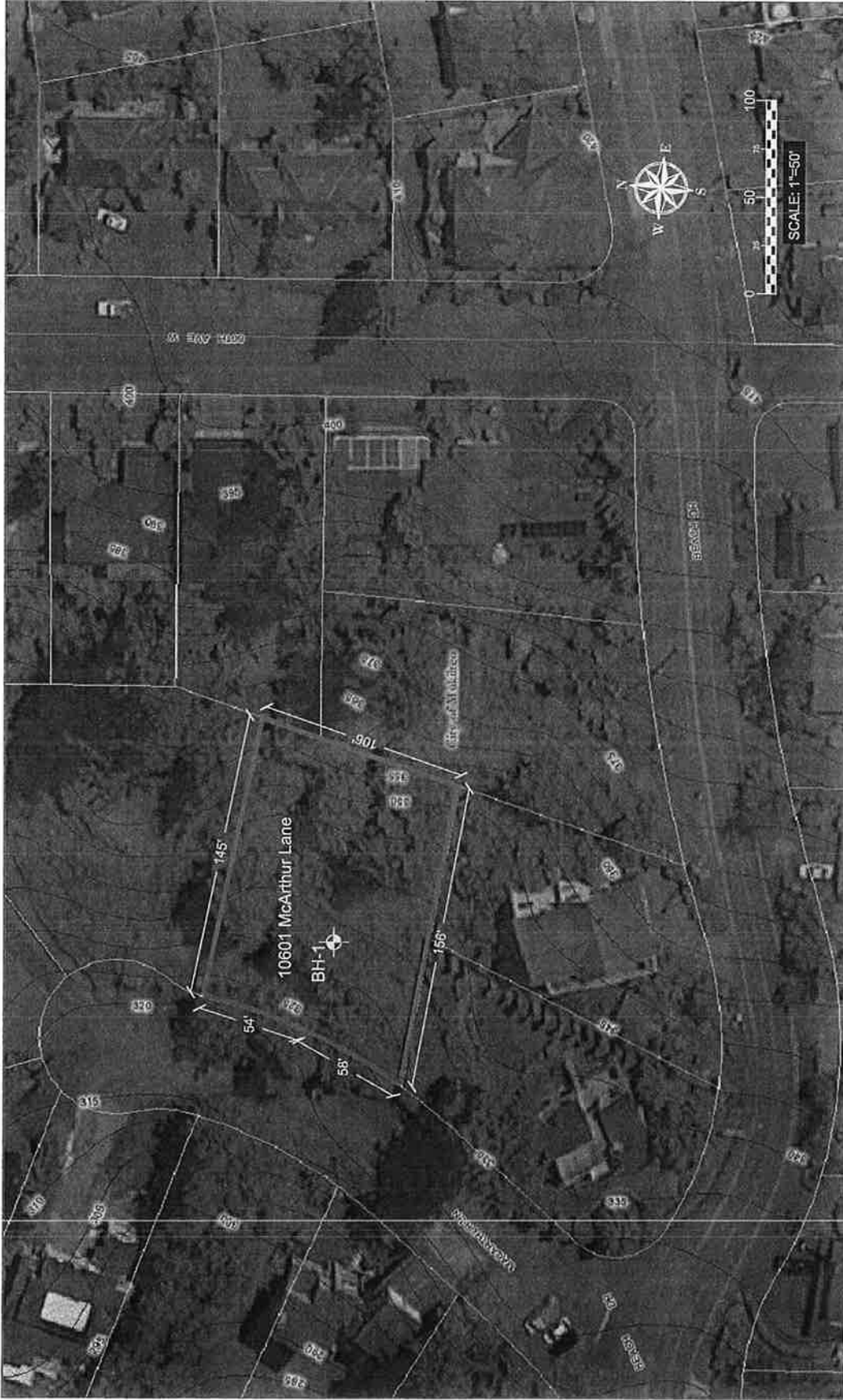
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PROJECT NO.

2013-061



HWA GEOSCIENCES INC.



BH-1  BORING DESIGNATION AND APPROXIMATE LOCATION

BASE MAP PROVIDED BY:



HWA GEOSCIENCES INC.

Geotechnical Pre-Purchase Investigation
10601 McArthur Lane
Mukiteo, Washington

SITE AND
EXPLORATION
PLAN

DRAWN BY:	EFK	FIGURE #	2
CHECK BY:	BH	PROJECT #	
DATE:	08.07.13		2013-061-21

S:\2013 PROJECTS\2013-06-1-21 FINAL TO PROPERTY\CAD\HWA\2013-06-1A.DWG - 4/Layout1.rvt - Plotted: 8/7/2013 9:44 AM

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	N (blows/ft)	Approximate Relative Density(%)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	0 - 15	Very Soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	35 - 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000

USCS SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP DESCRIPTIONS		
Coarse Grained Soils	Gravel and Gravelly Soils	Clean Gravel (little or no fines)		GW Well-graded GRAVEL	
		Gravel with Fines (appreciable amount of fines)		GP Poorly-graded GRAVEL	
	More than 50% of Coarse Fraction Retained on No. 4 Sieve	Sand and Sandy Soils	Clean Sand (little or no fines)		SW Well-graded SAND
			Sand with Fines (appreciable amount of fines)		SP Poorly-graded SAND
More than 50% Retained on No. 200 Sieve Size	50% or More of Coarse Fraction Passing No. 4 Sieve	Silty SAND		SM Silty SAND	
		Clayey SAND		SC Clayey SAND	
	Fine Grained Soils	Silt and Clay	Liquid Limit Less than 50%		ML SILT
			Liquid Limit 50% or More		CL Lean CLAY
50% or More Passing No. 200 Sieve Size	Silt and Clay	Liquid Limit Less than 50%		OL Organic SILT/Organic CLAY	
		Liquid Limit 50% or More		MH Elastic SILT	
		Fat CLAY		CH Fat CLAY	
		Organic SILT/Organic CLAY		OH Organic SILT/Organic CLAY	
Highly Organic Soils				PT PEAT	

TEST SYMBOLS

%F	Percent Fines
AL	Atterberg Limits: PL = Plastic Limit LL = Liquid Limit
CBR	California Bearing Ratio
CN	Consolidation
DD	Dry Density (pcf)
DS	Direct Shear
GS	Grain Size Distribution
K	Permeability
MD	Moisture/Density Relationship (Proctor)
MR	Resilient Modulus
PID	Photoionization Device Reading
PP	Pocket Penetrometer Approx. Compressive Strength (tsf)
SG	Specific Gravity
TC	Triaxial Compression
TV	Torvane Approx. Shear Strength (tsf)
UC	Unconfined Compression

SAMPLE TYPE SYMBOLS

	2.0" OD Split Spoon (SPT) (140 lb. hammer with 30 in. drop)
	Shelby Tube
	3-1/4" OD Split Spoon with Brass Rings
	Small Bag Sample
	Large Bag (Bulk) Sample
	Core Run
	Non-standard Penetration Test (3.0" OD split spoon)

GROUNDWATER SYMBOLS

	Groundwater Level (measured at time of drilling)
	Groundwater Level (measured in well or open hole after water level stabilized)

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5 mm) to No. 200 (0.074 mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074mm)

COMPONENT PROPORTIONS

PROPORTION RANGE	DESCRIPTIVE TERMS
< 5%	Clean
5 - 12%	Slightly (Clayey, Silty, Sandy)
12 - 30%	Clayey, Silty, Sandy, Gravelly
30 - 50%	Very (Clayey, Silty, Sandy, Gravelly)
Components are arranged in order of increasing quantities.	

NOTES: Soil classifications presented on exploration logs are based on visual and laboratory observation. Soil descriptions are presented in the following general order:

Density/consistency, color, modifier (if any) GROUP NAME, additions to group name (if any), moisture content. Proportion, gradation, and angularity of constituents, additional comments.
(GEOLOGIC INTERPRETATION)

Please refer to the discussion in the report text as well as the exploration logs for a more complete description of subsurface conditions.

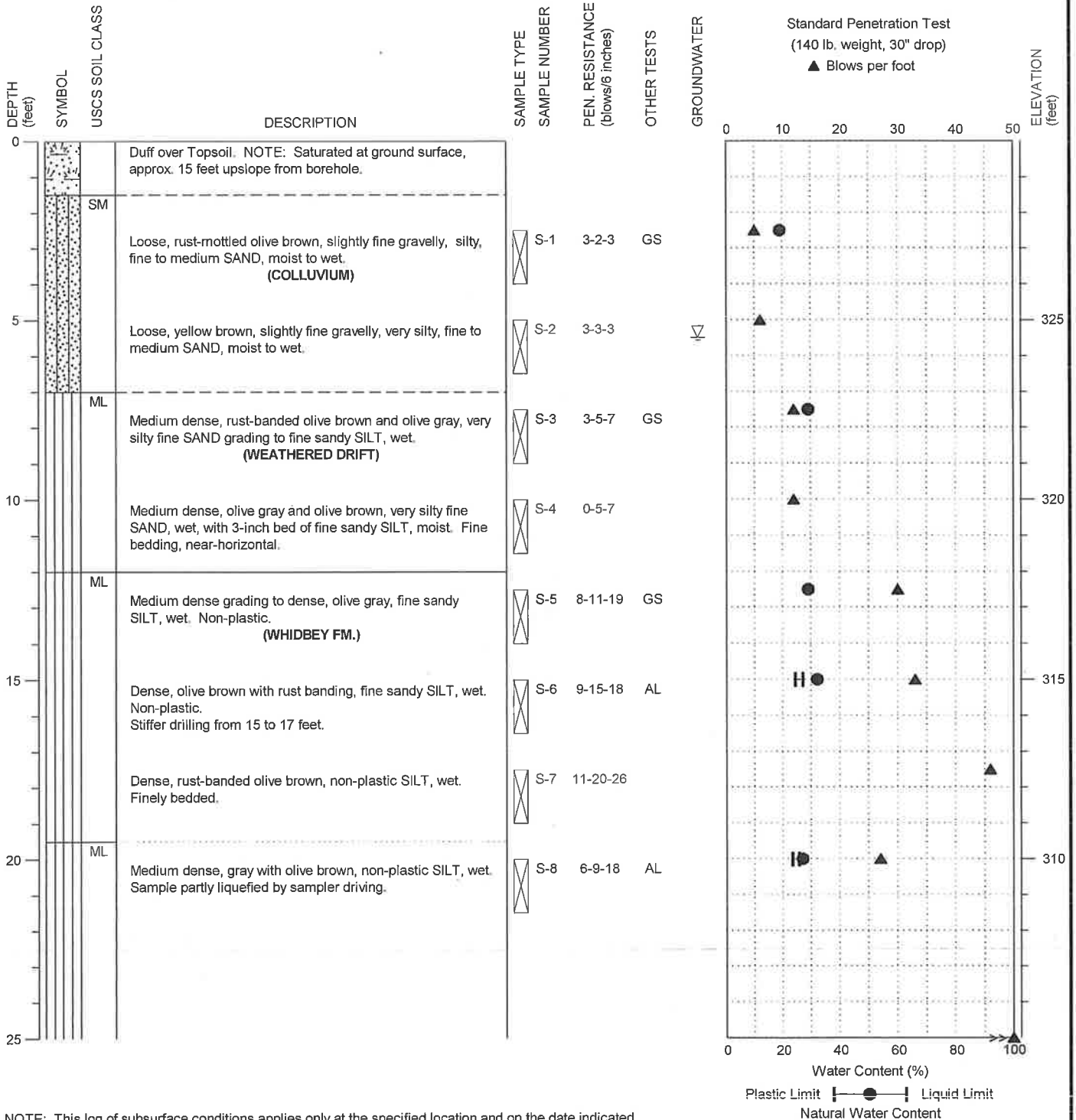
MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
MOIST	Damp but no visible water.
WET	Visible free water, usually soil is below water table.

