DEVELOPMENT SERVICES DEPARTMENT
ENVIRONMENTAL COORDINATOR
11511 MAIN ST., P.O. BOX 90012
BELLEVUE, WA 98009-9012

DETERMINATION OF NON-SIGNIFICANCE

PROPONENT: Jessica Wang

LOCATION OF PROPOSAL: 701 Shoreland Drive SE

NAME & DESCRIPTION OF PROPOSAL: Wang Residence

Demolish an existing single-family residence and shoreline cottage, and construct, in their place, a new residence, with associated improvements, including a new dock, soft shoreline stabilization, and restoration plantings. Modification and/or disturbance of a steep slope critical area, buffer, and structure setback is proposed.

FILE NUMBER: 11-119136-LO and 11-119137-WG

The Environmental Coordinator of the City of Bellevue has determined that this proposal does not have a probable significant adverse impact upon the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(C). This decision was made after the Bellevue Environmental Coordinator reviewed the completed environmental checklist and information filed with the Land Use Division of the Development Services Department. This information is available to the public on request.

☐ There is no comment period for this DNS. There is a 14-day appeal period. Only persons who submitted written comments before the DNS was issued may appeal the decision. A written appeal must be filed in the City Clerk's office by 5:00 p.m. on _____.

☒ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS. There is a 14-day appeal period. Only persons who submitted written comments before the DNS was issued may appeal the decision. A written appeal must be filed in the City Clerk's Office by 5 p.m. on 3/15/12.

☐ This DNS is issued under WAC 197-11-340(2) and is subject to a 14-day comment period from the date below. Comments must be submitted by 5 p.m. on _____. This DNS is also subject to appeal. A written appeal must be filed in the City Clerk's Office by 5 p.m. on _____.

This DNS may be withdrawn at any time if the proposal is modified so that it is likely to have significant adverse environmental impacts; if there is significant new information indicating, or on, a proposals probable significant adverse environmental impacts (unless a non-exempt license has been issued if the proposal is a private project): or if the DNS was procured by misrepresentation or lack of material disclosure.

Environmental Coordinator

3/1/2012
Date

OTHERS TO RECEIVE THIS DOCUMENT:
State Department of Fish and Wildlife
State Department of Ecology,
Army Corps of Engineers
Attorney General
Muckleshoot Indian Tribe

City of Bellevue
Development Services Department
P.O. Box 90012, Bellevue, WA 98009-9012
(425) 452-6800 Fax (425) 452-5225

Shoreline Management Act of 1971
Permit for Shoreline Management Substantial Development
Conditional Use and/or Variance

Application No. 11-119137-WG

Date Received 7/18/2011

[X] Approved / Date 3/1/2012
[ ] Denied / Date

Type of Action:

[X] Substantial Development Permit
[ ] Conditional Use Permit
[ ] Variance Permit

Pursuant to Chapter 90.58 RCW, a permit is hereby granted to: Jessica Wang

to undertake the following development:
Reconstruct an existing dock, remove an existing bulkhead, create a beach cove and soft stabilized shoreline, and restore the shoreline with native vegetation.

upon the following property: 701 Shoreland Drive SE

within Lake Washington
and/or its associated wetlands. The project will be located within Shorelines of Statewide Significance (RCW 90.58.030). The project will be located within a Shoreline Overlay District designation. The following master program provisions are applicable to this development:

- Land Use Code(LUC) Section 20.25E.080(B)General Regulations Applicable to all Land Use Districts & Activities
- Land Use Code(LUC) Section 20.25E.080(N) Moorage Regulations
- Bellevue Comprehensive Plan, Shoreline Management Program Element, Policy SH-13 and SH-50

Development pursuant to this permit shall be undertaken in accordance with the following terms and conditions:

Conditions of Approval (Land Use Division)

This permit is granted pursuant to the Shoreline Management Act of 1971 and nothing in this permit shall excuse the applicant from compliance with any other federal, state or local statutes, ordinances or regulations applicable to this project, but not inconsistent with the Shoreline Management Act (Chapter 90.58 RCW).

This permit may be rescinded pursuant to RCW 90.58.140(8) in the event the permittee fails to comply with the terms and conditions hereof. Construction pursuant to this permit, or substantial progress toward construction, must be undertaken within two years of the date of final approval. This permit shall expire five years from the date of local approval.

Construction pursuant to this permit will not begin or is not authorized until twenty-one (21) days from the date of filing, as defined in RCW 90.58.140(6) and WAC 173-27-130, or until all review proceedings initiated within twenty-one (21) days from the date of such filing have terminated; except as provided in RCW 90.58.140(5) (A) (B) (C).

March 1, 2012
Date

City of Bellevue, Land Use Division

CC: Attorney General, Department of Ecology, Northwest Region
Dept. of Fish and Wildlife, 1775 12th Ave. NW Suite 201 Issaquah, WA 98027
DOE, Dave Radabaugh, 3190 160th Avenue SE, Bellevue, WA 98008-5452

Development Services
Permit Processing 425-452-4898

Application for LAND USE APPROVAL

APPLICATION DATE 7/18/11	TECH CB	CIP PROJ #	PROJECT FILE # 11-119137 WG

☐ Administrative Conditional Use-LA ☐ Boundary Line Adjustment-LW ☐ Planned Unit Development-LK ☐ Planned Unit Dev Combined w/Plat-LK ☐ Conditional Use-LB ☐ Conditional Use Shoreline Mgmt-WA/WG ☐ Design Review-LD ☐ Final Plat-LG	☐ Binding Site Plan-LF ☐ Final Short Plat-LF ☐ Land Use Approval Amendment-LI ☐ Land Use Exemption-LJ ☐ Critical Land Use Permit Admin-LO ☐ Preliminary Plat-LL ☐ Antenna no Building Permit w/SEPA-CA	☐ Preliminary Short Plat-LN ☐ Preliminary SEPA Review-LM ☒ Shoreline Development-WG ☐ Shoreline Exemption w/o SEPA-WD ☐ Shoreline Exemption w/SEPA-WE ☐ Shoreline Variance-WF ☐ Variance-LS
	NOTICE OF COMPLETENESS: Your application is considered complete 29 days after submittal, unless otherwise notified.	

1. **Property Address** 701 Shoreland Dr SE, Bellevue WA 98004 Zoning R-2.5
   Project Name (if applicable) Shoreland Drive Residence Tax Assessor # 562730-0180
2. **Applicant** Jessica Wang Phone (____)____
   Address 4465 Forest Ave SE City, State, Zip Mercer Island, WA 98040
3. **Contact Person** Robert Hutchison Phone (425) 443-0573
   E-Mail Address rob@hutchmaul.com FAX # (____)____
   Address 4010 Whitman Ave N City, State, Zip Seattle, WA 98103
4. **Engineer/Architect/Surveyor** Hutchison & Maul Architecture Phone (206) 545-1991
   Address 4010 Whitman Ave N City, State, Zip Seattle, WA 98103
5. Description of proposed project, use, exemption, or variance Demolition of existing residence & accessory building, construction of new residence.
   Proposed Building Gross Square Footage 10,000 sf Proposed Structure Parking Gross Square Footage 1,000 sf
6. **Nature of Project (if applicable)**
   Current use of property and existing improvements Residential
   Identify any adjacent water area/wetlands or significant natural features (i.e., streams, wetlands, views, significant trees, water bodies, etc) on or within 200 feet of the property. Lake Washington
7. If **SHORT PLAT or SUBDIVISION** Application: Total Acreage ____ Number of Proposed Lots ____
   Has this property been previously subdivided? If yes, Date ____ Recording # ____
   If this is a Final Plat or Final Short Plat, what is the Preliminary project file # ____
8. If **SHORELINE MANAGEMENT**: Total cost or fair market value of the project (whichever is higher) $ $4 million
   If a single family residence or pier is proposed, is it intended for the owner's own personal use? ☒Yes ☐No
   If Shoreline Variance, the development will be located:
   ☒Landward ☐ Waterward of the ordinary high water mark. **AND/OR** ☐ Outside ☐ Inside areas designated as marshes, bogs or swamps by the Dept. of Ecology. (Chapter. 173.22. WAC)

BCC 23.10.033 - Agreement regarding vested rights: The filing of an application for any of these required approvals prior to the filing of a valid and complete application for a building permit shall not establish or create a vested right to proceed with construction of any proposed project.

I certify that I am the owner or owners authorized agent. If acting as an authorized agent, I further certify that I am authorized to act as the Owners agent regarding the property at the above-referenced address for the purpose of filing applications for decision, permits, or review under the Land Use Code and other applicable Bellevue City Codes and I have full power and authority to perform on behalf of the Owner all acts required to enable the City to process and review such applications.

I certify that the information on this application is true and correct and that the applicable requirements of the City of Bellevue, RCW and the State Environmental Policy Act (SEPA) will be met.

Signature ____ Date 07-18-2011
(Owner or Owners Agent)

City of Bellevue
Development Services Department
Land Use Staff Report

Proposal Name:	Wang Residence
Proposal Address:	701 Shoreland Drive SE
Proposal Description:	Application for a Critical Areas Land Use Permit and Shoreline Substantial Development Permit to demolish an existing single-family residence and shoreline cottage, and construct, in their place, a new residence, with associated improvements, including a new dock, soft stabilization, and restoration plantings. Modification and/or disturbance of a steep slope critical area, buffer, and structure setback is proposed. The site is adjacent to Lake Washington.
File Number:	11-119136-LO and 11-119137-WG
Applicant:	Jessica Wang, Property Owner
Decisions Included:	Critical Areas Land Use Permit (Process II. 20.30P) Shoreline Substantial Development Permit (Process II. 20.30R)
Planner:	Reilly Pittman, Land Use Planner
State Environmental Policy Act Threshold Determination:	Determination of Non-Significance for Carol V. Helland, Environmental Coordinator Development Services Department
Director's Decision:	Approval with Conditions Michael A. Brennan, Director Development Services Department By: for Carol V. Helland, Land Use Director

Application Date:	July 18, 2011
Notice of Application Date:	August 4, 2011
Re-Notice of Application Date:	October 27, 2011
Decision Publication Date:	March 1, 2012
SEPA Appeal Deadline:	March 15, 2012 (14-days from publication date)
Substantial Development Permit Appeal:	March 22, 2012 (21-days from publication date)

For information on how to appeal a project proposal, visit the Permit Center at City Hall or call 425-452-6800. Appeal of the SEPA Threshold Determination must be made to the City of Bellevue City Clerk's

Office by 5 p.m. on the date noted above for SEPA appeal deadline. Appeal of the Shoreline Substantial Development Permit must be made to the Washington State Shoreline Hearings Board (contact the project planner for more information on how to file an appeal with the Shoreline Hearings Board).

CONTENTS

I. Proposal Description ..... Pg 4-5

II. Site Description, Zoning & Land Use Context ..... Pg 5-7

III. Consistency with Land Use Code Requirements ..... Pg 7-15

IV. Public Notice & Comment ..... Pg 15-16

V. Summary of Technical Review ..... Pg 16-17

VI. State Environmental Policy Act ..... Pg 17-18

VII. Changes to Proposal Due to Staff Review ..... Pg 18

VIII. Decision Criteria ..... Pg 18-22

IX. Conclusion and Decision ..... Pg 22

X. Conditions of Approval ..... Pg 22-27

Attachments

1. Site Plan, Dock Plan, Building Elevations – Enclosed
2. Mitigation Planting Plan, Notes, and Shoreline Cross Sections – Enclosed
3. Critical Areas Report, Geotech Report, Arborist Report – Enclosed
4. Impact Analysis, Survey – In File
5. SEPA Environmental Checklist – In File
6. Permit forms and documents – In File

I. Proposal Description

The applicant proposes to demolish the existing residence and accessory structure and construct a new residence having 10,625 square feet of internal floor area with a footprint of 5,625 square feet on a 22,890 square-foot property adjacent to Lake Washington. The new house and improvements are located as much as possible within the existing footprints of the prior structures but will permanently modify 2,285 square feet of steep slope critical area out of the total 6,815 square feet of steep slope on the property. 6,744 square feet of area regulated as slope buffer/setback and/or shoreline buffer/setback will also be modified. 2,549 square feet of area will be temporarily disturbed. The shoreline modification is largely a result of removal of the existing upland improvements and the existing shoreline bulkhead. The removal of the bulkhead, regrading of the shoreline for the creation of a beach cove, and site-wide replanting is proposed as mitigation for all impacts to steep slope critical areas on the site. The intent of the shoreline restoration is to provide a net improvement of the most important critical area functions on the site and the shoreline ecosystem in which the site exists.

The house design proposes a relatively small footprint considering the size of the house. The size of the house footprint is partly due to the unique layout of the house which is avoiding a significantly large fir tree on the site which provides known eagle perching potential near the lake. The house is planned in a way the both avoids the tree and disturbance of the steepest slopes by locating the bulk of the house at the top and toe of the slope. The pin method for constructing the house foundation will also allow for minimal slope disturbance. The site also incorporates bio-retention of storm water and pervious pavement to allow infiltration. **See Figures 1 and 2 below for the proposed site plan.**

Figure 1

The existing pier will be replaced in the same location and configuration, but will be slightly smaller per current dock construction requirements. The new pier is proposed to slightly deviate from the current dock dimensional requirements to allow the ell to maintain its existing dimensions.