LEGEND OF TERMS AND SYMBOLS USED ON EXPLORATION LOGS

DRILLING COMPANY: Environmental Drilling Inc.
 DRILLING METHOD: Hollow-Stem Auger, Simco 4000 Tracked Rig
 SAMPLING METHOD: SPT w/ Cathead
 LOCATION:

DATE STARTED: 7/22/2013
 DATE COMPLETED: 7/22/2013
 LOGGED BY: B. Thurber
 SURFACE ELEVATION: 330.0 ± feet



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.



Geotechnical Pre-Purchase Investigation
 10601 McArthur Lane
 Mukilteo, Washington

BORING:
 BH-1

PAGE: 1 of 2

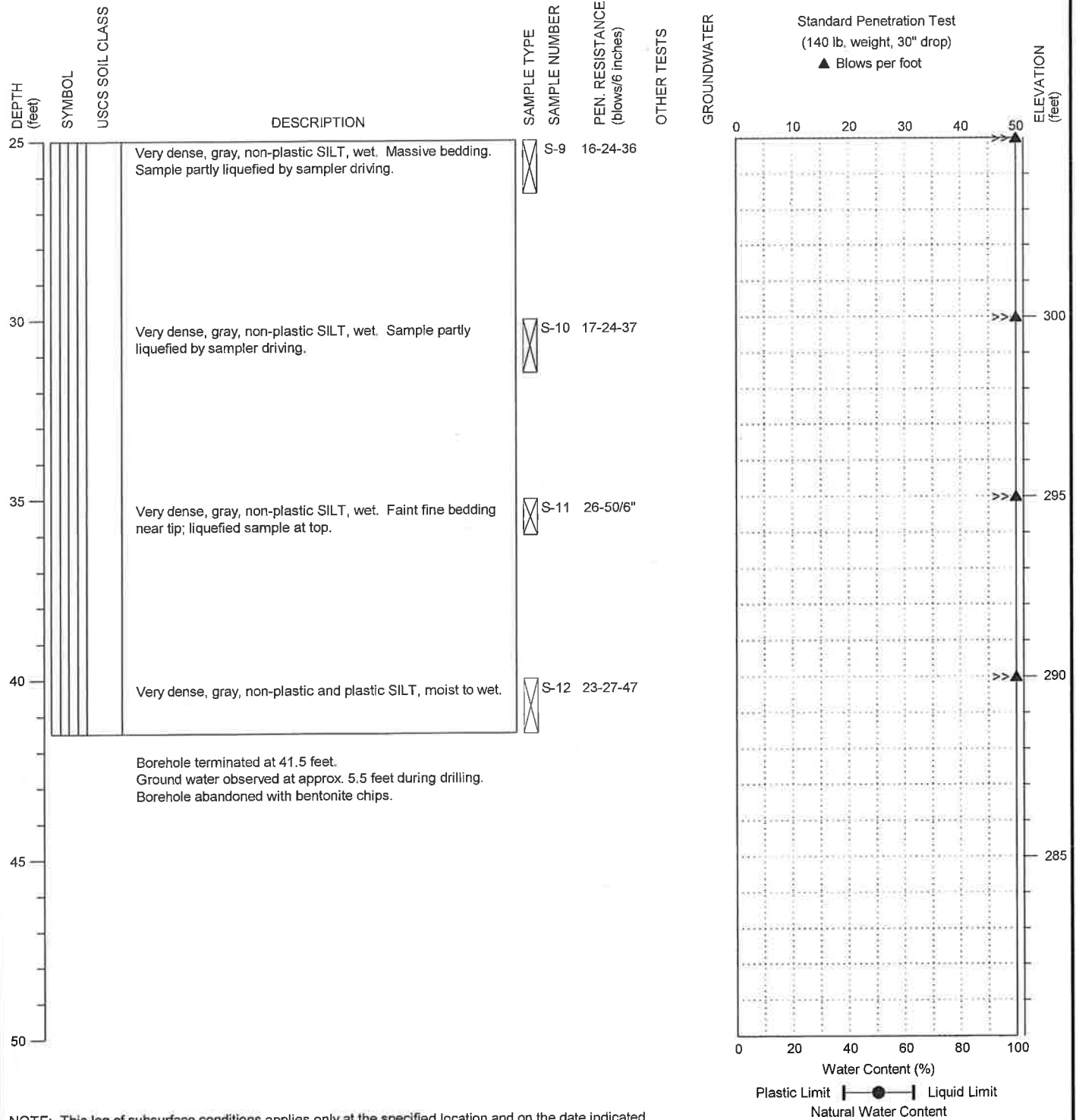
PROJECT NO.: 2013-061

FIGURE:

4

DRILLING COMPANY: Environmental Drilling Inc.
 DRILLING METHOD: Hollow-Stem Auger, Simco 4000 Tracked Rig
 SAMPLING METHOD: SPT w/ Cathead
 LOCATION:

DATE STARTED: 7/22/2013
 DATE COMPLETED: 7/22/2013
 LOGGED BY: B. Thurber
 SURFACE ELEVATION: 330.0 ± feet



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.



Geotechnical Pre-Purchase Investigation
 10601 McArthur Lane
 Mukilteo, Washington

BORING:
 BH-1

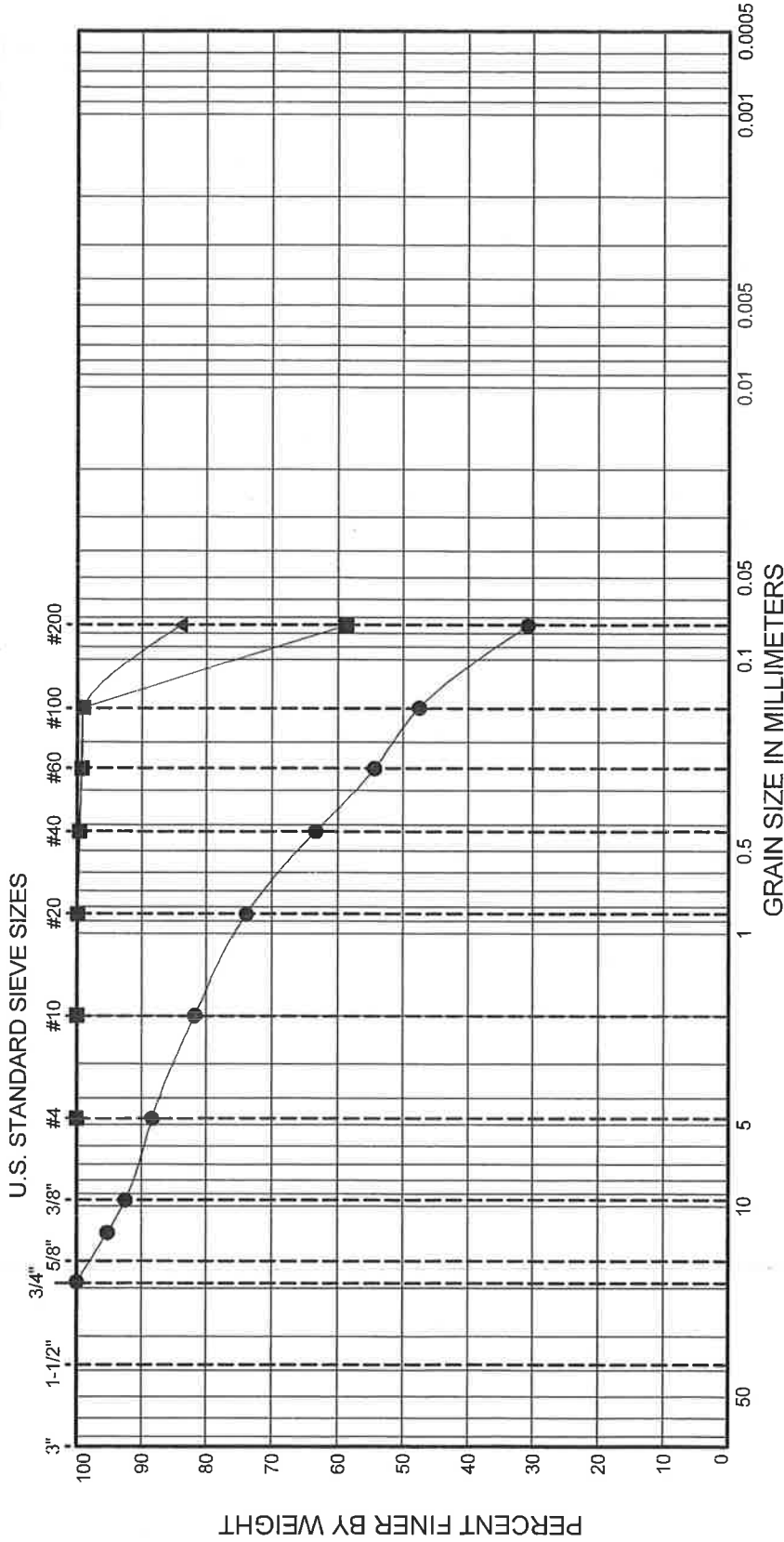
PAGE: 2 of 2

PROJECT NO.: 2013-061

FIGURE:

4

GRAVEL		SAND			SILT		CLAY
Coarse	Fine	Coarse	Medium	Fine			



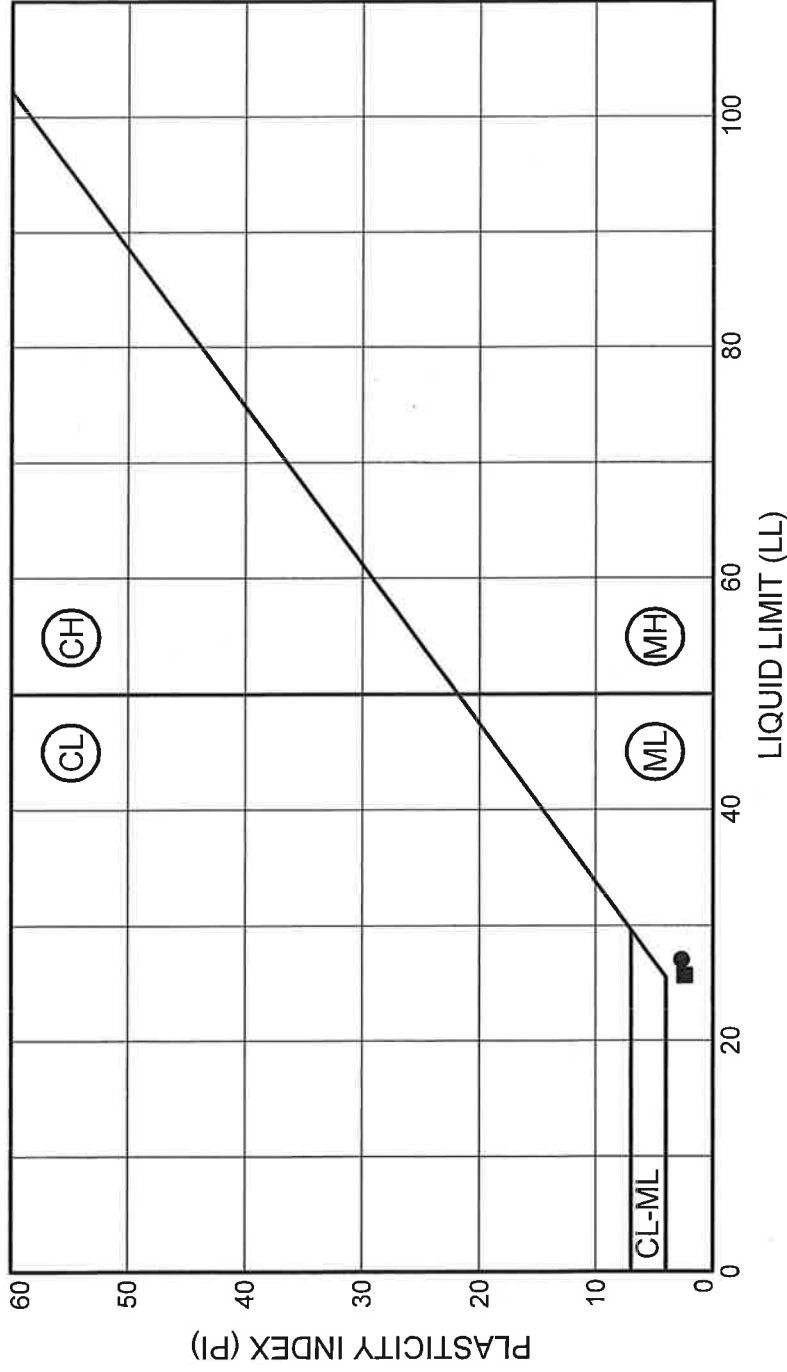
SYMBOL	SAMPLE	DEPTH (ft)	CLASSIFICATION OF SOIL- ASTM D2487 Group Symbol and Name	% MC	LL	PL	PI	Gravel %	Sand %	Fines %
●	BH-1 S-1	2.5 - 4.0	(SM) Brown, silty SAND	19				11.7	57.5	30.8
■	BH-1 S-3	7.5 - 9.0	(ML) Olive brown, sandy SILT	29				0.0	41.2	58.8
▲	BH-1 S-5	12.5 - 14.0	(ML) Olive gray, SILT with sand	29				0.0	16.0	84.0

HWA
HWA GEOSCIENCES INC.

Geotechnical Pre-Purchase Investigation
10601 McArthur Lane
Mukiteo, Washington

**PARTICLE-SIZE ANALYSIS
OF SOILS
METHOD ASTM D422**

PROJECT NO.: 2013-061 FIGURE: 5



SYMBOL	SAMPLE	DEPTH (ft)	CLASSIFICATION	% MC	LL	PL	PI	% Fines
●	S-6	15.0 - 16.5	(ML) Olive brown, SILT	32	27	24	3	
■	S-8	20.0 - 21.5	(ML) Very dark gray, SILT	27	26	23	3	



Wetland Resources, Inc.

RECEIVED

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

OCT 23 2015

CITY OF MUKILTEO

9505 19th Avenue S.E.
Suite 106

Everett, Washington 98208

(425) 337-3174

Fax (425) 337-3045

CRITICAL AREA STUDY AND BUFFER MITIGATION PLAN

FOR

PIANALTO SFR—MACARTHUR LANE

CITY OF MUKILTEO, WA

Wetland Resources, Inc. Project #13206

Prepared By:

Wetland Resources, Inc.

9505 19th Avenue SE, Suite 106

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Prepared For:

Greg Pianalto

11702 Marine Drive

Tulalip, WA 98271

October 20, 2014

Revision 1: October 22, 2015

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ATTACHMENTS:

- FIELD DATA FORMS (S1 & S2)
- DOE WETLAND RATING FORM
- SITE PLAN (SHEET 1/1)

INTRODUCTION

On September 30, 2013, *Wetland Resources, Inc.* (WRI) conducted a site investigation on the subject .35-acre property located at 10601 Macarthur Lane in the city of Mukilteo, WA (a portion of Section 20, Township 28N, Range 4E, W.M.). The purpose of the investigation was to identify and delineate regulated wetlands and/or streams on the subject site with respect to a proposal to construct a new single-family residence.

The 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE Research and Development Center, 2010) was used for making wetland determinations on this site. The Mukilteo Municipal Code (MMC) for Wetland Regulations, Chapter 17B.52B, was used for determining regulatory requirements. WRI identified one Category IV wetland with a 50-foot regulated buffer on the site. No other critical areas were identified in the vicinity.

The on-site wetland and its regulated buffers occupy most of the usable area on the property. In order to construct a reasonable development on the site, the applicant will apply for a variance to eliminate much of the buffer. The remainder of this report provides a detailed analysis of the existing conditions and proposed mitigation measures needed to achieve a reasonable development on the site.

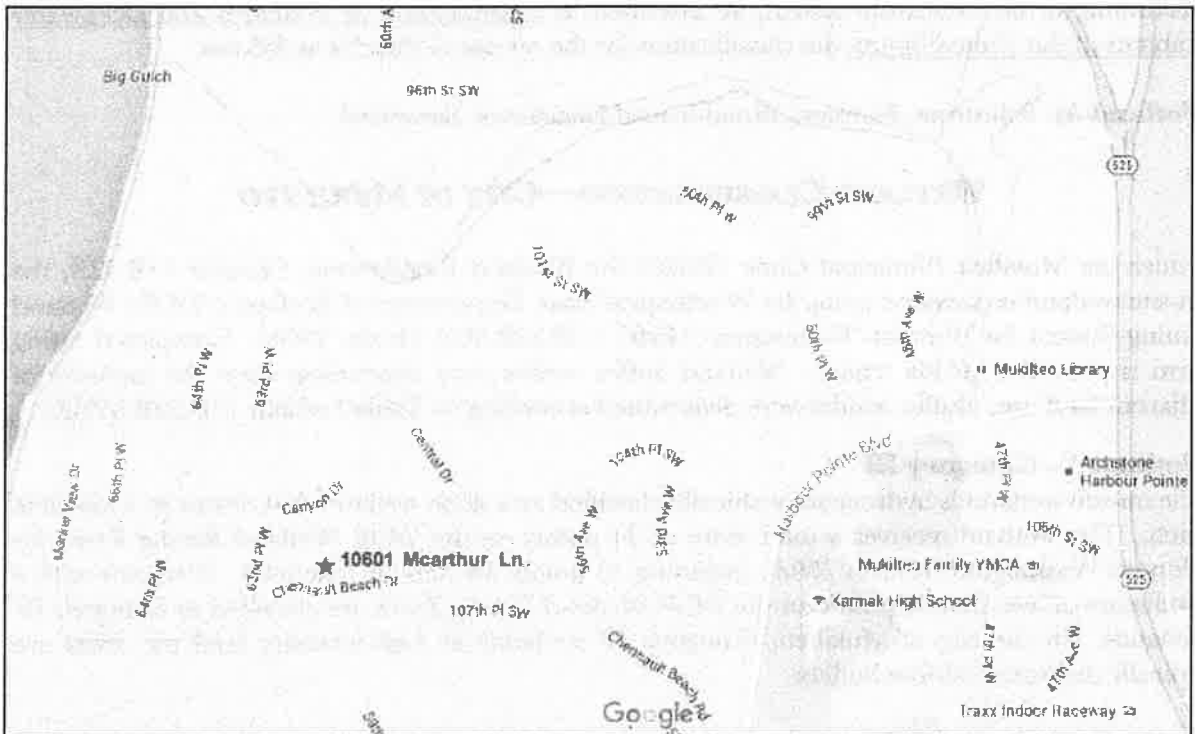


Figure 1: Vicinity Map

SITE DESCRIPTION

Access to the site is from the west via Macarthur Lane. Topography consists of a west-facing slope with an average grade of about 20%. The site is undeveloped and consists of scattered trees and shrubs throughout. Surrounding land use consists of single-family residential use.