Approval of a Critical Areas Land Use Permit is required for all proposed impacts to steep slopes (2,285 square feet), all impacts to buffers and structure setbacks of both the slope and the shoreline (6,744 square feet) and temporary disturbance caused by construction and demolition (2,549 square feet). The site is within 200 feet of Lake Washington and is therefore within the Shoreline Jurisdiction of the State of Washington and a Shoreline Substantial Development Permit is required for the new development and replacement of the dock. See attachment 1 for project plans.

II. Site Description, Zoning, and Land Use

A. Site Description

The project site is located at 701 Shoreland Drive SE in the Southwest Bellevue Subarea. The site is adjacent to Lake Washington to the west and is surrounded by other residential properties on all other sides. The property obtains access from an access easement that crosses the properties to the South and connects with SE 15th Street that is within Chism Beach Park. There is an existing single-family residence on-site and a detached accessory structure adjacent to the lake. **See Figure 2 for existing site condition.**

Figure 2

B. Zoning

The property is zoned R-2.5, single-family residential and the proposed house and improvements are allowed in this zone.

C. Land Use Context

The property has a Comprehensive plan Land Use Designation of SF-M (Single Family Medium Density). Construction of a home and improvements is consistent with this land use.

D. Critical Areas On-Site and Regulations

i. Shorelines

Shorelines provide a variety of functions including shade, temperature control, water purification, woody debris recruitment, channel, bank and beach erosion, sediment delivery, and terrestrial-based food supply (Gregory et al. 1991; Naiman et al. 1993; Spence et al.1996).

Shorelines provide a wide variety of functions related to aquatic and riparian habitat, flood control and water quality, economic resources, and recreation, among others. Each function is a product of physical, chemical, and biological processes at work within the overall landscape. In lakes, these processes take place within an integrated system (ecosystem) of coupled aquatic and riparian habitats (Schindler and Scheuerell 2002). Hence, it is important to have an ecosystem approach which incorporates an understanding of shoreline functions and values.

ii. Geologic Hazard Areas

Geologic hazards pose a threat to the health and safety of citizens when commercial, residential, or industrial development is inappropriately sited in areas of significant hazard. Some geologic hazards can be reduced or mitigated by engineering, design, or modified construction practices. When technology cannot reduce risks to acceptable levels, building in geologically hazardous areas is best avoided (WAC 365-190).

Steep slopes may serve several other functions and possess other values for the City and its residents. Several of Bellevue's remaining large blocks of forest are located in steep slope areas, providing habitat for a variety of wildlife species and important linkages between habitat areas in the City. These steep slope areas also act as conduits for groundwater, which drains from hillsides to provides a water source for the City's wetlands and stream systems. Vegetated steep slopes also provide a visual amenity in the City, providing a "green" backdrop for urbanized areas enhancing property values and buffering urban development.

iii. Habitat Associated with Species of Local Importance

Urbanization, the increase in human settlement density and associated

intensification of land use, has a profound and lasting effect on the natural environment and wildlife habitat (McKinney 2002, Blair 2004, Marzluff 2005, Munns 2006), is a major cause of native species local extinctions (Czech et al 2000), and is likely to become the primary cause of extinctions in the coming century (Marzluff et al. 2001a). Cities are typically located along rivers, on coastlines, or near large bodies of water. The associated floodplains and riparian systems make up a relatively small percentage of land cover in the western United States, yet they provide habitat for rich wildlife communities (Knopf et al. 1988), which in turn provide a source for urban habitat patches or reserves. Consequently, urban areas can support rich wildlife communities. In fact, species richness peaks for some groups, including songbirds, at an intermediate level of development (Blair 1999, Marzluff 2005).Protected wild areas alone cannot be depended on to conserve wildlife species. Impacts from catastrophic events, environmental changes, and evolutionary processes (genetic drift, inbreeding, colonization) can be magnified when a taxonomic group or unit is confined to a specific area, and no one area or group of areas is likely to support the biological processes necessary to maintain biodiversity over a range of geographic scales (Shaughnessy and O'Neil 2001). As well, typological approaches to taxonomy or the use of indicators present the risk that evolutionary potential will be lost when depending on reserves for preservation (Rojas 2007). Urban habitat is a vital link in the process of wildlife conservation in the U.S.

The property is within 0.4 miles of a bald eagle nest which places the site in a Bald Eagle Management Zone. Eagle use of the large fir trees on the site for perching is documented. The Washington Department of Fish and Wildlife no longer requires a management plan for actions within the management zone. However, the U.S. Fish and Wildlife Service have recommended management actions within a management zone. Due to the distance the site is from the nest, the project is in compliance with the recommendations as documented in the submitted critical areas report in attachment 3.

III. Consistency with Land Use Code Requirements:

A. Zoning District Dimensional Requirements:

The proposal is in conformance with the general dimensional requirements of the R-2.5 zone as outlined below. All setbacks, height, lot coverage by structure, and impervious surface may be required to be verified by survey through the building permit inspection process.

i. Zoning Dimensional Requirements

BASIC INFORMATION	
Zoning District	R-2.5
Gross Site Area	22,890 square feet

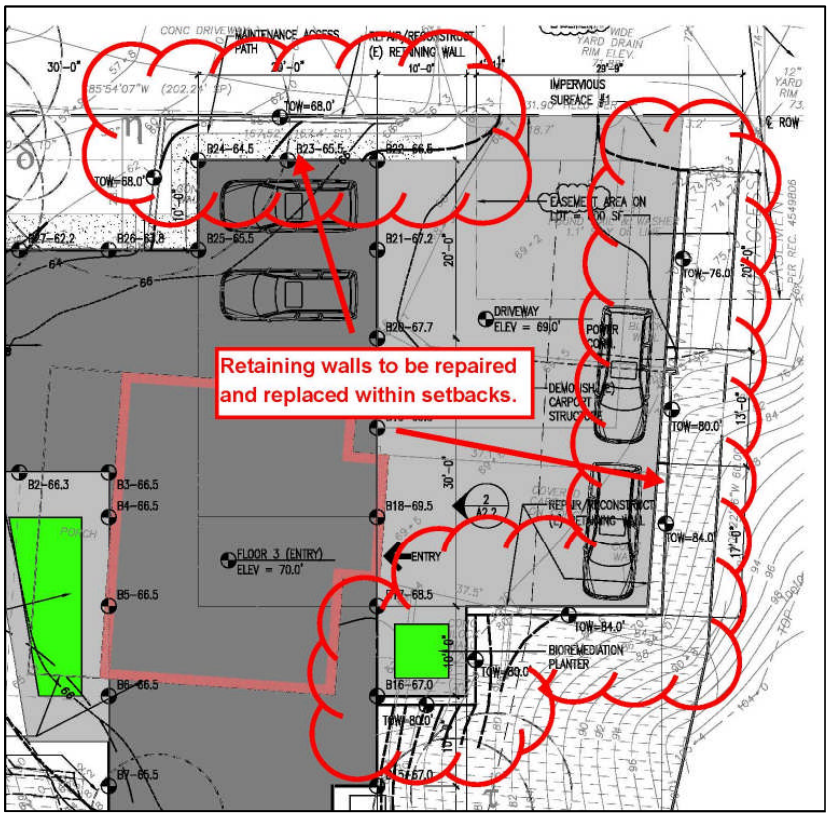
Critical Area and Buffer	6,815 square feet		
ITEM	**REQ'D/ALLOWED**	**PROPOSED**	**MEETS REQ'D**
Building Setbacks Front Yard Rear Yard Min. Side Yard 2 Side Yard Access Easements	 20 feet 25 feet 5 feet 15 feet 10 feet	 20 feet 25 feet 5 feet 15 feet 10 feet	**Yes**
Maximum in Building Height (Flat Roof)	30 feet from AEG	30 feet from AEG or less	**Yes**
Maximum Façade Height	40 feet	40 feet or less	**Yes**
Maximum Lot Coverage by Structure	35 Percent 22,890 - 6,815 16,075 SF net lot area .35 x 16,075 5,626 SF	35 Percent 5,625 SF	**Yes**
Maximum Impervious Surface Coverage	50 Percent 22,890 x .5 11,445 SF	42 Percent 9,618 SF	**Yes**
Maximum Floor Area Ratio	.5 or 50 Percent 22,890 x .5 11,450 SF	.46 or 46 Percent 10,625 SF	**Yes**
Tree Retention	30% of 352 diameter inches = 105.6 inches	75% of diameter inches retained = 264 inches	**Yes**

i. Retaining Walls and Rockeries

Per LUC 20.20.025.D retaining walls and rockeries that are 30 inches or greater are allowed within zoning setbacks provided the existing grade change is such that there is no feasible alternative to location or height. There are two instances where retaining walls exceed 30 inches in a setback on the existing property. These walls are proposed for replacement as part of the new construction. The walls are located within the front and side yard setback from the east and north property lines respectively. The walls support vehicle access and the easement that leads to the site. The exiting grade above the walls is significantly steep, greater than 40 percent. Give the steep grades and the need for site access there are no options to relocate or reduce the wall heights that would not impact access or cause further impacts to steep slopes. Because the walls are already existing, facilitate access onto the site, and have significant grade change they can be repaired and replaced at a height similar to their current design. See

Figure 2 below for wall location. **<u>See Conditions of Approval in Section X of this report.</u>**

Figure 2



B. Critical Areas Overlay District LUC 20.25H

The City of Bellevue Land Use Code Critical Areas Overlay District (LUC 20.25H) establishes performance standards and procedures that apply to development on any site which contains in whole or in part any portion designated as critical area, critical area buffer or structure setback from a critical area or buffer. The project area is within a steep slope critical area, 50-foot top-of-slope buffer, the 75-foot toe-of-slope setback, shoreline buffer, and shoreline setback and is subject to the performance standards found below:

i. Consistency with LUC 20.25H.125

Development within a landslide hazard or steep slope critical area or the critical area buffers of such hazards shall incorporate the following additional performance standards in design of the development, as applicable. The requirement for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function.

1. **Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to**

conform to existing topography;
The house layout proposed is to avoid the steep slope area as much as possible by placing the bulk of the house at the top and toe of slope. The project utilizes tiered foundations walls to the maximum extent possible. The pin foundation proposed will also limit the need for extensive excavation that would disturb the slope.

2. **Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation;**
The proposed development on the property is located to avoid the steep slope critical areas as much as possible and to retain all but three significant trees in place on the perimeter of the site. Retention of the largest fir tree on site is also achieved, which provides stability to the slope and maintains potential for eagle perching on the site. Development has been concentrated at the top and toe of the slope. The applicant has prepared an arborist report on the property to address how construction of the residence can be accomplished without impacting the large fir and beech tree located on the site. The construction does result in the removal of a large fir tree and two smaller trees. However, the proposal does retain most of the trees on-site, including the largest trees and includes planting of additional trees.

3. **The proposed development shall not result in greater risk or a need for increased buffers on neighboring properties;**
Per the submitted geotech report as attachment 3, the structures will be constructed on "competent native soil or pin piles" and based on the distance from adjacent development on neighboring properties, the proposal "will not result in greater risk to the neighboring properties" (Geotech, Pg. 6). The geotech also concludes that the proposed improvements will likely "improve the stability of the subject site" (Pg. 6). The applicant will be required to record a hold harmless agreement which releases the City from liability for any damage arising from the location of improvements within a geologically hazardous area in accordance with LUC 20.30P.170. **<u>See Conditions of Approval in Section X of this report.</u>**

4. **The use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes where graded slopes would result in increased disturbance as compared to use of retaining wall;**
Repair or replacement of existing retaining walls is proposed in order to avoid further impacts to steep slopes by relocating or redesigning the retention system. The basement walls of the house are planned to avoid creating artificial slopes or cause disturbance to the natural slope.

5. **Development shall be designed to minimize impervious surfaces within the**

critical area and critical area buffer;
Location of improvements in the steep slope is minimized by the project. Improvements in the slope buffer include bio-retention planter cells and pervious pavement to limit the amount of impervious surface on the site.

6. **Where change in grade outside the building footprint is necessary, the site retention system should be stepped and regrading should be designed to minimize topographic modification. On slopes in excess of 40 percent, grading for yard area may be disallowed where inconsistent with this criteria;**
   The change in grade outside of the proposed building footprint is very minimal as the improvements are located in the flatter top and toe of the slope. Improvements within the steep slope consist of walkways, stairs, and the portion of the house which connects the upper and lower level.

7. **Building foundation walls shall be utilized as retaining walls rather than rockeries or retaining structures built separately and away from the building wherever feasible. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation;**
   Foundation walls are utilized for retention where possible. However the use of a pin pile foundation is meant to limit excavation which would be needed to incorporate the foundation as a retention device.

8. **On slopes in excess of 40 percent, use of pole-type construction which conforms to the existing topography is required where feasible. If pole-type construction is not technically feasible, the structure must be tiered to conform to the existing topography and to minimize topographic modification;**
   The geotech found that the use of pole-type construction on this site would result in a “less stable site/structure” and did not recommend using this construction type (Pg. 7). A tiered basement wall is proposed to be used meeting this standard.