Dominant species on the site includes: red alder (*Alnus rubra*), Scouler's willow (*Salix scouleriana*), big leaf maple (*Acer macrophyllum*), and Douglas fir (*Pseudotsuga menziesii*) in the canopy with salmonberry (*Rubus spectabilis*), Himalayan blackberry (*Rubus armeniacus*), ocean spray (*Holodiscus discolor*), oso-berry (*Oemleria cerasiformis*), bracken fern (*Pteridium aquilinum*), and sword fern (*Polystichum munitum*) in the understory.

The onsite wetland is hydrogeomorphically classified as a slope wetland with a mix of native and non-native species. Due to its sloped nature and limited habitat functions, this wetland receives a total relatively low score of 24 points for functions on the DOE Wetland Rating Form for Western Washington (version 2008), including 10 points for habitat functions. This wetland shall be classified as a Category IV wetland with a 50-foot buffer.

WETLAND CLASSIFICATION—COWARDIN SYSTEM

According to the Cowardin System, as described in Classification of Wetlands and Deepwater Habitats of the United States, the classification for the on-site wetland is as follows:

Wetland A: Palustrine, Forested, Broad-leaved Deciduous, Saturated.

WETLAND CLASSIFICATION—CITY OF MUKILTEO

Under the Mukilteo Municipal Code (MMC) for Wetland Regulations, Chapter 17B.52B, the on-site wetland is classified using the Washington State Department of Ecology's (DOE) Wetland Rating System for Western Washington (MMC 17B.52B.060; Hruby 2004). Completed rating form is provided in this report. Wetland buffer widths vary depending upon the intensity of adjacent land use. Buffer widths were determined according to Table I within 17B.52B.070(E).

Wetland A - Category III

The on-site wetland is hydrogeomorphically classified as a slope wetland that drains to a roadside ditch. The wetland receives a total score of 24 points on the DOE Wetland Rating Form for Western Washington (version 2008), including 10 points for habitat functions. Wetlands with a total score of less than 30 points on the DOE Wetland Rating Form are classified as Category IV wetlands. In the city of Mukilteo, Category IV wetlands in high-intensity land use areas are typically dedicated 50-foot buffers.

In the city of Mukilteo, regulated streams, wetlands and their buffers are designated collectively as Native Growth Protection Areas (NGPAs). All Native Growth Protection Areas shall be shown on the development site plans or final plat maps, and shall be noted as follows, per MMC 17.52.035:

There shall be no clearing, excavation, or fill within the native growth protection area shown on the face of this site plan/plat, with the exception of required utility station, removal of dangerous trees, thinning of woodlands for the benefit of the woodlands as determined by a certified landscape architect or arborist, and removal of obstructions on drainage courses, or as allowed under Section 17.52A.070, Vegetation management on steep slopes.

NATIVE GROWTH PROTECTION AREA SIGNS

Signs designating the presence of the NGPA shall be posted along the NGPA boundary. Signs shall be placed at approximately 50-foot intervals around the perimeter of the NGPA. An example of Type 1 sign language is as follows:

NATIVE GROWTH PROTECTION AREA
THIS WETLAND AND UPLAND BUFFER ARE PROTECTED TO
PROVIDE WILDLIFE HABITAT AND MAINTAIN WATER QUALITY.
PLEASE DO NOT DISTURB THIS VALUABLE RESOURCE.

*SEE RECORDED PLAT FOR RESTRICTIONS

The signs shall be constructed of aluminum or similar durable material. They shall be secured to 4" x 4" x 7' (min.) pressure treated posts buried a minimum of two feet in quick setting concrete.

WETLAND DETERMINATION REPORT

Methodology

Wetland conditions were evaluated using the on-site, routine methodology described in the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), (referred as 2010 Regional Supplement). In general, wetland delineation consisted of two tasks: (1) assessing vegetation, soil, and hydrologic characteristics to identify areas meeting the wetland identification criteria, and (2) mapping wetland boundaries using aerial photography and existing survey information.

The following criteria descriptions were used in the boundary determination:

Vegetation Criteria

Wetland Vegetation Criteria

The 2010 Regional Supplement defines hydrophytic vegetation as "the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to exert a controlling influence of the plant species present." Field indicators were used to determine whether the vegetation meets the definition for hydrophytic vegetation.

Soils Criteria and Mapped Description

The National Technical Committee for Hydric Soils, as described in the 2010 Regional Supplement, defines hydric soils as "a soil 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 were used to determine whether a given soil meets the definition for hydric soils.

According to the Soil Survey of Snohomish County Area Washington, the underlying soils on the subject property consist of Alderwood gravelly sandy loam soils.

The Alderwood series is moderately deep over a hardpan and is moderately well drained. It formed in glacial till. Typically the surface layer is very dark grayish brown gravelly sandy loam about 7 inches thick. The upper part of the subsoil is dark yellowish brown and dark brown very gravelly sandy loam about 23 inches thick. A weakly cemented hardpan is at a depth of about 35 inches. Depth to the hardpan ranges from 20 to 40 inches. Permeability of this soil is moderately rapid above the hardpan and very slow through it. Available water capacity is low. Urban land consists of areas that are covered by streets, buildings, parking lots, and other structures that obscure or alter the soils so that identification is not possible.

Hydrology Criteria

The 2010 Regional Supplement states that criteria for designation as a wetland based on hydrology is met when “areas are seasonally inundated and/or saturated to the surface for a consecutive number of days \geq 12.5 percent of the growing season, provided that soil and vegetation parameters are met. Areas inundated or saturated between 5 and 12.5 percent of the growing season in most years may or may not be wetland. Areas saturated to the surface for less than 5 percent of the growing season are non-wetlands.” Field indicators are employed in the determination that wetland hydrology parameters are met.

BOUNDARY DETERMINATION FINDINGS

Wetland A

Dominant vegetation within the area identified as a wetland consists of red alder (*Alnus rubra*, Fac), Scouler’s willow (*Salix scouleriana*, FacW), salmonberry (*Rubus spectabilis*, Fac), Himalayan blackberry (*Rubus armeniacus*, FacU), lady fern (*Athyrium filix-femina*, Fac), willow smartweed (*Polygonum lapathifolium*, FacW), field horsetail (*Equisetum arvense*, Fac), tall mannagrass (*Glyceria elata*, FacW), and creeping nightshade (*Solanum dulcamara*, Fac).

The underlying soils in the area identified as wetland are black (10YR 2/1) mucky sandy loam and gravelly sandy loam in the upper 18 inches. The soils were saturated to the surface at the time of the site visit

Based on the presence of all three field indicators, it appears that the area identified as wetland is saturated more than 12.5 percent of the growing season, thereby meeting the criteria of a wetland.

Non-Wetland

Typical vegetation found throughout the non-wetland areas of the site consists of red alder, big-leaf maple (*Acer macrophyllum*, FacU), Douglas fir (*Pseudotsuga menziesii*, Fac), Himalayan blackberry (*Rubus armeniacus*, FacU), sword fern (*Polystichum munitum*, FacU), Oso-berry (*Oemleria cerasiformis*, FacU), oceanspray (*Holodiscus discolor*, FacU), and bracken fern (*Pteridium aquilinum*, FacU).

The color of the soils sampled in the non-wetland areas are is very dark brown (10YR 3/3) in the upper four inches with a dark yellowish brown (10YR 4/4) in the sublayer. Soil texture throughout the profile is a gravelly sandy loam. The soils were slightly moist at the time of the site investigation.

Based on the lack of field indicators, it appears that areas of the site mapped as non-wetland are not saturated to the surface for more than 12.5 percent of the growing season, thereby not fulfilling wetland hydrology criteria.

FUNCTIONS AND VALUES ASSESSMENT

Methodology

The methodology for this functions and values assessment is based on professional opinion developed through past field analyses and interpretation. This assessment pertains specifically to the on-site wetland system, but is typical for assessments of similar systems common to Western Washington.

Value Assessment

The on-site wetland is hydrogeomorphically (HGM) classified as a slope wetland because it is located on a hillside and contains ground water seeps that “daylight” and flows through the wetland without being impounded. Slope wetlands do not improve water quality or control floodwaters to the same extent as depressional or riverine wetlands because they lack the physical characteristics to be able to impound surface water for treatment and/or flood control.

Water Quality

With its location on a relatively steep slope, the subject wetland has limited ability to trap excess surface waters that flow through it. Herbaceous vegetation cover is relatively low throughout the wetland, resulting in moderately low ability to improve water quality for downstream systems.

Hydrologic control

While this wetland does have some ability to retain ponded water in the upper portion, due to existing vegetation, it has a low capacity for reducing peak flows. Similar to water quality functions, the sloped condition of the wetland results in limited flood control functions. The wetland contains moderate coverage of rigid vegetation that may help slow velocity. A carefully engineered drainage plan should be able to demonstrate no detrimental impacts to this function.

Minor improvements to this function could be made through enhancement by planting additional woody species in open areas of the wetland.

Wildlife habitat function

The wetland and adjacent upland areas are completely isolated by suburban development. As such, connection to other diverse habitats is limited. Species habitat features are limited within the wetland and its buffer. The wetland therefore receives a low score for habitat functions.

Minor improvements to these functions could be made through enhancement of species richness in the wetland. This would be achieved through planting of a diversity of native trees and shrubs within the wetland area.

To conclude, low functionality of the subject wetland is evidenced by the relatively low score of 24 points for functions it receives on the DOE Wetland Rating Form. Potential improvements could be achieved through vegetation enhancement within both the wetland and buffer areas.

PROJECT DESCRIPTION

The applicant is proposing to construct a single-family residence with associated driveway, patio and garage on the subject property. The new home site will be located in the easternmost part of the site with access gained via a new 10-foot wide driveway along the southern property line. With the on-site wetland occupying the northwestern quarter of the site, it and its regulated buffers encumber more than 75% of the property. In order to achieve the desired development goals for this property, the applicant is applying for a reasonable use permit.

Impact Analysis

To achieve a reasonable use of the property, a total of 3,300 square feet of buffer will be permanently impacted, resulting in a minimum buffer width of 17 feet. Given the low level of function within the on-site Category IV wetland and its buffer, measures to mitigate this loss can be achieved through a combination of on and off-site measures. Such measures include vegetation enhancement in the remaining buffer areas on the site and implementation of best management practices for erosion control and stormwater/groundwater control.

As mentioned above, short-term water quality protection measures will be implemented through installation of erosion control fencing along the boundaries of the proposed clearing areas. Careful engineering will ensure that the slopes above the wetland are stable. The natural hydrology of the wetland will not be impacted. Runoff from new surfaces will sheet flow and infiltrate at appropriate rates that will result in no impact to hydrologic functions with the on-site wetland. Please see the project engineer's drainage plans for details.

There are scattered big leaf maple trees and a couple firs and red alders that may be impacted as part of this project. Specifically, two mature Douglas fir and one big leaf maple are expected to be removed from the site. Understory vegetation to be impacted consists mostly of Himalayan blackberry, sword fern and bracken fern. This permanent removal of vegetation may displace some small birds or mammals that may utilize the site; but the overall loss of habitat is expected to be minimal since baseline habitat conditions are of low quality. The loss of woody and herbaceous vegetation, however, may affect infiltration patterns on the site. This would need to be addressed as part of the project's stormwater management plans.

Placement of the house upslope of the wetland will require a moderately deep cut into the hillside for construction of the foundation. To ensure that the groundwater hydrology source to the onsite wetland is not compromised, all stormwater runoff from the new house will be collected and properly directed back into the wetland in a manner that has no effect on soil erosion or water quality.

Based on existing and anticipated conditions, the proposed development is expected to reduce the level of existing functions on the site somewhat. However, the overall cumulative effects,

when compared to the developed areas surrounding the site, are expected to be relatively minimal. Mitigation can be provided in the form of vegetation enhancement on site and off-site in the city's in lieu fee program. Further discussion of proposed mitigation are provided later in this report.

Proposed Mitigation Measures

The provisions under MMC 17.52.025.C.1-4 were followed as part of this proposal. Because more than fifty percent of the buffer will be reduced, the applicant understands that this proposal will require the approval of a hearing examiner through a variance process. MMC 17.52.025.C.1-4 states: *"In order for the property owner to receive a reduction in the required critical area buffer, administratively or through a variance, the remaining buffer shall be enhanced to reduce significant adverse impacts to the critical area and off-site buffer mitigation shall be required for the area of buffer reduced. Mitigation can be in the form of payment of a fee in-lieu of buffer mitigation through use of the Mukilteo habitat reserve (MHR) as described in the Mukilteo CAMP."*

Therefore, as mitigation for permanently impacting 3,300 square feet of buffer, the applicant is proposing to enhance 5,530 square feet of buffer area that remains on the site. This results in a greater than 1:1 enhancement to impact ratio. Enhancement will involve removal of invasive species and then densely planting the designated areas with a diversity of native species.

Following correct installation of the approved mitigation measures, the buffer enhancement plantings may function to improve soil stability downslope of the house as well minimize pollutants and sediments in the runoff flowing through the site. Other anticipated benefits would be increased screening and protection around the perimeter of the wetland, which ultimately benefit the habitat functions within the wetland. These assumptions are consistent with the guidelines provided in *Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands*. (Washington State Department of Ecology, 2005).

In addition to on-site enhancement, the applicant will pay into to a fee in-lieu program as part of the requirement for off-site buffer mitigation. The total area of off-site mitigation and purchase of fee in-lieu credits will be equivalent to enhancement of 3,300 square feet of forested buffer area. The City shall advise the applicant on how to complete this payment.

REASONABLE USE DISCUSSION

A. The standards and requirements of these critical area regulations are not intended and shall not be construed or applied in a manner to deny all reasonable use of private property. If the applicant demonstrates to the satisfaction of the planning director or his or her designee that strict application of these standards would deny all reasonable use of a property, development may be permitted subject to appropriate conditions. A reasonable use exception is intended as a "last resort" when no plan and/or mitigation can meet the requirements of this chapter and allow the applicant a reasonable viable use of his or her property.

Per MMC17.52.025, a development under reasonable use can be granted if all of the following are met:

B. The applicant must demonstrate to the planning director or his or her designee all of the following:

1. *That no reasonable use with less impact on the critical area and/or the buffer is feasible and reasonable;*

The on-site wetland and associated buffers cover about 3/4 of the subject property, including the entire front portion of the property where access is gained. Because of this, strict application of the standards set forth in MMC 17.52.025 would prohibit a reasonable development on the site. The proposal is intended to relieve the applicant from hardship by allowing the applicant to construct an access driveway and a single-family residence on the site. No special privileges apply to this application.

2. *There is no feasible and reasonable on-site alternative to the proposed activity or use that would allow reasonable use with less adverse impacts to the critical area and/or buffer. Feasible on-site alternatives shall include, but are not limited to: reduction in density or building size, phasing of project implementation, change in timing of activities, and revision of road or parcel layout or related site planning considerations;*

The lot is allowed one single-family residence. The applicant has carefully redesigned the house size to ensure that the footprint is within the acceptable size range that is typical of other reasonable use applications in Mukilteo. The footprint is smaller than others in the vicinity of this property. All other on-site alternatives have been explored. The house is being placed as far as possible from the on-site wetland, as well as the driveway. Direct impacts to the on-site wetland will be achieved, but impacts to the on-site buffers cannot be avoided.

3. *There are no practical alternatives available to the applicant for development of the property. An alternative is practical if the property or site is available and the project is capable of being done after taking into consideration existing technology, infrastructure, and logistics in light of the overall project purpose;*

The lot is allowed one single-family residence and there is no other practical use for this property in this existing residential community. Storm drainage and home design alternative have been carefully considered to ensure the least amount of impact on the site. Please see project engineer's drainage report.

4. *The proposed activity or use will be mitigated to the maximum practical extent and result in the minimum feasible alteration or impairment of functional characteristics of the site, including contours, vegetation and habitat, groundwater, surface water, and hydrologic conditions, and consideration has been given to best available science;*

As mitigation for the aforementioned impacts, the applicant is proposing to enhance 5,530 square feet of buffer area that remains on the site. This results in a greater than 1:1 enhancement to impact ratio. Enhancement will involve removal of invasive species and then densely planting the designated areas with a diversity of native species.

Following correct installation of the approved mitigation measures, the buffer enhancement plantings may function to improve soil stability downslope of the house as well minimize pollutants and sediments in the runoff flowing through the site. Other anticipated benefits would be increased screening and protection around the perimeter of the wetland, which ultimately benefit the habitat functions within the wetland. These assumptions are consistent with the guidelines provided in *Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands*. (Washington State Department of Ecology, 2005).

maintenance. The total area of this disturbance associated with the driveway and the 1-foot setback amounts to 1,795 SF (11% of site) on this property.

3. *Critical area regulations, buffers and/or steep slope setbacks may be reduced as follows:*

a. *Less than twenty-five percent is an administrative process.*

The buffer reduction will be greater than 25%; thus, this will not be achieved administratively.

b. *Twenty-five percent to fifty percent where the applicant demonstrates to the city that the development cannot meet the city's code requirements without encroaching onto a critical area or its buffer is an administrative process. In order for the property owner to receive this administrative reduction, the applicant must provide a report relying on best available science and prepared by a qualified specialist to the city that demonstrates the reduction is warranted.*

The buffer reduction will be greater than 25%; thus, this will not be achieved administratively.

c. *Fifty percent or greater reduction requires approval by the hearing examiner through a variance process and with the submittal of a report relying on best available science and prepared by a qualified specialist to the city that demonstrates the reduction is warranted.*

The buffer reduction will be slightly greater than 50% in a small portion of the buffer, which requires approval by a hearing examiner and submittal of this report relying on best available science that has demonstrated that the reduction is unavoidable and will be fully mitigated.

4. *In order for the property owner to receive a reduction in the required critical area buffer, administratively or through a variance, the remaining buffer shall be enhanced to reduce significant adverse impacts to the critical area and off-site buffer mitigation shall be required for the area of buffer reduced. Mitigation can be in the form of payment of a fee in-lieu of buffer mitigation through use of the Mukilteo habitat reserve (MHR) as described in the Mukilteo CAMP. Mitigation may also be in the form of off-site buffer restoration or enhancement as described in the Mukilteo critical areas mitigation program (CAMP) or some other available site per an approved mitigation plan as required by the city's critical areas regulations.*

As mitigation for the aforementioned impacts, the applicant is proposing to enhance 5,530 square feet of buffer area that remains on the site. This results in a greater than 1:1 enhancement to impact ratio. Enhancement will involve removal of invasive species and then densely planting the designated areas with a diversity of native species.

Following correct installation of the approved mitigation measures, the buffer enhancement plantings may function to improve soil stability downslope of the house as well minimize pollutants and sediments in the runoff flowing through the site. Other anticipated benefits would be increased screening and protection around the perimeter of the wetland, which ultimately benefit the habitat functions within the wetland. These assumptions are consistent with the guidelines provided in *Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands*. (Washington State Department of Ecology, 2005).

In addition to on-site enhancement, the applicant will pay into to a fee in-lieu program as part of the requirement for off-site buffer mitigation. The total area of off-site mitigation and purchase

In addition to on-site enhancement, the applicant will pay into to a fee in-lieu program as part of the requirement for off-site buffer mitigation. The total area of off-site mitigation and purchase of fee in-lieu credits will be equivalent to enhancement of 3,300 square feet of forested buffer area. The City shall advise the applicant on how to complete this payment.

5. *There will be no material damage to nearby public or private property and no material threat to the health or safety of people on or off the property;*

No harm to the public is expected since the work will be completely contained within the property. No changes in storm water, utilities, or wastewater are expected to affect surrounding properties.

6. *The proposed activity or use complies with all local, state, and federal laws and the applicant has applied for or obtained all required state and federal approvals; and*

Since no direct in-water impacts are proposed, no other local, state, or federal laws apply. The impact is limited to the upland buffers, and is therefore limited to local review by the city of Mukilteo.

7. *The inability to derive reasonable use is not the result of actions by the applicant in segregating or dividing the property and creating the undevelopable condition after March 23, 1992.*

This reasonable use application was not cause by segregation or division of the property after 1992.