9. **On slopes in excess of 40 percent, piled deck support structures are required where technically feasible for parking or garages over fill-based construction types; and**
   No construction is proposed in slopes of 40 percent for parking. The parking area is located at the top of the slope, where it is presently located due to the limited driveway access available.

10. **Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and**

restoration plan meeting the requirements of LUC 20.25H.210.
All disturbed areas are proposed to be restored as part of the site-wide mitigation plan which is attachment 2.

C. Shoreline Overlay District LUC 20.25E:

The City of Bellevue Land Use Code Shoreline Overlay District (LUC 20.25E) establishes performance standards and procedures that apply to development within 200 feet of Lake Washington. The proposal to replace the dock is subject to the following performance standards.

i. New, expanded, or repaired moorage facilities are subject to the moorage regulations in LUC 20.25E.080.N.1 which are being met as follows:

1. **No skirting is allowed on any structure.**
   No skirting is proposed.

2. **Moorage facilities serving only one residential waterfront lot shall not exceed 480 square feet.**
   New docks are limited to 480 square feet in area which is exceeded by this proposal. The existing dock is 690 square feet in area and the proposed dock is 534 square feet in area. The larger dock square footage is due to the size of the ell which is 22 feet by 11 feet. The ell is the only feature of the dock that exceeds the standard dimension and causes the dock to exceed the overall 480 square-foot area limit. The proposed ell dimension can be modified through the critical areas report process which is discussed below.

   Pursuant to this code section (LUC 20.25E.080.N) any performance standard for new moorage facilities may be proposed for modification through a critical areas report under a Critical Area Land Use Permit (see pages 31-38 of the CAR for dock discussion). Through a critical areas report the applicant must demonstrate that the proposal will lead to equivalent or better protection of critical areas and a net increase in certain critical area functions and values.

   The current shoreline is comprised of a bulkhead with lawn and ornamental vegetation. A detached accessory structure and a deck are within 25 feet of the shoreline. The existing dock is 84 feet in total length and has a 22-foot by 11-foot ell, a 6-foot by 73-foot walkway, is 690 square feet in area, and has 32 piles, some of which are moorage piles and dolphin piles and are greater than 12 inches in diameter.

   The proposed dock is replacing the existing one in a like-for-like fashion and the ell is proposed to maintain the existing dimensions of 22 feet by 11 feet. This will cause the dock to exceed the 480 square-foot surface area allowed. The new

dock will result in a 23 percent decrease in dock surface area when compared to the existing. The entire dock will also be grated and 32 piles will be removed and replaced with only 13 piles that meet the requirements for spacing width and material type. The width of the walkway is also reduced from 6 feet to the required 4-foot width that will be fully grated. The existing dock provides no light penetration and will be replaced with a new dock that is fully grated, allowing greater light penetration to the lake below. The reduced number and size of the new piles will limit the shadows created. In addition, the shoreline bulkhead and other improvements will be removed and the shoreline restored through beach creation and planting. The design of the dock will reduce its impact as much as possible on the shoreline habitat within the first 30 feet of the Ordinary High Water Mark and the proposed shoreline restoration will increase the functions provided by the shoreline on this site which is currently only planted with ornamental species and lawn.

The evaluation by the applicant's consultant suggests the new dock design provides significant improvements "particularly in the near shore area" and that the replacement will "result in a net improvement" to critical areas (CAR, Pg. 33). The ell is over 70 feet from the OHWM and the ell is the only feature of the dock that exceeds the standard dimension. The additional surface area of the dock is due to the ell. Because the ell is in deeper water the biologist found that the surface area of the ell and its placement in deeper water "significantly reduces the potential impacts" caused (Pg. 36). As the ell is replacing the existing one, the impacts are also already present.

3. **Piers shall not exceed 4 feet wide and shall be fully grated.**
   The proposed pier walkway is 4 feet wide and is proposed to be grated.

4. **Ells are allowed only over water with depths of nine feet or greater at the landward end of the ell.**
   The ell is located in over 10 feet of water.

5. **Ells may be up to six feet wide by 26 feet long with grating over the entire ell.**
   The ell on this pier is replacing the existing ell which measures 22x11 feet. The proposed ell dimension is modified by a critical areas report already discussed in this section. The ell is located in the deeper water and the impacts from the ell already exist. The new dock will allow greater light penetration in the near-shore and the shoreline restoration and replanting will result in a significantly improved shoreline.

6. **In no case may any moorage facility extend more than 150 feet waterward of the ordinary high water mark.**

The dock is 84 feet long and meets this requirement.

7. **The first (nearest shore) piling shall be steel, four-inch piling and at least 18 feet waterward of the ordinary high water mark. Piling sets beyond the first are not required to be steel, shall be spaced at least 18 feet apart and shall not be greater than 12 inches in diameter. Piles shall not be treated with pentachlorophenol, creosote, CCA or comparably toxic compounds. If ACZA pilings are proposed, the applicant will meet all of the Best Management Practices, including a post-treatment procedure, as outlined in the amended Best Management Practices of the Western Wood Preservers. Steel piles will be installed using approved sound attenuation measures.**
   All structure and moorage piles meet the material and spacing requirements. Piles shall not be treated with pentachlorophenol, creosote, CCA or comparably toxic compounds. If ACZA pilings are proposed, the applicant will meet all of the Best Management Practices, including a post-treatment procedure, as outlined in the amended Best Management Practices of the Western Wood Preservers. Steel piles will be installed using approved sound attenuation measures. **See Conditions of Approval in Section X of this report.**

8. **Existing Habitat Features. Existing habitat features (e.g., large and small woody debris, substrate material, etc.) shall be retained and new or expanded moorage facilities placed to avoid disturbance of such features.**
   The existing large beech tree along the shoreline provides significant detritus input and shading of the near shore and is being retained in the proposal. The 116-foot long bulkhead is being removed and replaced with a low boulder outcropping placed at or landward of the existing bulkhead. The land behind the existing bulkhead will be regraded to create a gravel beech cove, north of the existing dock. The proposed beach cove will provide over 645 square feet of new beach area and moves the OWHM further landward. New shallow water habitat will be created along 70 feet of the shoreline and the entire shoreline.

9. **Invasive weeds (e.g., milfoil) may be removed with nonchemical means only.**
   No invasive species were identified in the plans to be removed.

10. **Shoreline Planting. In order to mitigate the impacts of new or expanded moorage facilities, the applicant shall plant emergent vegetation (if site-appropriate) and a buffer of vegetation a minimum of 10 feet wide along the entire length of the lot immediately landward of ordinary high water mark. Planting shall consist of native shrubs and trees and, when possible, emergent vegetation. At least five native trees will be included in a planting plan containing one or more evergreen trees and two or more trees that like**

wet roots (e.g., willow species). Such planting shall be monitored for a period of five years consistent with a monitoring plan approved pursuant to LUC 20.25H.210. This subsection is not intended to prevent reasonable access through the shoreline critical area buffer to the shoreline, or to prevent beach use of the shoreline critical area.
In addition to the bulkhead removal and beach cove creation 10,562 square feet of the property is to be restored with native vegetation per the planting plan which is attachment 2. The planting also includes the entire shoreline area, above and below the new boulders.

11. **No private moorage waterward of the ordinary high water mark, including structures attached thereto, shall be closer than 12 feet to any adjacent property line Excepted from the requirements of this section are boat lifts or portions of boat lifts which do not exceed 30 inches in height measured from ordinary high water mark.**
Based on the project plans and survey, the proposed dock is not located within 12 feet of a property line.

IV. Public Notice and Comment

Application Date:	July 18, 2011
Public Notice (500 feet):	August 4, 2011
Re-Notice (500 feet):	October 27, 2011
Minimum Comment Period:	November 10, 2011
Shoreline Comment Period:	November 28, 2011

The Notice of Application for this project was published in the City of Bellevue weekly permit bulletin on July 18, 2011. It was mailed to property owners within 500 feet of the project site. The application was re-noticed on October 27, 2011 due to the replacement of the existing dock being included as part of the project. The final comment period associated with the re-notice ended on November 28, 2011. Comments were received from five surrounding property owners and responded to individually. Some of the comments are summarized and responded to below.

1. **The proposed home is massive compared to those in the neighborhood.**
The scale and size of the proposed home in relation to that of the surrounding neighborhood is not evaluated in the determination of whether to approve or deny a Critical Areas Land Use Permit or Shoreline Permit. These permits and their associated codes and decision criteria do not authorize or require design review, considerations based on neighborhood character, or architectural compatibility with homes adjacent to the property. The resulting use and development must be compatible with a residential zoning designation; the project will construct a house for use as a residential dwelling and is compatible. The Land Use Code allows a

property owner to build within the limits placed on the property by the R-2.5 zone. The applicant must obtain a Critical Areas Land Use Permit for any critical area impacts and a shoreline permit as they propose construction within 200 feet of Lake Washington.

2. **The design impacts my view.**
Views are not protected by the Land Use Code and there are no standards or requirements regarding view protection. The house is proposed to comply with the maximum height limit of the R-2.5 zone. The submitted SEPA checklist contains a description of how the existing views of adjacent properties will be improved by removal of existing structures and the proposed house placement. The submitted analysis anticipated view impacts are minimal given the existing grades, the placement of adjacent homes, and the proposed home setbacks from the shoreline and property lines.

3. **The proposal will remove a large tree which is currently an eagle perch.**
The perch tree and site has been evaluated by a biologist and a tree arborist. There is no documented nest on the property or within sight of it and the tree is not located within any protected buffer from a nest. The project is exempt from and/or complies with Federal and State requirements as documented by the biologist. The biologist has found that retention of the other large tree on the site and the fact that other large trees are located nearby along the lake will maintain the ability of eagles and other birds to perch near the lake. Removal of the tree is a habitat impact which the project is required to provide mitigation for. The remaining large trees are being preserved as the house is using a more innovative layout to avoid trees and limit excavation which could damage the roots.

4. **The proposal does not provide sufficient parking.**
The proposed design provides more than 2 off-street parking spots as required by LUC 20.20.590. Providing parking in addition to the required 2 parking spots is at the discretion of a property owner.

5. **The road could be damaged by construction of the house.**
Properties adjacent to the lake have the opportunity to haul construction materials to the site by barge and crane in addition to trucks via the local roads which may be done for this project. However, as a condition of approval, the applicants will be required to establish a haul route plan that will require repair of any damage caused by construction. This will require them to document the condition of existing roads in order to verify that no damage from construction was caused. **See Conditions of Approval in Section X of this report.**

V. Summary of Technical Reviews

A. Clearing and Grading

The Clearing and Grading Division of the Development Services Department has reviewed the proposed site development for compliance with Clearing and Grading codes and standards and approved the application.

B. Utilities

The Utilities Department has reviewed the proposed site development for compliance with Utility codes and standards and approved the application with conditions relating to protection of the City sewer line in Lake Washington, the need for permits to connect to City utilities, and the need to address drainage sufficiently to meet requirements. Temporary disturbance resulting from installation of utilities not yet anticipated on the plans is already accounted for in this approval and the site restoration. **See Conditions of Approval in Section X of this report.**

C. Transportation Review

Use of the Right of Way

Applicants often request use of the right of way and of pedestrian easements for materials storage, construction trailers, hauling routes, fencing, barricades, loading and unloading and other temporary uses as well as for construction of utilities and street improvements. A Right of Way Use Permit for such activities must be applied for prior to issuance of any construction permit including demolition permit. **See Conditions of Approval in Section X of this report.**

VI. State Environmental Policy Act (SEPA)

The environmental review indicates no probability of significant adverse environmental impacts occurring as a result of the proposal. The Environmental Checklist submitted with the application adequately discloses expected environmental impacts associated with the project. The City codes and requirements, including the Clear and Grade Code, Utility Code, Land Use Code, Noise Ordinance, Building Code and other construction codes are expected to mitigate potential environmental impacts. Therefore, issuance of a Determination of Non-Significance (DNS) is the appropriate threshold determination under the State Environmental Policy Act (SEPA) requirements.

A. Earth, Air, and Water

Removal of the shoreline bulkhead, creation of a beach cove, and reconstruction of the existing dock will result in some disturbance of the lake bed sediment. The site will be required to comply with the City's BMPs and sediment and erosion controls for clearing and grading under the future building permit which will address earth disturbance above and below the OHWM. On page 33 of the submitted critical areas report provides BMPs which will be followed such as timing construction with seasonal restrictions, use of in-water sediment controls to isolate the work areas and prevent the escape of turbid water, pile extraction techniques to limit substrate impacts, etc.

B. Animals

Chinook salmon, bull trout, and steelhead are found in Lake Washington. The dock reconstruction, removal of the bulkhead, beach creation will cause temporary disturbance of lake bed sediment which will increase turbidity for a period of time. The resulting site, shoreline, and dock will be an improvement above the existing condition and provide near shore habitat for fish, light penetration through the dock and a narrower pier, and improved vegetation cover on the site as a whole. The removal of the large fir tree will remove an eagle perch but the site is outside of any buffer from a nest and complies with federal and state requirements that protect nests. The retention of other significant trees on the site will maintain the opportunity for eagle usage on the site; other trees off-site and nearby will allow eagle perching near the lake as well.

C. Plants

The removal of the large fir tree will remove an eagle perch but the site is outside of any buffer from a nest and complies with federal and state requirements that protect nests. The other existing larger fir tree is retained on the site which is also in close proximity to the water. In addition other large evergreen trees exist in the vicinity which are also available for perching. The proposed replanting of the property includes trees, shrubs, and ground cover, but the project also retains most of the existing mature trees on the site. The remaining significant trees will be required to have tree protection in order to ensure they are retained. **See Section X for a related condition of approval.**

D. Noise

The site is adjacent to single-family residences whose residents are most sensitive to disturbance from noise during evening, late night and weekend hours when they are likely to be at home. Construction noise will be limited by the City's Noise Ordinance (Chapter 9.18 BCC) which regulates construction hours and noise levels. Sound generated by pile driving for dock construction will require sound attenuation measures. **See Section X for a related condition of approval.**

VII. Changes to Proposal Due to Staff Review

The applicant has chosen to remove the existing shoreline bulkhead and replace it with a beach cove and a more natural shoreline as a result of consultation and direction from staff. The bulkhead removal, beach creation, and planting restoration are proposed to provide sufficient mitigation for all the impacts to critical areas on the site as a result of the project. This mitigation is appropriate as improvement of the most important critical area functions and values on a site is allowed rather than solely restoring the impacted critical areas which may not be capable of sufficient improvement in function and value.

VIII. Decision Criteria

A. 20.25H.255.B Critical Areas Report Decision Criteria

The Director may approve, or approve with modifications, a proposal to reduce the regulated critical area buffer on a site where the applicant demonstrates:

1. **The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in overall critical area or critical area buffer functions;**
   The submitted critical areas report identifies the on-site steep slope critical area, buffers, setbacks, and shoreline critical area as having limited function and value compared to a natural undisturbed site. Existing development and lack of maintenance have degraded the site as compared to the site's potential. The project proposes to restore 10,562 square feet of the property with native vegetation planted on the steep slope, buffers, setback, and along the shoreline. The shoreline is also proposed for restoration by removal of the existing bulkhead which will be replaced with a more natural shoreline with a 645 square-foot gravel beach cove which is 70 feet wide or approximately 60 percent of the property's shoreline frontage on Lake Washington. The shoreline will be protected with boulder outcroppings placed further landward of the existing bulkhead that will allow the existing dock to be rebuilt in place and retention of a large beech tree which is adjacent to the lake. The site will have a net improvement in water quality, slope stability, habitat potential and structural complexity. The shoreline will specifically receive the greatest improvements of increased near-shore habitat area and substrate, habitat complexity due to the emergent and terrestrial planting, and increased input of detritus from shoreline vegetation.

2. **The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in the most important critical area or critical area buffer functions to the ecosystem in which they exist;**
   Restoration of the shoreline to a more natural condition and establishing a vegetated shoreline buffer will improve stormwater quality, increase the area of shallow habitat available, provide some shade to aquatic habitat, and the opportunity for additional organic material input to the lake. The shoreline frontage on this site is the most important critical area as it provides an interface between the land and the water which is critical to the aquatic ecosystem.

3. **The proposal includes a net gain in stormwater quality function by the critical area buffer or by elements of the development proposal outside of the reduced regulated critical area buffer;**
   The project is installing over 10,000 square feet of vegetation, using pervious pavements and bio-retention planter cells. In addition the method for the house construction is on a pin-pile foundation which will limit the amount of earth disturbance and soil compaction associated with conventional construction. This technique will make is possible to retain most of the large trees on the site which

provide coverage of the ground and water interception. The overall house footprint is being expanded and more of the site is improved, however the original house is over 100 hundred years old and any modern redevelopment project would result in an expansion of the portion of the site that is improved. The manner in which the site is being developed has taken the most care to ensure stormwater quality functions if not improved, will not be made worse.

4. **Adequate resources to ensure completion of any required restoration, mitigation and monitoring efforts;**
   Mitigation planting is required and found on attachment 2. The planting will be maintained and monitored for a period of at least five years per the plan in the critical areas report as attachment 3. A maintenance surety will be required based on a submitted cost estimate prior to building permit issuance. The surety will be released after five years assuming restoration has been successful. **See Conditions of Approval in Section IX of this report.**

5. **The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site; and**
   The modifications and performance measures in this proposal are not detrimental to the functions and values of the shoreline or steep slope critical area.

6. **The resulting development is compatible with other uses and development in the same land use district.**
   The project will construct a new single-family residence which is a compatible use with the surrounding uses which are also single-family homes.

B. 20.30P.140 Critical Area Land Use Permit Decision Criteria – Decision Criteria
The Director may approve, or approve with modifications an application for a Critical Area Land Use Permit if:

1. **The proposal obtains all other permits required by the Land Use Code;**
   The applicant must obtain a building permit before beginning any work. **See Conditions of Approval in Section X of this report.**

2. **The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on the critical area and critical area buffer;**
   The design of the pier with the modified performance standards will limit impacts to the shoreline environment more than application of the default performance standards in LUC 20.25E.080.N. The proposed home will limit disturbance of the steep slope and allow retention of significant trees on the site.

3. **The proposal incorporates the performance standards of Part 20.25H to the maximum extent applicable, and ;**
   As discussed in Section II and VIII of this report, the performance standards of LUC 20.25E and LUC 20.25H are being met or exceeded.

4. **The proposal will be served by adequate public facilities including street, fire protection, and utilities; and;**
   The proposed activity will not affect public services or facilities. The Utility Department has added a condition of approval concerning protection of the sewer line in Lake Washington, drainage, and permit requirements. **See Conditions of Approval in Section X of this report.**

5. **The proposal includes a mitigation or restoration plan consistent with the requirements of LUC Section 20.25H.210; and**
   A restoration planting plan has been submitted. The proposed planting will restore the shoreline buffer, steep slope, and the remaining site with native plants. A maintenance surety will be required to ensure plant survival over the 5-year monitoring period. **See Conditions of Approval in Section X of this report.**

6. **The proposal complies with other applicable requirements of this code.**
   As discussed in this report, the proposal complies with all other applicable requirements of the Land Use Code.

C. LUC 20.30R.155.B Shoreline Substantial Development Permit – Decision Criteria
The Director may approve, or approve with modifications if:

1. **The applicant has carried the burden of proof and produced evidence sufficient to support the conclusion that the application merits approval or approval with modifications;**
   The applicant has demonstrated that the proposed dock is in conformance with required performance standards for moorage facilities in the Land Use Code and has submitted a critical areas report requesting a slightly larger ell and dock surface area. The requested deviation from the standard for new construction is in order to maintain the existing size of the ell and is discussed in section III above.

2. **The applicant has demonstrated that the proposal complies with the applicable decision criteria of the Bellevue City Code;**
   As discussed in this staff report, the proposal complies with all applicable decision criteria.

3. **The applicant has demonstrated that the proposal is consistent with the policies and procedures of the Shoreline Management Act and the provisions of Chapter 173-14 WAC and the Master Program.**

The proposal complies with the policies of the Shoreline Management Act and Chapter 173-14 WAC of the Master Program.

IX. Conclusion and Decision

After conducting the various administrative reviews associated with this proposal, including Land Use Code consistency, SEPA, City Code and Standard compliance reviews, the Director of the Development Services Department does hereby **approve with conditions** the Critical Areas Land Use Permit and Shoreline Substantial Development Permit to construct a new house, associated improvements, dock, and restore the shoreline and property. **Approval of this Shoreline Substantial Development Permit does not constitute a permit for construction. A building permit is required and all plans are subject to review for compliance with applicable City of Bellevue codes and standards.**

Note - Expiration of Critical Area Permit Approval: In accordance with LUC 20.30P.150, a Critical Areas Land Use Permit automatically expires and is void if the applicant fails to file for a building permit or other necessary development permits within one year of the effective date of the approval.

Note - Expiration of Shoreline Substantial Development Permit: In accordance with LUC 20.30R.175, the Shoreline Substantial Development Permit automatically expires and is void if the applicant fails to file for a building permit or other necessary development permit and fails to make substantial progress towards completion of the project within two years of the effective date of the Shoreline Substantial Development Permit unless the applicant has received an extension for the Shoreline Substantial Development Permit pursuant to LUC 20.30R.180.

Permit authorization expires finally, despite substantial progress, five years after the effective date of the Shoreline Substantial Development Permit unless the applicant has received an extension pursuant to LUC 20.30R.180

X. Conditions of Approval

The applicant shall comply with all applicable Bellevue City Codes and Ordinances including but not limited to:

Applicable Ordinances	Contact Person
Clearing and Grading Code- BCC 23.76	Savina Uzunow, 425-452-7860
Utilities – BCC Title 24	Mark Frazier, 425-452-2022
Land Use Code- BCC Title 20	Reilly Pittman, 425-452-4350
Noise Control- BCC 9.18	Reilly Pittman, 425-452-4350

The following conditions are imposed under the Bellevue City Code or SEPA authority

referenced:

1. **Building Permit Required:** Approval of this Critical Areas Land Use Permit and Shoreline Substantial Development Permit does not constitute an approval of a building permit. Application for a building permit must be submitted and approved. Plans submitted as part of the building permit application shall be consistent with the activity permitted under this approval.

   Authority: Land Use Code 20.30P.140
   Reviewer: Reilly Pittman, Development Services Department

2. **Retaining Wall and Rockery Heights:** The walls noted in section III of this report are replacing existing walls and due to topography and access consideration are allowed to exceed 30 inches within a required setback. Any other walls and structures within a setback must comply with the 30 inch height limit, unless allowed by future permit approval.

   Authority: Land Use Code 20.20.010
   Reviewer: Reilly Pittman, Development Services Department

3. **Hold Harmless Agreement:** The applicant shall submit a hold harmless agreement in a form approved by the City Attorney which releases the City from liability for any damage arising from the location of improvements within a critical area buffer in accordance with LUC 20.30P.170. The hold harmless agreement is required to be recorded with King County prior to clearing and grading permit issuance. Staff will provide the applicant with the hold harmless form.

   Authority: Land Use Code 20.30P.170
   Reviewer: Reilly Pittman, Development Services Department

4. **Right Of Way Use Permit:** The applicant is required to apply for a Right of Way Use Permit before the issuance of any clearing and grading, building, foundation, or demolition permit. In some cases, more than one Right of Way Use Permit may be required, such as one for hauling and one for construction work within the right of way. A Right of Way Use Permit regulates activity within the city right of way, including but not limited to the following:

   a) Designated truck hauling routes.
   b) Truck loading and unloading activities.
   c) Hours of construction and hauling.
   d) Continuity of pedestrian facilities.
   e) Temporary traffic control and pedestrian detour routing for construction activities.
   f) Street sweeping and maintenance during excavation and construction.
   g) Location of construction fences.

h) Parking for construction workers.
i) Construction vehicles, equipment, and materials in the right of way.
j) All other construction activities as they affect the public street system.

Authority: Bellevue City Code 14.30
Reviewer: Tim Stever, Transportation Department, 425-452-4294

5. **Utilities:** Do not build within 5' of mainline sewer. Do not place barge/anchor over sewer main. Approval of this plan does not include water, sewer, or storm drainage connections. These utilities will be reviewed under the building permit and will also require separate connection permits. On site drainage facilities shown on the site plan are inadequate.

   Authority: Bellevue City Code Title 24
   Reviewer: Mark Frazier, Utility Department, 425-452-2022

6. **Tree Protection and Retention:** Tree protection on the property will be per City Clearing and Grading BMP T101 and per any recommendations of the project arborist. Any grading, excavation, or other earth disturbance near the large beach tree adjacent to lake Washington and the large fir tree on the steep slope shall be done under the supervision of the arborist to ensure these significant trees are protected. All tree protection shall be in place prior to commencement of construction.

   Authority: Land Use Code 20.30P.220, Bellevue City Code 23.76
   Reviewer: Reilly Pittman, Development Services Department

7. **Mitigation Planting and Shoreline Restoration:** The bulkhead is required to be removed and the shoreline restored per the submitted plans to create a beach cove and replant the property with native plants. This is required mitigation for the impacts caused by the home construction to the critical areas on the property. The restoration shall be done per the plans which are attachment 2. Minor changes can be made to the plans to change species or make other changes which do not result in a greater impact or disturbance of critical areas, buffers, or structure setbacks. This mitigation also addresses any temporary disturbance resulting from future utility placement as part of the home construction.

   Authority: Land Use Code 20.30P.140
   Reviewer: Reilly Pittman, Development Services Department

8. **Planting Cost Estimate:** A cost estimate for the proposed plant installation and 5 years of maintenance and monitoring must be submitted prior to building permit issuance.

   Authority: Land Use Code 20.30P.140
   Reviewer: Reilly Pittman, Development Services Department

9. **Maintenance Surety:** In order to ensure the restoration successfully establishes, a maintenance assurance device in an amount equal to 100% of the cost of labor and materials for the landscape installation shall be held for a period of three years from the date of successful installation. The maintenance assurance device will be released to the applicant upon receipt of documentation of reporting successful establishment in compliance with the performance standards described below.

   Authority: Land Use Code 20.30P.140
   Reviewer: Reilly Pittman, Development Services Department

10. **Monitoring:** The planting area shall be maintained and monitored for 5 years as detailed in the critical areas report. The monitoring plan, goals, and performance standards are as found below, from the submitted critical areas report.