C. *Allowed Reductions for Single-Family Residential Reasonable Use Lots. As provided under state law and the guidelines of the Department of Commerce, reasonable use permits shall allow the development of a modest single-family residential home on a critical area lot.*

1. *Building setbacks may be reduced by up to fifty percent where the applicant demonstrates to the city that the development cannot meet the city's code requirements without encroaching onto a critical area or its buffer.*

The applicant has proposed a 5-foot setback around the entire house foundation and between the house and back property lines.

2. *Development on reasonable use lots shall leave at least seventy percent of the lot undisturbed to protect the critical areas. On small lots seven thousand five hundred square feet or less, a maximum building footprint of one thousand five hundred square feet would be allowed. Additional impervious area for the driveway will be permitted which provides the shortest and most direct access to the house with minimal encroachment or impact into the critical area or buffer. When determining if the access has minimum encroachment or impact on a critical area the use of bridges and open bottom culverts are shall be considered minimal impact. Yard areas will be permitted only if they do not encroach into the critical area or buffer.*

The total lot area is 15,904 SF. The total area of disturbance, including the building footprint and 5-foot yard setback amounts to 3,900 SF (25% of site). As allowed above, additional impervious area for the driveway will be permitted which provides the shortest and most direct access to the house with minimum encroachment. The driveway will be a minimum allowed 10-foot wide driveway with a minimum 1-foot disturbance area along each side to allow for

of fee in-lieu credits will be equivalent to enhancement of 3,300 square feet of forested buffer area. The City shall advise the applicant is how to complete this payment.

D. Allowed Reductions for Multifamily, Commercial, and Industrial Lots.

This does not apply to this project.

E. If, upon application of the wetland mitigation and buffer reduction options contained in Chapters 17.52A through 17.52D, and reasonable provisions contained herein, a development cannot be built without further intrusion into the critical area or buffer, then the applicant can pursue a variance under Chapter 17.64, Conditional Uses and Variances.

Based on the detailed analysis supplied above that clearly demonstrates compliance with Chapters 17.51.A-D, a variance pursuant to Chapter 17.64 will not be achieved.

F. Subdivisions of reasonable use lots will not be allowed unless there is sufficient area to construction all buildings, driveways, drainage facilities, landscaping, and yards areas without intruding on the critical area, buffer, or setback.

The applicant does not intend to subdivide this property.

BUFFER ENHANCEMENT PLAN

The applicant proposes to enhance 5,530 square feet of the remaining buffer areas on this site. Prior to planting, invasive plants should be removed by the roots and exported off-site. These include, but are not limited to, Himalayan blackberry and creeping nightshade. The designated areas will be enhanced with native shrubs spaced on 6-foot centers. The plantings will tolerate sloped conditions with variable light exposure. They will be marked with brightly colored ribbon for easy identification during maintenance and monitoring. The following list of plantings is recommended for this site.

Buffer Enhancement Planting Plan (5,530 SF)

Common Name	Latin Name	Size	Spacing	Quantity
Serviceberry	<i>Amelanchier alnifolia</i>	1 gal	18'	8
Cascara	<i>Rhamnus purshiana</i>	1 gal	18'	8
Thimbleberry	<i>Rubus parviflorus</i>	1 gal	6'	24
Salmonberry	<i>Rubus spectabilis</i>	1 gal	6'	24
Oceanspray	<i>Holodiscus discolor</i>	1 gal	6'	22
Vine maple	<i>Acer circinatum</i>	1 gal	6'	20
Oso-berry	<i>Oemleria cerasiformis</i>	1 gal	6'	20
Snowberry	<i>Symphoricarpos albus</i>	1 gal	6'	20
Sword fern	<i>Polystichum munitum</i>	1 gal	3'	60

PROJECT GOALS AND OBJECTIVES

The goals of this mitigation plan are to offset the new on-site development by replacing and improving the ecological functions on this site. To achieve this, specific goals have been established and are listed below.

Goal 1. Improve wetland buffer functions through vegetation enhancement.

- **Objective 1.** Enhance 5,530 square feet of the remaining wetland buffers.

Goal 2. Permanently protect the enhanced NGPA areas.

- **Objective 1.** Install permanent signs to clearly mark the boundaries of the protected areas.

PLANTING NOTES

Plant in the early spring or late fall and obtain all plants from a reputable nursery. Care and handling of all plant materials is extremely important to the overall success of the project. The origin of all plant materials specified in this plan shall be native plants, nursery grown in the Puget Sound region of Washington. Some limited species substitution may be allowed, only with the agreement of the landscape designer, wetland biologist, and/or City staff.

Handling: Plants shall be handled to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants must be covered during transport. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species' horticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements, and shall not be used unless planted between November 1 and March 1, and only with the permission of the landscape designer, wetland biologist, and City staff. Bare root plants must have enough fibrous root to insure plant survival. Roots must be covered at all times with mud and/or wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.

Weeding: Existing and exotic vegetation in the planting areas will be hand-weeded from around all newly installed plants at the time of installation and on a routine basis throughout the monitoring period. No chemical control of vegetation shall be used on this site.

Planting Pits: Planting pits shall be circular or square with vertical sides, and shall be 6" deeper and 12" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits. Burlap shall be removed from the planting pit.

Backfill shall be worked back into holes such that air pockets are removed without adversely compacting down soils.

Water: Plants shall be watered midway through backfilling, and again upon completion of backfilling. For spring plantings (if approved), a rim of earth shall be mounded around the base of the tree or shrub no closer than the drip line, or no less than 30 inches in diameter, except on steep slopes or in hollows. Plants shall be watered a second time within 24-48 hours after installation. The earthen rim / dam should be leveled prior to the second growing season.

Plant Location: Three-foot by two-inch by one quarter-inch (3' x 2" x 1/4") lath stakes or suitable flagging material shall be placed next to or on each planting to assist in locating the plants while removing the competing non-native vegetation and to assist in locating the plants during the monitoring period.

Arrangement and Spacing: The plants shall be arranged in a pattern with the appropriate numbers, sizes, species, and distribution that are required in accordance with the approved plans. The actual placement of individual plants shall mimic natural, asymmetric vegetation patterns found on similar undisturbed sites in the area. Spacing of the plantings may be adjusted to maintain existing vegetation with the agreement of the landscape designer, wetland biologist, and/or City staff.

Inspection(s): A wetland biologist shall be present on site to inspect the plants prior to planting. Minor adjustments to the original design may be required prior to and during construction.

Mulch: All landscaped areas denuded of vegetation and soil surface surrounding all planting pit areas shall receive no less than two to four inches of organic compost or certified weed free straw after planting. Compost or certified weed free straw shall be kept well away (at least two inches) from the trunks and stems of woody plants.

Temporary Erosion and Sedimentation Control

Prior to beginning any development or mitigation activities, erosion control fencing shall be installed as described in the grading plan construction drawings. A pre-construction meeting between the City, the consulting wetland professional, contractor and equipment operator(s) will be held prior to any construction activities to inspect the location of siltation fencing.

All sedimentation control facilities shall be kept in place and functioning until vegetation is firmly established. Refer to site engineer's TESC plan for all erosion and sedimentation control details.

PROJECT MONITORING PROGRAM

Purpose for Monitoring

A monitoring program shall be included as a part of the approved mitigation plan. To insure that the performance standards of the approved mitigation plan have been met, the mitigation and/or buffer enhancement site(s) shall be monitored for a minimum of five years. The monitoring period required by the city may be extended an additional two years if the wetland or

buffer is not performing as expected by the mitigation or enhancement plan. The monitoring reports shall be submitted on August 1st of each year during the monitoring period.

Monitoring and reports shall be submitted in accordance with the following schedule:

- (1) At the time of construction;
- (2) Thirty days after planting;
- (3) Early in the growing season of the first year;
- (4) End of the growing season of the first year;
- (5) Twice the second year (at the beginning and end of the growing season); and
- (6) Annually thereafter, to cover a total monitoring period of at least five growing seasons.

Performance Standards

Year 1 Monitoring

Success Standard: 100 percent survival of planted species
No greater than 10 percent coverage of invasive species. Zero tolerance of noxious weeds.

Year 2 Monitoring

Success Standard: 90 percent survival of planted species
No greater than 10 percent coverage of invasive species. Zero tolerance of noxious weeds.

Year 3 Monitoring

Success Standard: 80 percent survival of planted species
No greater than 10 percent coverage of invasive species. Zero tolerance of Noxious weeds.

Year 5 Monitoring

Success Standard: 80 percent survival of planted species
No greater than 10 percent coverage of invasive species. Zero tolerance of noxious weeds.

Monitoring Methodologies

Monitoring sample plots and photo points will be established during the as-built inspection and shown on the as-built map. These will be used throughout the 5-year monitoring period. Within these plots, plant survival shall be measured, and invasive vegetation cover will be estimated. These plots shall be fixed, located using stakes, GPS, or other method and used for the duration of the monitoring period. The percentage of plant survival will be derived by subtracting the number of missing or dead plants from the number of plants that were recorded in the transects during the initial visit to assess plan compliance.

Plant survival within the transects is assumed to be representative of the entire site. In addition to the transects, a visual inspection of the entire mitigation area shall be conducted to assess any high mortality areas not represented by the transects. As a supplement to the visual inspection, a panoramic photo of the entire mitigation site will be taken and included in each monitoring

report. If one or more of the planted species exhibit a high rate of mortality and are deemed inappropriate for the site, a substitution may be recommended by the consulting biologist.

Photo points

Permanent photo points will be established within the enhancement areas. Photographs will be taken from these points to visually record condition of the enhancement area. Photos shall be taken annually between May 15 and November 1 (prior to leaf drop), unless otherwise specified.

Monitoring Reports

Monitoring reports shall be submitted by November 1 of each year during the monitoring period. As applicable, monitoring reports must include descriptions / data for:

- 1) Site plan and vicinity map.
- 2) Historic description of project, including date of installation, current year of monitoring, restatement of planting / restoration goals, and performance standards.
- 3) General appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, invasive weeds, and/or other components deemed appropriate by the Department and a qualified consultant.
- 4) Slope condition, site stability, any structures or special features.
- 5) Wetland and buffer conditions, e.g., surrounding land use, use by humans, and/or wild and domestic creatures.
- 6) Wildlife Monitoring Methods shall include visual sightings, aural observations, nests, scat, tracks, and/or other means deemed appropriate by the Department and a qualified consultant. Wildlife monitoring components shall include species counts, species diversity, breeding activity, habitat type, nesting activity, location, usage, and/or other components deemed appropriate by the Department and a qualified consultant.
- 7) Assessment of nuisance / exotic biota and recommendations for management.
- 8) Color photographs (4" x 6" in size) taken from permanent photo-points that shall be depicted on the monitoring report map.