    Goals:
    1) *Within the proposed restoration area, establish dense native vegetation that is appropriate to the eco-region and site.*
    2) *Where indicated on the plan, areas within the restoration area will remain substantially vegetated with a preponderance of native plants and will contain little invasive or noxious weed cover.*
    3) *Increase habitat cover and refuge for amphibians, small mammals, and invertebrates. Provide perching habitat for native birds.*

    Performance Standards
    The standards listed below will be used to judge the success of the installation over time. If performance standards are met at the end of Year 5, the site will then be deemed successful and the performance security bond will be eligible for release by the City of Bellevue.

    1) *Survival: Achieve 100% survival of installed plants by the end of Year 1. This standard can be met through plant establishment or through replanting as necessary to achieve the required numbers.*
    2) *Native cover:*
       a. *Achieve 40% understory cover of native shrubs and sapling trees by Year 2. Native volunteer species may count towards this cover standard.*
       b. *Achieve 60% understory cover of native shrubs and sapling trees by Year 3. Native volunteer species may count towards this cover standard.*
       c. *Achieve 80% understory cover of native shrubs and sapling trees by Year 5. Native volunteer species may count towards this cover standard.*
    3) *Species diversity: Establish at least three native shrub species by Year 3 and maintain this diversity through Year 5. Native volunteer species may count towards this standard. Establish at least three western red cedar trees and at least 18 other*

individual trees from the plant list or other suitable native volunteer tree species.

4) *Invasive cover: Aerial cover for all non-native, invasive and noxious weeds will not exceed 10% at any year during the monitoring period. Invasive plants include Himalayan blackberry (Rubus armeniacus), cut leaf blackberry (Rubus laciniatus), reed canarygrass (Phalaris arundinacea), cherry (hedge) laurel (Prunus laurocerasus), English holly (Ilex aquifolium), and ivy species (Hedera spp.).*

Annual monitoring reports are to be submitted to Land Use each of the five years. The reports, along with a copy of the planting plan, can be sent to Reilly Pittman at rpittman@bellevuewa.gov or to the address below:

Environmental Planning Manager
Development Services Department
City of Bellevue
PO Box 90012
Bellevue, WA 98009-9012

Authority: Land Use Code 20.30P.140; 20.25H.220
Reviewer: Reilly Pittman, Development Services Department

11. **Land Use Inspection Required:** Inspection of the shoreline restoration and dock must be completed by the Land Use Planner as part of the building permit inspection process. A Land Use inspection will be added to the building permit.

    Authority: Land Use Code 20.25H.210
    Reviewer: Reilly Pittman, Development Services Department

12. **Federal And State Permits:** Federal and state water quality standards shall be met. All required federal and state permits and approvals must be received by the applicant and presented to the City prior to commencement of any work on those areas covered.

    Authority: Land Use Code 20.25E.080
    Reviewer: Reilly Pittman, Development Services Department

13. **In-Water Work Window:** The US Army Corps of Engineers regulates work windows for when work can occur in Lake Washington. The allowed work window where work can occur in water for this property is from July 16th to April 30th, subject to change by US Army Corps regulation.

    Authority: Land Use Code 20.25H.080
    Reviewer: Reilly Pittman, Development Services Department

14. **Piles and Noise Attenuation**: Piles shall not be treated with pentachlorophenol,

creosote, CCA or comparably toxic compounds. If ACZA pilings are proposed, the applicant will meet all of the Best Management Practices, including a post-treatment procedure, as outlined in the amended Best Management Practices of the Western Wood Preservers. Noise attenuation for pile installation is required.

Authority: Land Use Code 20.25E.080
Reviewer: Reilly Pittman, Development Services Department

15. **Noise Control:** Noise related to construction is exempt from the provisions of BCC 9.18 between the hours of 7 am to 6 pm Monday through Friday and 9 am to 6 pm on Saturdays, except for Federal holidays and as further defined by the Bellevue City Code. Noise emanating from construction is prohibited on Sundays or legal holidays unless expanded hours of operation are specifically authorized in advance. Requests for construction hour extension must be done in advance with submittal of a construction noise expanded exempt hours permit.

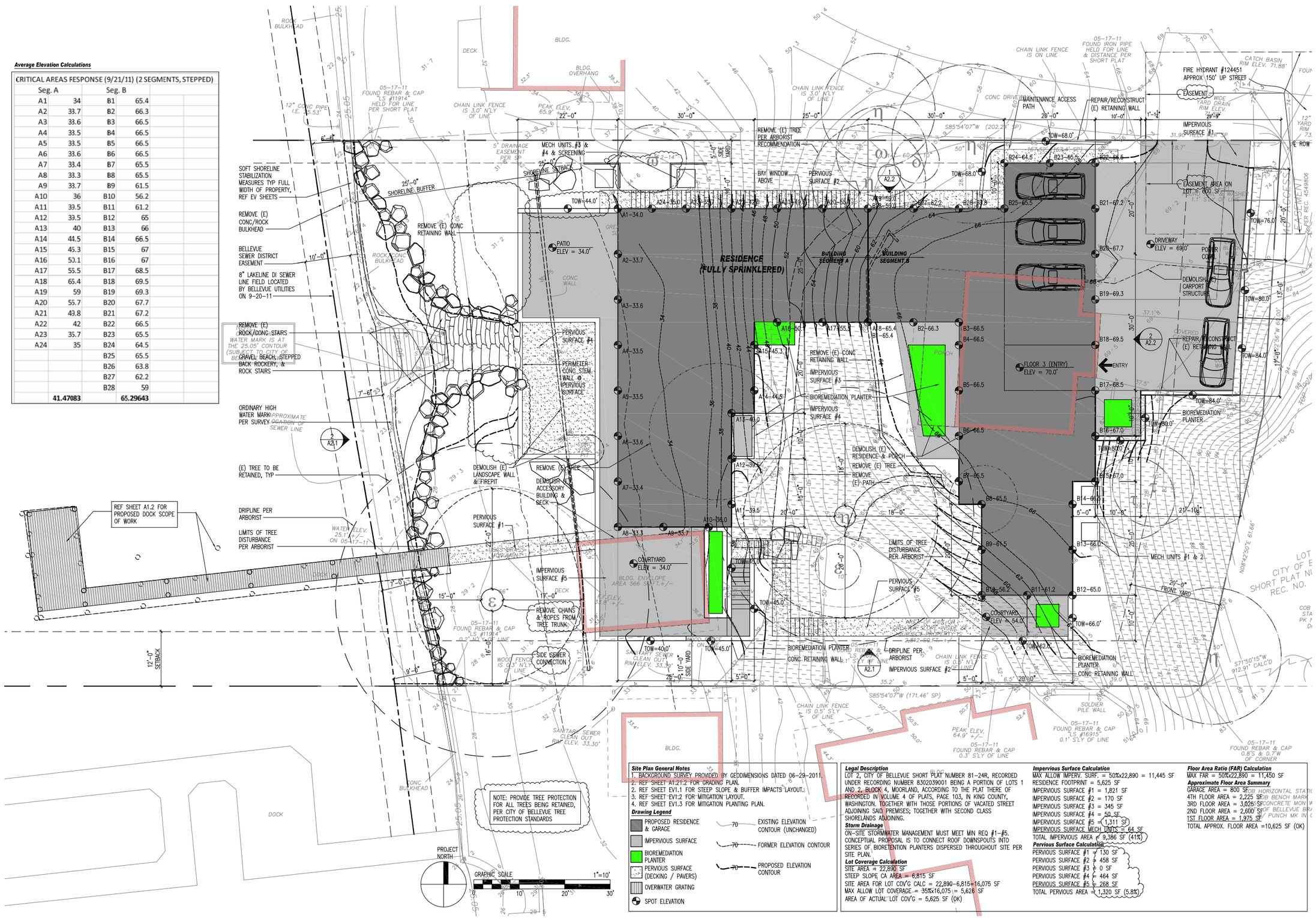
Authority: Bellevue City Code 9.18
Reviewer: Reilly Pittman, Development Services Department

Attachment 1:

Site Plan, Dock Plan, and Building Elevations

Average Elevation Calculations

CRITICAL AREAS FESPONSE (9/21/11) (2 SEGMENTS, STEPPED)			
Seg. A		Seg. B	
A1	34	B1	65.4
A2	33.7	B2	66.3
A3	33.6	B3	66.5
A4	33.5	B4	66.5
A5	33.5	B5	66.5
A6	33.6	B6	66.5
A7	33.4	B7	65.5
A8	33.3	B8	65.5
A9	33.7	B9	61.5
A10	36	B10	56.2
A11	39.5	B11	61.2
A12	39.5	B12	65
A13	40	B13	66
A14	44.5	B14	66.5
A15	45.3	B15	67
A16	53.1	B16	67
A17	55.5	B17	68.5
A18	65.4	B18	69.5
A19	59	B19	69.3
A20	55.7	B20	67.7
A21	49.8	B21	67.2
A22	42	B22	66.5
A23	35.7	B23	65.5
A24	35	B24	64.5
		B25	65.5
		B26	63.8
		B27	62.2
		B28	59
	41.47083		65.29643



Site Plan General Notes

1. BACKGROUND SURVEY PROVIDED BY GEODIMENSIONS DATED 06-29-2011.
2. REF SHEET A1.2 FOR GRADING PLAN.
2. REF SHEET EV1.1 FOR STEEP SLOPE & BUFFER IMPACTS LAYOUT.
3. REF SHEET EV1.2 FOR MITIGATION LAYOUT.
4. REF SHEET EV1.3 FOR MITIGATION PLANTING PLAN.

Drawing Legend

- PROPOSED RESIDENCE & GARAGE
- IMPERVIOUS SURFACE
- BIOREMEDIATION PLANTER
- PERVIOUS SURFACE (DECKING / PAVERS)
- OVERWATER GRATING
- SPOT ELEVATION
- 70 — EXISTING ELEVATION CONTOUR (UNCHANGED)
- 70 — FORMER ELEVATION CONTOUR
- 70 — PROPOSED ELEVATION CONTOUR

Legal Description

LOT 2, CITY OF BELLEVUE SHORT PLAT NUMBER 81-24R, RECORDED UNDER RECORDING NUMBER 8302039001 BEING A PORTION OF LOTS 1 AND 2, BLOCK 4, MOORLAND, ACCORDING TO THE PLAT THERE OF RECORDED IN VOLUME 4 OF PLATS, PAGE 103, IN KING COUNTY, WASHINGTON. TOGETHER WITH THOSE PORTIONS OF VACATED STREET ADJOINING SAID PREMISES; TOGETHER WITH SECOND CLASS SHORELANDS ADJOINING.

Storm Drainage

ON-SITE STORMWATER MANAGEMENT MUST MEET MIN REQ #1-#5. CONCEPTUAL PROPOSAL IS TO CONNECT ROOF DOWNSPOUTS INTO SERIES OF BIORETENTION PLANTERS DISPERSED THROUGHOUT SITE PER SITE PLAN.

Lot Coverage Calculation

SITE AREA = 22,890 SF
STEEP SLOPE CA AREA = 6,815 SF
SITE AREA FOR LOT COV'G CALC = 22,890-6,815=16,075 SF
MAX ALLOW LOT COVERAGE = 35%x16,075 = 5,626 SF
AREA OF ACTUAL LOT COV'G = 5,625 SF (OK)

Impervious Surface Calculation

MAX ALLOW IMPERV. SURF. = 50%x22,890 = 11,445 SF
RESIDENCE FOOTPRINT = 5,625 SF
IMPERVIOUS SURFACE #1 = 1,821 SF
IMPERVIOUS SURFACE #2 = 170 SF
IMPERVIOUS SURFACE #3 = 345 SF
IMPERVIOUS SURFACE #4 = 50 SF
IMPERVIOUS SURFACE #5 = 1,311 SF
IMPERVIOUS SURFACE MECH UNITS = 64 SF
TOTAL IMPERVIOUS AREA = 9,386 SF (41%)

Pervious Surface Calculation

PERVIOUS SURFACE #1 = 130 SF
PERVIOUS SURFACE #2 = 458 SF
PERVIOUS SURFACE #3 = 0 SF
PERVIOUS SURFACE #4 = 464 SF
PERVIOUS SURFACE #5 = 268 SF
TOTAL PERVIOUS AREA = 1,320 SF (5.8%)

Floor Area Ratio (FAR) Calculation

MAX FAR = 50%x22,890 = 11,450 SF

Approximate Floor Area Summary

GARAGE AREA = 800 SF
4TH FLOOR AREA = 2,225 SF
3RD FLOOR AREA = 3,025 SF
2ND FLOOR AREA = 2,600 SF
1ST FLOOR AREA = 1,975 SF
TOTAL APPROX. FLOOR AREA =10,625 SF (OK)

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL
02.02.2012	PERMIT RESUBMITTAL #2

ARCHITECTURAL
SITE PLAN

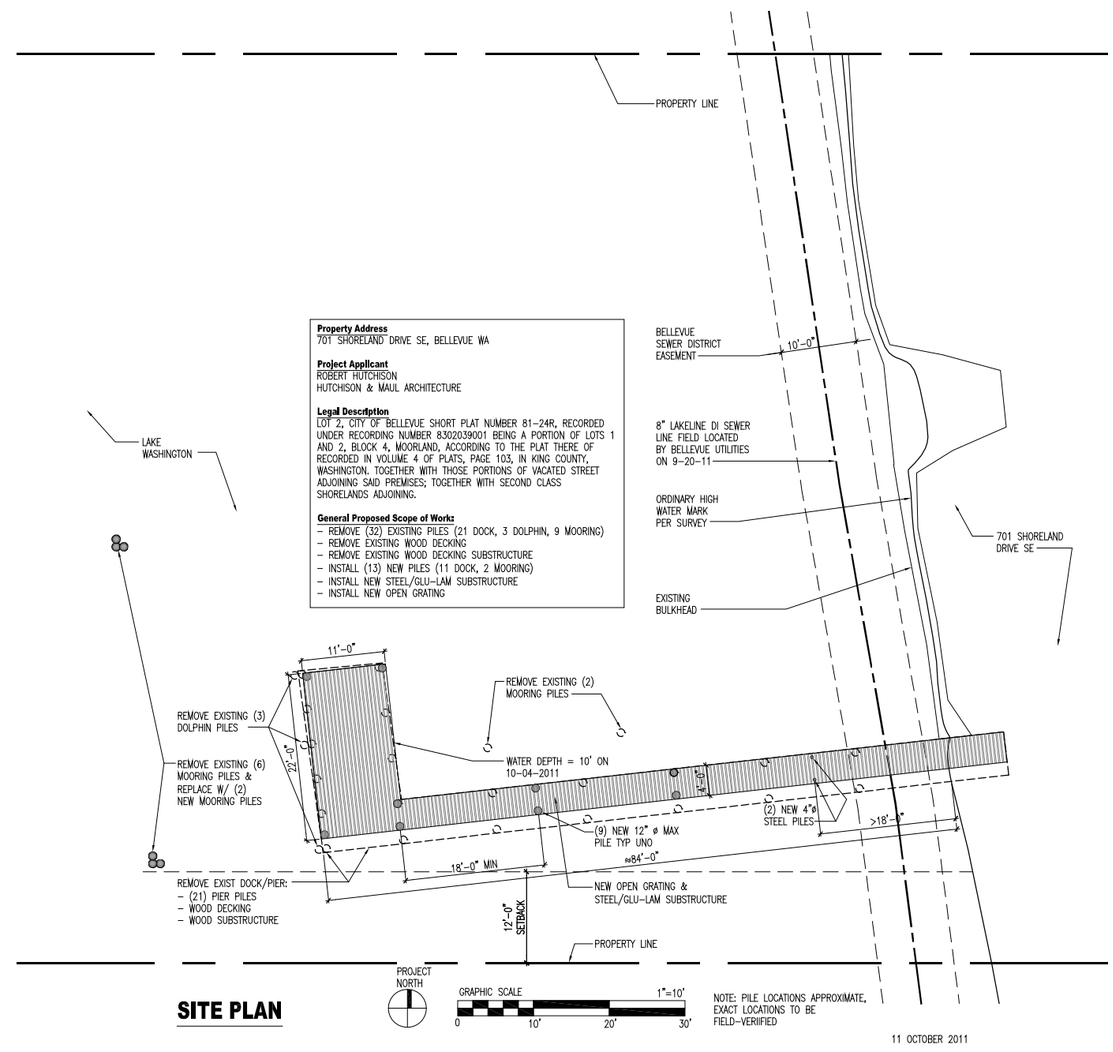
A1.1

Property Address
701 SHORELAND DRIVE SE, BELLEVUE WA

Project Applicant
ROBERT HUTCHISON
HUTCHISON & MAUL ARCHITECTURE

Legal Description
LOT 2, CITY OF BELLEVUE SHORT PLAT NUMBER 81-24R, RECORDED UNDER RECORDING NUMBER 8302039001 BEING A PORTION OF LOTS 1 AND 2, BLOCK 4, MOORLAND, ACCORDING TO THE PLAT THERE OF RECORDED IN VOLUME 4 OF PLATS, PAGE 103, IN KING COUNTY, WASHINGTON. TOGETHER WITH THOSE PORTIONS OF VACATED STREET ADJOINING SAID PREMISES; TOGETHER WITH SECOND CLASS SHORELANDS ADJOINING.

General Proposed Scope of Work:
- REMOVE (32) EXISTING PILES (21 DOCK, 3 DOLPHIN, 9 MOORING)
- REMOVE EXISTING WOOD DECKING
- REMOVE EXISTING WOOD DECKING SUBSTRUCTURE
- INSTALL (13) NEW PILES (11 DOCK, 2 MOORING)
- INSTALL NEW STEEL/GLU-LAM SUBSTRUCTURE
- INSTALL NEW OPEN GRATING



SITE PLAN

11 OCTOBER 2011

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

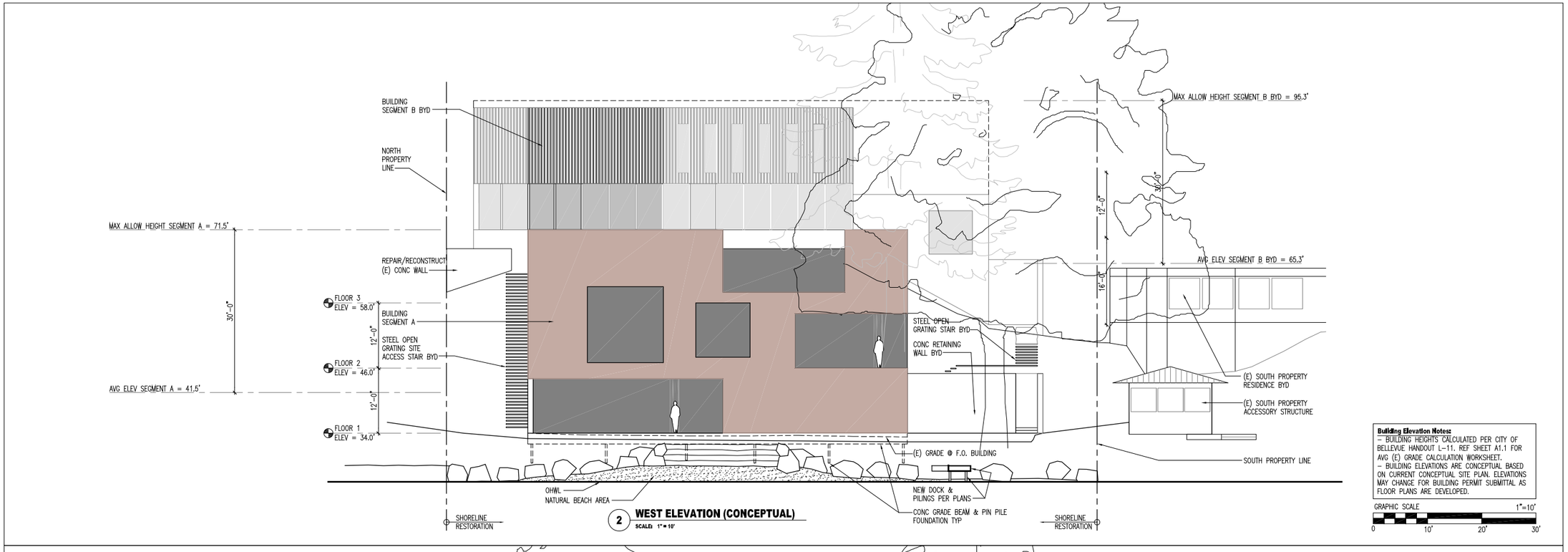
Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL

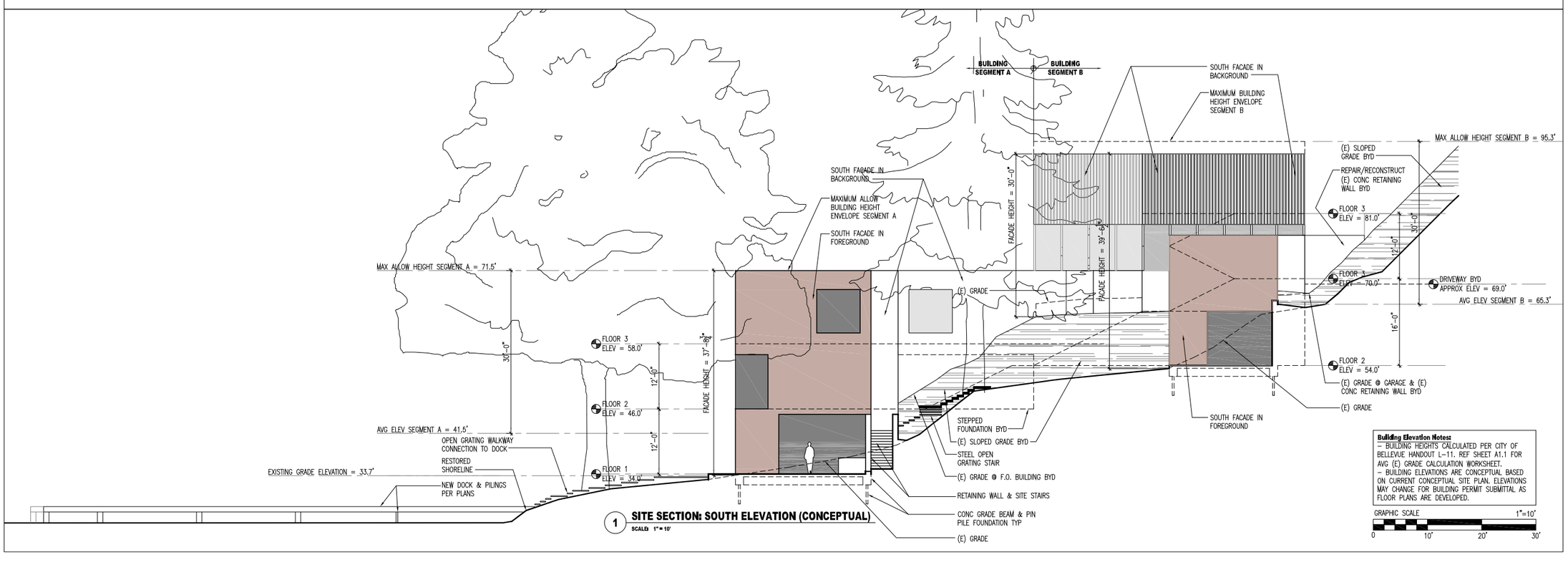
DOCK WORK
SITE PLAN

A1.2



Building Elevation Notes:
– BUILDING HEIGHTS CALCULATED PER CITY OF BELLEVUE HANDOUT L-11. REF SHEET A1.1 FOR AVG (E) GRADE CALCULATION WORKSHEET.
– BUILDING ELEVATIONS ARE CONCEPTUAL BASED ON CURRENT CONCEPTUAL SITE PLAN. ELEVATIONS MAY CHANGE FOR BUILDING PERMIT SUBMITTAL AS FLOOR PLANS ARE DEVELOPED.

2 **WEST ELEVATION (CONCEPTUAL)**
SCALE: 1" = 10'



Building Elevation Notes:
– BUILDING HEIGHTS CALCULATED PER CITY OF BELLEVUE HANDOUT L-11. REF SHEET A1.1 FOR AVG (E) GRADE CALCULATION WORKSHEET.
– BUILDING ELEVATIONS ARE CONCEPTUAL BASED ON CURRENT CONCEPTUAL SITE PLAN. ELEVATIONS MAY CHANGE FOR BUILDING PERMIT SUBMITTAL AS FLOOR PLANS ARE DEVELOPED.