MAINTENANCE

The planting areas will require periodic maintenance to remove undesirable species and replace vegetation mortality. Maintenance may include, but will not be limited to, removal of competing grasses (by hand if necessary), irrigation, fertilization (if necessary), replacement of plant mortality, and the replacement of mulch for each maintenance period. Mulch should be replenished during the maintenance visits, every second year, or as needed.

CONTINGENCY PLAN

If 20 percent of the plants are severely stressed during any of the inspections, or it appears 20 percent may not survive, additional plantings of the same species may be added to the planting area. Elements of a contingency plan may include, but will not be limited to: more aggressive weed control, pest control, mulching, replanting with larger plant material, species substitution, fertilization, soil amendments, and/or irrigation.

PROJECT COSTS

The applicant shall enter into an agreement with the City to complete the mitigation plan approved by the City and shall post a mitigation surety to ensure mitigation is fully functional. The surety shall be in the amount of 150 percent of the estimated cost of the uncompleted actions or the estimated cost of restoring the functions and values of the critical area that are at risk, whichever is greater. The surety shall be based on a cost estimate of installing the project with mitigation plant materials, and any other related costs. Following successful determination of the mitigation plan, the bond shall be released.

Estimated Costs for On-site Mitigation:

Estimated Cost of 206 one-gallon plants (at \$10.50/plant)	\$2,163.00
(Estimate includes: cost of plant materials and labor per each one-gallon plant)	

Estimated Bond Amount (150% of Estimated Cost)	\$3,244.50
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Estimated Cost for In-Lieu-Fee Program:

Estimated Cost for Site Preparation	\$500.00
Estimated Cost for Mulch (3.5cy)	\$80.00
Estimated Cost Maintenance (\$200.00/year for Year 1-2 & 5)	\$60.00
Estimated Cost to Replace Three Significant Trees at a 4:1 Ratio (\$30.00/5-gal pot)	\$360.00
Estimated Cost of Plant Materials (95 plants @ \$10.50/plant)	\$997.50

Total Estimated Project Costs	\$1,997.50
Estimated Bond Amount (150% of Estimated Cost)	\$2,996.25

Final Amount for In-Lieu-Fee Program	\$2,996.25
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USE OF THIS REPORT

This Critical Area Study and Buffer Mitigation Plan is supplied to Greg Pianalto as a means of determining on-site critical area conditions. 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.



Andrea Bachman
Senior Ecologist, PWS #2462

REFERENCES

- Castelle, A.J., C. Conolly, M. Emers, E.D. Metz, S. Meyer, M. Witter, S. Mauermann, T. Erickson, and S.S. Cooke. 1992. Wetland Buffers: Use and Effectiveness. Washington. Department of Ecology, Publication No. 92-10. Olympia, WA.
- City of Mukilteo Zoning Code, Title 17, (Ordinance 1305) May 2012.
- Cooke, Sarah S. 2000. Wetland and Buffer Functions Semi-Quantitative Assessment Methodology (SAM). Cooke Scientific Services. February 2000.
- Corps of Engineers Wetlands Delineation Manual, 1987. Technical Report Y-87-1. Environmental Laboratory. U.S. Army Engineer Waterway Experiment Station. Vicksburg, MS.
- Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington DC. December 1979.
- Hruby, T. 2004. Washington State Wetland Rating System for Western Washington-Revised. Washington State Department of Ecology Publication #04-06-025.
- National List of Plant Species that Occur in Wetlands, Northwest Region. 1996. U.S. Department of the Interior, Fish and Wildlife Service. Washington, D.C.
- Sheldon, D., T. Hruby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale. 2005. Wetlands in Washington State - Volume 1: A Synthesis of the Science. Washington State Department of Ecology. Publication #05-06-006. Olympia, WA. March 2005.
- Soil Survey of Snohomish County Area Washington. U.S.D.A. Soil Conservation Service. July 1983.
- Washington State Wetlands Identification and Delineation Manual. Washington State Department of Ecology. Publication #96-94. March 1997.

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

Project/Site: Pianalto - MacArthur Lane City/County: Mukilteo Sampling Date: 9/30/2013
 Applicant/Owner: Greg Pianalto State: WA Sampling Point: S1
 Investigator(s): Andrea Bachman Section, Township, Range: 20/28N/04E
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): _____
 Subregion (LRR): LRR-A Lat: 47.902051° Long: -122.315991° Datum: _____
 Soil Map Unit Name: Alderwood-Everett gravelly sandy loams, 25 to 70 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.

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Alnus rubra</u>	20	Y	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>6</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83.3%</u> (A/B)
4. _____	_____	_____	_____	
	20	= Total Cover		
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				Prevalence Index worksheet:
1. <u>Rubus spectabilis</u>	45	Y	FAC	Total % Cover of: _____ Multiply by:
2. <u>Athyrium felix-femina</u>	35	Y	FAC	OBL species _____ x 1 = <u>0</u>
3. <u>Rubus armeniacus</u>	20	Y	FACU	FACW species _____ x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species _____ x 3 = <u>0</u>
5. _____	_____	_____	_____	FACU species _____ x 4 = <u>0</u>
	100	= Total Cover		UPL species _____ x 5 = <u>0</u>
				Column Totals: <u>0</u> (A) <u>0</u> (B)
<u>Herb Stratum</u> (Plot size: _____)				Prevalence Index = B/A = _____
1. <u>Epilobium watsonii</u>	20	Y	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" 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 type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Equisetum arvense</u>	10	Y	FAC	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	30	= Total Cover		
<u>Woody Vine Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare Ground in Herb Stratum _____				
Remarks:				

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				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 2/1	100	-	-	-	-	Mucky Sand	
10-18	10YR 2/1	100	-	-	-	-	gravely Sandy Loam	

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 type="checkbox"/> Redox Dark Surface (F6)	
<input checked="" 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: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	Secondary Indicators (2 or more required)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<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): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>	

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: Pianalto - MacArthur Lane City/County: Mukilteo Sampling Date: 9/30/2013
 Applicant/Owner: Greg Pianalto State: WA Sampling Point: S2
 Investigator(s): Andrea Bachman Section, Township, Range: 20/28N/04E
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): _____
 Subregion (LRR): LRR-A Lat: 47.902051° Long: -122.315991° Datum: _____
 Soil Map Unit Name: Alderwood-Everett gravelly sandy loams, 25 to 70 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 type="checkbox"/> No <input checked="" 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: _____)				
1. <u>Acer macrophyllum</u>	35	Y	FACU	
2. <u>Pseudotsuga menziesii</u>	25	Y	FACU	
3. _____				
4. _____				
	60	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Rubus armeniacus</u>	30	Y	FACU	
2. <u>Oemleria cerasiformis</u>	25	Y	FACU	
3. <u>Holodiscus discolor</u>	25	Y	FACU	
4. <u>Polystichum munitum</u>	20	N	FACU	
5. <u>Rubus spectabilis</u>	15	N	FAC	
	115	= Total Cover		
Herb Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
		= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
		= Total Cover		
% Bare Ground in Herb Stratum _____				
Remarks: _____				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

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 = _____

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

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			
0-4	10YR 3/3	100	-	-	-	-	gravely Sandy Loam	
10-18	10YR 4/4	100	-	-	-	-	gravely Sandy Loam	

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 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: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	Secondary Indicators (2 or more required)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<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): _____	Wetland Hydrology Present? 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): 0	

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

Remarks:

Wetland name or number A

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland A - Macarthur Ln Date of site visit: 9/30/13

Rated by A. Bachman Trained by Ecology? Yes No Date of training 11/06

SEC: 20 TOWNSHIP: 28 RANGE: 4 Is S/T/R in Appendix D? Yes No

Map of wetland unit: Figure 1/1 Estimated size .1ac

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I II III IV

Category I = Score ≥ 70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions

4

Score for Hydrologic Functions

10

Score for Habitat Functions

10

TOTAL score for Functions

24

Category based on SPECIAL CHARACTERISTICS of wetland

I II Does not Apply

Final Category (choose the "highest" category from above)

IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics	Wetland HGM Class used for Rating	
Estuarine	Depressional	
Natural Heritage Wetland	Riverine	
Bog	Lake-fringe	
Mature Forest	Slope	<input checked="" type="checkbox"/>
Old Growth Forest	Flats	
Coastal Lagoon	Freshwater Tidal	
Interdunal		
None of the above	Check if unit has multiple HGM classes present	<input type="checkbox"/>

Wetland name or number A

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i>		✓
SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number A

Classification of Wetland Units in Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
 NO – go to 2 YES – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES – **Freshwater Tidal Fringe** NO – **Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a *Freshwater Tidal Fringe* use the forms for **Riverine wetlands**. If it is *Saltwater Tidal Fringe* it is rated as an **Estuarine** wetland. Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term “Estuarine” wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___ At least 30% of the open water area is deeper than 6.6 ft (2 m)?
 NO – go to 4 YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
 The wetland is on a slope (*slope can be very gradual*),
 The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
 The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
 NO - go to 5 YES – The wetland class is **Slope**

Wetland name or number A

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

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

The overbank flooding occurs at least once every two years.