1 **SITE SECTION: SOUTH ELEVATION (CONCEPTUAL)**
SCALE: 1" = 10'

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

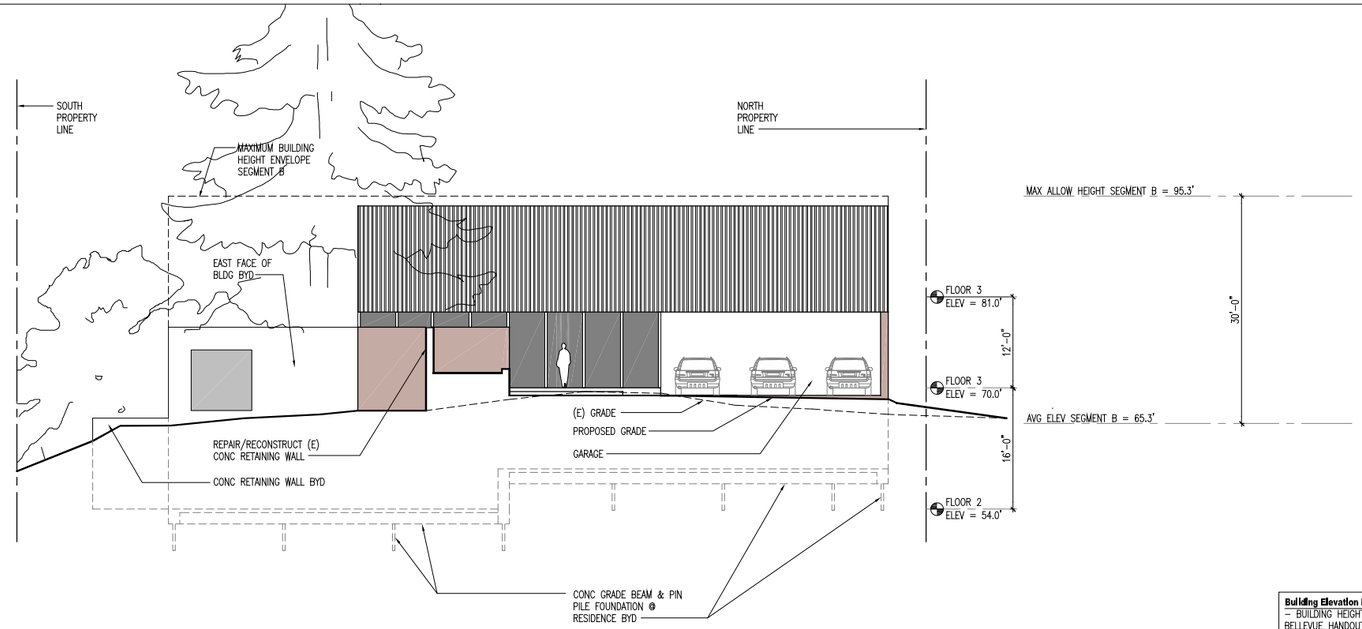
Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL

ARCHITECTURAL
BUILDING ELEVATIONS

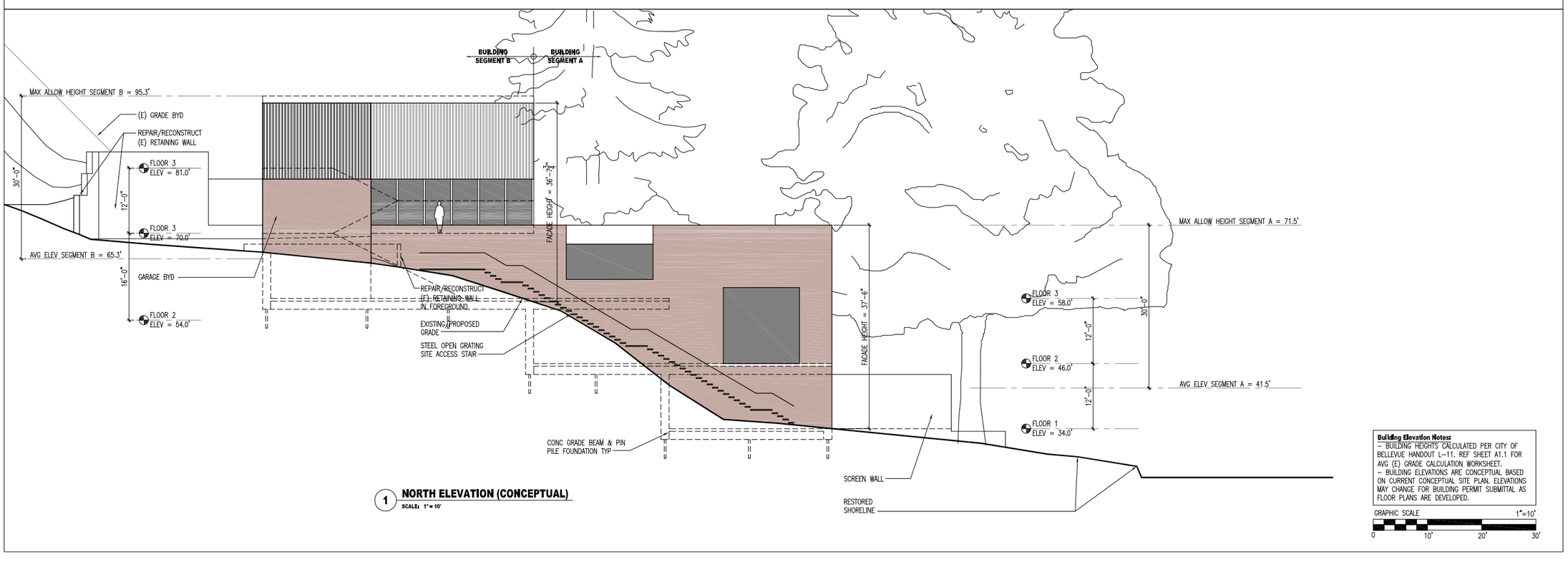
A2.1



2 EAST ELEVATION (CONCEPTUAL)
SCALE: 1"= 10'

Building Elevation Notes:
– BUILDING HEIGHTS CALCULATED PER CITY OF BELLEVUE HANDOUT L–11. REF SHEET A1.1 FOR AVG (E) GRADE CALCULATION WORKSHEET.
– BUILDING ELEVATIONS ARE CONCEPTUAL BASED ON CURRENT CONCEPTUAL SITE PLAN. ELEVATIONS MAY CHANGE FOR BUILDING PERMIT SUBMITTAL AS FLOOR PLANS ARE DEVELOPED.

GRAPHIC SCALE 1"=10'
0 10' 20' 30'



1 NORTH ELEVATION (CONCEPTUAL)
SCALE: 1"= 10'

Building Elevation Notes:
– BUILDING HEIGHTS CALCULATED PER CITY OF BELLEVUE HANDOUT L–11. REF SHEET A1.1 FOR AVG (E) GRADE CALCULATION WORKSHEET.
– BUILDING ELEVATIONS ARE CONCEPTUAL BASED ON CURRENT CONCEPTUAL SITE PLAN. ELEVATIONS MAY CHANGE FOR BUILDING PERMIT SUBMITTAL AS FLOOR PLANS ARE DEVELOPED.

GRAPHIC SCALE 1"=10'
0 10' 20' 30'

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

PRE-DESIGN DOCUMENTS

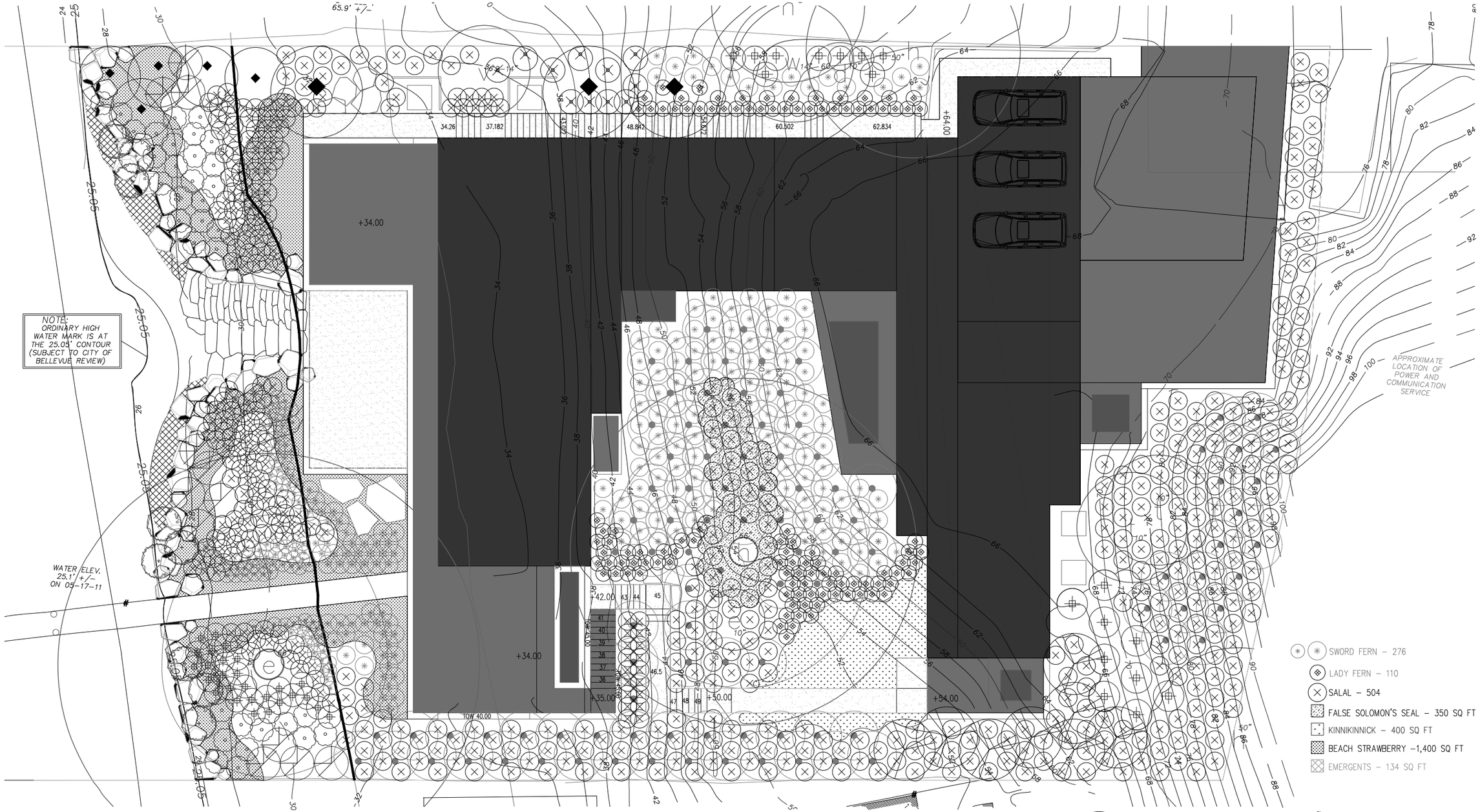
05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL

ARCHITECTURAL
BUILDING ELEVATIONS

A2.2

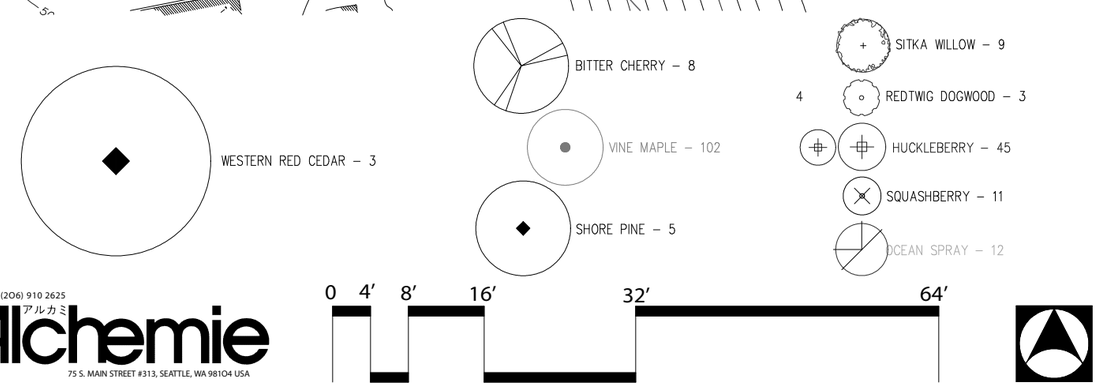
Attachment 2:

Mitigation Planting Plan and Notes, Shoreline Restoration Sections



WANG/CHEN PLANT SCHEDULE

	QUANTITY	SCIENTIFIC NAME	COMMON NAME	SPACING	SIZE	CONDITION	REMARKS
TREES	102	ACER CIRCINATUM	VINE MAPLE	6' O.C	3'	B & B	SHADE – PS, MULTI–TRUNK
	5	PINUS CONTORTA CONTORTA	SHORE PINE	8' O.C	8'	B & B	SUN, WELL DRAINED
	8	PRUNUS EMARGINATA	BITTER CHERRY	AS SHOWN	5 GALLON	CONTAINER	SUN – PS, DRY – MOIST
	9	SALIX SITCHENSIS	SITKA WILLOW	AS SHOWN	1 GALLON	CONTAINER	SUN, WELL DRAINED
	3	THUJA PLICATA	WESTERN RED CEDAR	AS SHOWN	8'	B & B	SUN – PS
SHRUBS	34	CORNUS STOLONIFERA 'BAILEYI'	REDTWIG DOGWOOD	3' O.C	1 GALLON	CONTAINER	SUN – PS
	504	GAULTHERIA SHALLON	SALAL	AS SHOWN	1 GALLON	CONTAINER	SUN – SHADE
	12	HOLODISCUS DISCOLOR	OCEAN SPRAY	AS SHOWN	1 GALLON	CONTAINER	PS – DRY
	45	VACINNIUM OVATUM	EVERGREEN HUCKLEBERRY	AS SHOWN	1 GALLON	CONTAINER	SUN – SHADE
	11	VIBURNUM EDULE	SQUASHBERRY	AS SHOWN	1 GALLON	CONTAINER	SUN – PS, MOIST
GROUND COVERS	400 SQ FT	ARCTOSTAPHYLOS UVA–URSI	KINNIKINNICK	12" O.C		FLATS	SUN – DRY
	110	ATHERIUM FELIX FEMINA	LADY FERN	24" O.C	1 GALLON	CONTAINER	PS – SHADE, MOIST
	1,400 SQ FT	FRAGARIA CHILOENSIS	BEACH STRAWBERRY	12" O.C		FLATS	SUN – PS, WELL DRAINED
	350 SQ FT	MAIANTHEMUM RACEMOSUM	FALSE SOLOMON'S SEAL	18" O.C	4" POTS	CONTAINER	PS – SHADE, MOIST
	276	POLYSTICHUM MUNITUM	SWORD FERN	42" O.C	1 GALLON	CONTAINER	PS – SHADE
	134 SQ FT		EMERGENTS MIX	6" O.C	PLUGS		20% CAREX STIPATA (124)/ 20% JUNCUS EFFUSUS (124) 40% SCHOENOPLECTIS ACUTUS (248)/ 20% SCIRPUS MICROCARPUS (124)