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

NO - go to 6 YES - The wetland class is **Riverine**

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

NO - go to 7 YES - The wetland class is **Depressional**

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

NO - go to 8 YES - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

<i>HGM Classes within the wetland unit being rated</i>	<i>HGM Class to Use in Rating</i>
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number A

S Slope Wetlands		Points (only 1 score per box)
WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		
S	S 1. Does the wetland unit have the <u>potential</u> to improve water quality?	<i>(see p.64)</i>
S	<p>S 1.1 Characteristics of average slope of unit:</p> <p><input type="checkbox"/> Slope is 1% or less (<i>a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance</i>) points = 3</p> <p><input type="checkbox"/> Slope is 1% - 2% points = 2</p> <p><input type="checkbox"/> Slope is 2% - 5% points = 1</p> <p><input checked="" type="checkbox"/> Slope is greater than 5% points = 0</p>	0
S	<p>S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>)</p> <p><input type="checkbox"/> YES = 3 points <input checked="" type="checkbox"/> NO = 0 points</p>	0
S	<p>S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.</p> <p><input type="checkbox"/> Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6</p> <p><input type="checkbox"/> Dense, uncut, herbaceous vegetation > 1/2 of area points = 3</p> <p><input checked="" type="checkbox"/> Dense, woody, vegetation > 1/2 of area points = 2</p> <p><input type="checkbox"/> Dense, uncut, herbaceous vegetation > 1/4 of area points = 1</p> <p><input type="checkbox"/> Does not meet any of the criteria above for vegetation points = 0</p> <p style="text-align: center;">Aerial photo or map with vegetation polygons</p>	Figure <u> </u> 2
S	Total for S 1 <i>Add the points in the boxes above</i>	2
S	<p>S 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?</p> <p>Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i></p> <p><input type="checkbox"/> Grazing in the wetland or within 150ft</p> <p><input type="checkbox"/> Untreated stormwater discharges to wetland</p> <p><input type="checkbox"/> Tilled fields, logging, or orchards within 150 feet of wetland</p> <p><input checked="" type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft upslope of wetland</p> <p><input type="checkbox"/> Other _____</p> <p><input checked="" type="checkbox"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1</p>	<i>(see p.67)</i> multiplier <u> </u> 2
S	TOTAL - Water Quality Functions Multiply the score from S1 by S2 <i>Add score to table on p. 1</i>	4

Comments

Wetland name or number A

S Slope Wetlands		Points (only 1 score per box)
HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion		
S	S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?	<i>(see p.68)</i>
S	<p>S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)</p> <p><input type="checkbox"/> Dense, uncut, rigid vegetation covers > 90% of the area of the wetland. points = 6</p> <p><input checked="" type="checkbox"/> Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3</p> <p><input type="checkbox"/> Dense, uncut, rigid vegetation > 1/4 area points = 1</p> <p><input type="checkbox"/> More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0</p>	3
S	<p>S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area.</p> <p><input checked="" type="checkbox"/> YES points = 2</p> <p><input type="checkbox"/> NO points = 0</p>	2
S	<i>Add the points in the boxes above</i>	5
S	<p>S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?</p> <p>Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? <i>Note which of the following conditions apply.</i></p> <p><input type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems</p> <p><input type="checkbox"/> Other _____</p> <p><i>(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam))</i></p> <p><input checked="" type="checkbox"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1</p>	<i>(see p. 70)</i> multiplier <u>2</u>
S	TOTAL - Hydrologic Functions Multiply the score from S 3 by S 4 <i>Add score to table on p. 1</i>	10

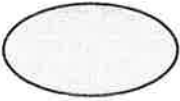
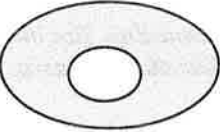

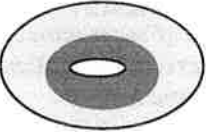
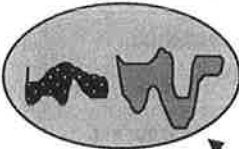
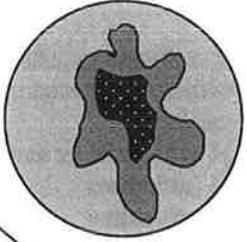
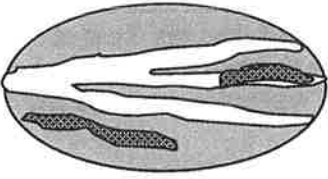
Comments

Wetland name or number A

These questions apply to wetlands of all HGM classes.		Points (only 1 score per box)
HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat		
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?		
<p>H 1.1. <u>Vegetation structure</u> (see p. 72) Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.</p> <p> <input type="checkbox"/> Aquatic bed <input type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have >30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have >30% cover) If the unit has a forested class check if: <input checked="" type="checkbox"/> The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon Add the number of vegetation structures that qualify. If you have: <input type="checkbox"/> 4 structures or more points = 4 <input checked="" type="checkbox"/> 3 structures points = 2 <input type="checkbox"/> 2 structures points = 1 <input type="checkbox"/> 1 structure points = 0 </p> <p>Map of Cowardin vegetation classes</p>	2	Figure <u> </u>
<p>H 1.2. <u>Hydroperiods</u> (see p. 73) Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)</p> <p> <input type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated <input type="checkbox"/> Occasionally flooded or inundated <input checked="" type="checkbox"/> Saturated only <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland = 2 points <input type="checkbox"/> Freshwater tidal wetland = 2 points </p> <p style="text-align: right;">Map of hydroperiods</p>	1	Figure <u> </u>
<p>H 1.3. <u>Richness of Plant Species</u> (see p. 75) 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle</p> <p>If you counted: <input type="checkbox"/> > 19 species points = 2 <input checked="" type="checkbox"/> 5 - 19 species points = 1 <input type="checkbox"/> < 5 species points = 0</p> <p>List species below if you want to:</p>		

Total for page 3

Wetland name or number A

<p>H 1.4. Interspersion of habitats (see p. 76) Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><input type="checkbox"/> None = 0 points</p> </div> <div style="text-align: center;">  <p><input checked="" type="checkbox"/> Low = 1 point</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Moderate = 2 points</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p><input type="checkbox"/> High = 3 points</p> </div> <div style="text-align: center;">  <p>[riparian braided channels]</p> </div> </div> <p>NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes</p>	<p>Figure <u> </u></p> <p>1</p>
<p>H 1.5. Special Habitat Features: (see p. 77) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). <input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>) <input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants <p>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p>1</p>
<p>H 1. TOTAL Score - potential for providing habitat <i>Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</i></p>	<p>5</p>

Comments

<p>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</p> <p>H 2.1 <u>Buffers</u> (see p. 80) <i>Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."</i></p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5</p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4</p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3</p> <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer. Points = 1</p> <p><input type="checkbox"/> Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0.</p> <p><input checked="" type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p>Figure <u> </u></p> <p style="text-align: center;">1</p>
<p>H 2.2 <u>Corridors and Connections</u> (see p. 81)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>).</p> <p><input type="checkbox"/> YES = 4 points (go to H 2.3) <input type="checkbox"/> NO = go to H 2.2.2</p> <p>H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?</p> <p><input type="checkbox"/> YES = 2 points (go to H 2.3) <input type="checkbox"/> NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <p><input checked="" type="checkbox"/> within 5 mi (8km) of a brackish or salt water estuary OR</p> <p><input type="checkbox"/> within 3 mi of a large field or pasture (>40 acres) OR</p> <p><input type="checkbox"/> within 1 mi of a lake greater than 20 acres?</p> <p><input checked="" type="checkbox"/> YES = 1 point <input type="checkbox"/> NO = 0 points</p>	<p style="text-align: center;">1</p>

Total for page 2

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

- Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).
 - Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).
 - Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
 - Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
 - Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).
 - Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
 - Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).
 - Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
 - Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A*).
 - Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
 - Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
 - Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
 - Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.
- If wetland has **3 or more** priority habitats = **4 points**
 If wetland has **2** priority habitats = **3 points**
 If wetland has **1** priority habitat = **1 point** No habitats = 0 points

0

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

Wetland name or number A

<p>H 2.4 Wetland Landscape (choose the <i>one</i> description of the landscape around the wetland that best fits) (see p. 84)</p> <p><input type="checkbox"/> There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5</p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5</p> <p><input checked="" type="checkbox"/> There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3</p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3</p> <p><input type="checkbox"/> There is at least 1 wetland within ½ mile. points = 2</p> <p><input type="checkbox"/> There are no wetlands within ½ mile. points = 0</p>	3
<p>H 2. TOTAL Score - opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>	5
<p>TOTAL for H 1 from page 14</p>	5
<p>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</p>	10

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
SC 1.0 Estuarine wetlands (see p. 86) Does the wetland unit meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt. <input type="checkbox"/> YES = Go to SC 1.1 NO <input type="checkbox"/>	
SC 1.1 Is the wetland unit 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? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2	Cat. I <input type="checkbox"/>
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO = Category II <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 the non-native <i>Spartina</i> spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre. <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 un-mowed grassland. <input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	<input type="checkbox"/> Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/> Dual rating I/II

Wetland name or number A

<p>SC 2.0 Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? (<i>this question is used to screen out most sites before you need to contact WNHP/DNR</i>) S/T/R information from Appendix D <input type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/></p> <p>YES <input type="checkbox"/> – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO <input type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? <input type="checkbox"/> YES = Category I NO <input type="checkbox"/> not a Heritage Wetland</p>	<p><input type="checkbox"/> Cat. I</p>
<p>SC 3.0 Bogs (see p. 87) Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <ol style="list-style-type: none">1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 <input type="checkbox"/> <input type="checkbox"/> No - go to Q. 22. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? <input type="checkbox"/> Yes - go to Q. 3 <input type="checkbox"/> No - Is not a bog for purpose of rating3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? <input type="checkbox"/> Yes – Is a bog for purpose of rating <input type="checkbox"/> No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog. <ol style="list-style-type: none">1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)? <p>2. <input type="checkbox"/> YES = Category I No <input type="checkbox"/> Is not a bog for purpose of rating</p>	<p><input type="checkbox"/> Cat. I</p>

<p>SC 4.0 Forested Wetlands (see p. 90) Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</p> <p>NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.</p> <p><input type="checkbox"/> Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); 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.</p> <p><input type="checkbox"/> YES = Category I NO <input type="checkbox"/> not a forested wetland with special characteristics</p>	<p>Cat. I <input type="checkbox"/></p>
<p>SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</p> <p><input type="checkbox"/> The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</p> <p><input type="checkbox"/> YES = Go to SC 5.1 NO <input type="checkbox"/> not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meets all 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 20% cover of invasive plant species (see list of invasive species on p. 74).</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 un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 acre (4350 square feet)</p> <p><input type="checkbox"/> YES = Category I <input type="checkbox"/> NO = Category II</p>	<p><input type="checkbox"/> Cat. I</p> <p><input type="checkbox"/> Cat. II</p>