(206) 910 2625
Alchemie
アルカミ
75 S. MAIN STREET #313, SEATTLE, WA 98104 USA

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991
Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.910.2625

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
BRUCE DAVIS HINCKLEY
CERTIFICATE NO. 445

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL
02.02.2012	PERMIT RESUBMITTAL #2

MITIGATION PLANTING PLAN

EV 1.3

VEGETATION MANAGEMENT OBJECTIVES

THE MANAGEMENT OBJECTIVE IS TO REPLACE FUNCTIONS AND VALUES PROVIDED BY REMOVED NATIVE TREES. THE SHORELINE IS BEING RESTORED BY REMOVING THE EXISTING BULKHEAD AND REPLACING IT WITH A NATURAL ROCKERY THAT INCORPORATES A COVE AND NATIVE PLANT VEGETATION. A TOTAL OF THREE SIGNIFICANT TREES ARE PROPOSED FOR REMOVAL FROM THE SITE. THE TREES ARE A MATURE DOUGLAS-FIR, A NORWAY SPRUCE (NON-NATIVE) AND AN ORNAMENTAL DOGWOOD. AS MITIGATION FOR TREE REMOVAL, A TOTAL OF THREE WESTERN RED CEDAR TREES, FOUR SHORE PINES AND SEVERAL SMALLER DECIDUOUS TREES WILL BE PLANTED WITHIN THE RESTORATION AREA FOR THE SITE. IN ADDITION TO THE REPLACEMENT TREES, THE RESTORATION AREA ALSO INCLUDES NUMEROUS NATIVE SHRUBS AND NUMEROUS GROUNDCOVER SPECIES AS MITIGATION FOR STEEP SLOPE CRITICAL AREA, BUFFER, AND SETBACK IMPACTS ASSOCIATED WITH CONSTRUCTION OF THE NEW RESIDENCE.

1.1 SHORT-TERM OBJECTIVES

- REMOVE ROCK BULKHEAD FROM THE SHORELINE AND RESTORE TO A MORE NATURAL STATE.
- ESTABLISH NEW, NATIVE SAPLING TREES ON THE PROPERTY.
- REDUCE INVASIVE WEED COVER, SPECIFICALLY REMOVE NON-NATIVE ENGLISH IVY AND HIMALAYAN BLACKBERRY FROM THE RESTORATION AREA.
- INCREASE NATIVE PLANT DENSITY AS PER THE PLANTING PLAN (SEE APPENDIX A).
- MAINTAIN EXISTING HABITAT FEATURES, SPECIFICALLY PRESERVE AND PROTECT EXISTING NATIVE VEGETATION TO THE GREATEST EXTENT FEASIBLE.
- PROPERLY MULCH AND IRRIGATE INSTALLED PLANTS TO HELP THEM BECOME ESTABLISHED (SEE APPENDIX A).
- 100 PERCENT SURVIVAL OF ALL INSTALLED PLANTS IN THE FIRST YEAR.

1.2 LONG-TERM OBJECTIVES

PROVIDE A MORE COMPLEX SHORELINE DOMINATED BY NATIVE PLANTS

ESTABLISH NATIVE TREES ALONG THE STEEP SLOPE AND NEW SHORELINE TO HELP MAINTAIN STABILITY AND PROVIDE INCREASED HABITAT OPPORTUNITIES. LONG-TERM, THE PLANTING PLAN AND GENERAL MAINTENANCE PRACTICES ARE INTENDED TO IMPROVE THE ECOLOGIC SERVICES PROVIDED BY THE RESTORATION AREA.

THE LONG-TERM OBJECTIVES SHOULD BE SUBSTANTIALLY ACHIEVED WHEN THE FOLLOWING PERFORMANCE STANDARDS ARE MET:

1) ESTABLISH AND RETAIN AT LEAST THREE WESTERN RED CEDAR TREES AND AT LEAST 10 OTHER INDIVIDUAL TREES FROM THE PLANT LIST OR OTHER SUITABLE NATIVE VOLUNTEER TREE SPECIES.

1.3 PROJECT INITIATION

1. REMOVE INVASIVE WEEDS FROM THE RESTORATION AREA. CUT ENGLISH IVY AND HIMALAYAN BLACKBERRY VINES BACK AND GRUB OUT THE ROOTS. (TAKE CARE NOT TO DAMAGE EXISTING NATIVE VEGETATION IN THAT AREA.)
2. PREPARE THE SITE FOR PLANTING AND INSTALL THE PLANTING PLAN PER THE PLANTING NOTES, INCLUDING MULCH AND TEMPORARY IRRIGATION (SEE APPENDIX A).
3. PROVIDE AS-BUILT DOCUMENTATION TO THE CITY OF BELLEVUE.

1.4 YEAR ONE

1. CHECK THE IRRIGATION SYSTEM IN THE LATE SPRING TO ENSURE PROPER OPERATION OVER THE DRY SEASON (JUNE 1 TO SEPTEMBER 30).
2. REMOVE ANY SPROUTING WEEDS IN THE EARLY SPRING TO REDUCE WEED COMPETITION GOING INTO THE GROWING SEASON AND KEEP WEED COVER BELOW 10 PERCENT.
3. CONDUCT A SURVIVAL PLANT COUNT IN THE LATE SUMMER/EARLY FALL AND REPLACE ANY DEAD PLANTS TO ACHIEVE 100 PERCENT SURVIVAL.
4. REPLENISH WOOD CHIP MULCH AS NEEDED.

1.5 YEARS TWO THROUGH FIVE

1. CHECK THE IRRIGATION SYSTEM IN THE LATE SPRING TO ENSURE PROPER OPERATION OVER THE DRY SEASON (JUNE 1 TO SEPTEMBER 30).
2. REMOVE ANY SPROUTING WEEDS IN THE EARLY SPRING TO REDUCE WEED COMPETITION GOING INTO THE GROWING SEASON AND KEEP WEED COVER BELOW 10 PERCENT.
3. APPLY A SLOW-RELEASE GRANULAR FERTILIZER TO THE DRIP-LINE OF EACH PLANT.
4. CONDUCT A SURVIVAL PLANT COUNT IN THE LATE SUMMER/EARLY FALL TO ENSURE THAT THE MANAGEMENT AREA IS ON-TRACK TO ACHIEVE A MINIMUM OF 85 PERCENT SURVIVAL BY YEAR FIVE. REPLACE DEAD PLANTS AS NEEDED.
5. REPLENISH WOOD CHIP MULCH AS NEEDED.

RESTORATION PLAN

1.1 OVERVIEW

THE PROPOSED RESTORATION PLAN FULFILLS THE REQUIREMENTS OF LUC 20.25H.220(B). THE PLAN SEEKS TO RESTORE AND ENHANCE SUBSTANTIAL PORTIONS OF THE LAKE WASHINGTON SHORELINE AND ON-SITE STEEP SLOPE CRITICAL AREA AND BUFFER. THE EXISTING SHORELINE BULKHEAD WILL BE REMOVED AND REPLACED WITH A MORE NATURAL ROCKERY THAT INCORPORATES NATIVE PLANTS. THE STEEP SLOPE HAS A HIGH POTENTIAL FOR ENHANCEMENT TO INCREASE SEVERAL IMPORTANT FUNCTIONS, AS IT PRESENTLY CONTAINS NON-NATIVE VEGETATION. TO ACHIEVE THIS, THE PLAN CALLS FOR THE ENHANCEMENT OF 10,059 SQUARE FEET OF THE SITE THROUGH BULKHEAD REMOVAL AND THE PLANTING OF NATIVE TREES, SHRUBS AND GROUNDCOVER WITHIN THE STEEP SLOPE CRITICAL AREA, BUFFER, SETBACK, AND THE SHORELINE BUFFER AND SETBACK. THE RESTORATION PLAN CAN BE FOUND IN APPENDIX A. SPECIES INCLUDE WESTERN RED CEDAR, SHORE PINE, BITTER CHERRY, VINE MAPLE, RED-TWIG DOGWOOD, OCEANSPRAY, EVERGREEN HUCKLEBERRY, SQUASHBERRY (HIGH BUSH CRANBERRY), SWORD FERN, LADY FERN, BEACH STRAWBERRY, SALAL, FALSE SOLOMON'S SEAL AND KINNIKINNICK.

1.2 MAINTENANCE AND MONITORING PLAN

APPENDIX A INCLUDES DETAILS OF THE 5-YEAR MAINTENANCE AND MONITORING PLAN, ALSO DETAILED BELOW.

1.2.1 GOALS

1) WITHIN THE PROPOSED RESTORATION AREA, ESTABLISH DENSE NATIVE VEGETATION THAT IS APPROPRIATE TO THE ECO-REGION AND SITE.
2) WHERE INDICATED ON THE PLAN, AREAS WITHIN THE RESTORATION AREA WILL REMAIN SUBSTANTIALLY VEGETATED WITH A PREPONDERANCE OF NATIVE PLANTS AND WILL CONTAIN LITTLE INVASIVE OR NOXIOUS WEED COVER.
3) INCREASE HABITAT COVER AND REFUGE FOR AMPHIBIANS, SMALL MAMMALS, AND INVERTEBRATES. PROVIDE PERCHING HABITAT FOR NATIVE BIRDS.

1.2.2 PERFORMANCE STANDARDS

THE STANDARDS LISTED BELOW WILL BE USED TO JUDGE THE SUCCESS OF THE INSTALLATION OVER TIME. IF PERFORMANCE STANDARDS ARE MET AT THE END OF YEAR 5, THE SITE WILL THEN BE DEEMED SUCCESSFUL AND THE PERFORMANCE SECURITY BOND WILL BE ELIGIBLE FOR RELEASE BY THE CITY OF BELLEVUE.

1) SURVIVAL: ACHIEVE 100% SURVIVAL OF INSTALLED PLANTS BY THE END OF YEAR 1. THIS STANDARD CAN BE MET THROUGH PLANT ESTABLISHMENT OR THROUGH REPLANTING AS NECESSARY TO ACHIEVE THE REQUIRED NUMBERS.
2) NATIVE COVER:
   a. ACHIEVE 40% UNDERSTORY COVER OF NATIVE SHRUBS AND SAPLING TREES BY YEAR 2. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
   b. ACHIEVE 60% UNDERSTORY COVER OF NATIVE SHRUBS AND SAPLING TREES BY YEAR 3. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
   c. ACHIEVE 80% UNDERSTORY COVER OF NATIVE SHRUBS AND SAPLING TREES BY YEAR 3. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
3) SPECIES DIVERSITY: ESTABLISH AT LEAST THREE NATIVE SHRUB SPECIES BY YEAR 3 AND MAINTAIN THIS DIVERSITY THROUGH YEAR 5. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS STANDARD. ESTABLISH AT LEAST THREE WESTERN RED CEDAR TREES AND AT LEAST 18 OTHER INDIVIDUAL TREES FROM THE PLANT LIST OR OTHER SUITABLE NATIVE VOLUNTEER TREE SPECIES.
4) INVASIVE COVER: AERIAL COVER FOR ALL NON-NATIVE, INVASIVE AND NOXIOUS WEEDS WILL NOT EXCEED 10% AT ANY YEAR DURING THE MONITORING PERIOD. INVASIVE PLANTS INCLUDE HIMALAYAN BLACKBERRY (*RUBUS ARMENIACUS*), CUT LEAF BLACKBERRY (*RUBUS LACINIATUS*), REED CANARYGRASS (*PHALARIS ARUNDINACEA*), CHERRY (HEDGE) LAUREL (*PRUNUS LAUROCERASUS*), ENGLISH HOLLY (*ILEX AQUIFOLIUM*), AND IVY SPECIES (*HEDERA SPP.*).

1.2.3 MONITORING METHODS

THIS MONITORING PROGRAM IS DESIGNED TO TRACK THE SUCCESS OF THE MITIGATION SITE OVER TIME AND TO MEASURE THE DEGREE TO WHICH IT IS MEETING THE PERFORMANCE STANDARDS OUTLINED IN THE PRECEDING SECTION.

AN AS-BUILT PLAN WILL BE PREPARED BY THE **RESTORATION PROFESSIONAL** (WATERSHED COMPANY [(425) 822-5242] PERSONNEL, OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS) PRIOR TO THE BEGINNING OF THE MONITORING PERIOD. THE AS-BUILT PLAN WILL BE A MARK-UP OF THE PLANTING PLANS INCLUDED IN THIS PLAN SET. THE AS-BUILT PLAN WILL DOCUMENT ANY DEPARTURES IN PLANT PLACEMENT OR OTHER COMPONENTS FROM THE PROPOSED PLAN.

MONITORING WILL TAKE PLACE ONCE ANNUALLY IN THE FALL FOR FIVE YEARS. YEAR-1 MONITORING WILL COMMENCE IN THE FIRST FALL SUBSEQUENT TO INSTALLATION.

THE FORMAL MONITORING VISIT SHALL RECORD AND REPORT THE FOLLOWING IN AN ANNUAL REPORT SUBMITTED TO THE CITY OF BELLEVUE:

1) VISUAL ASSESSMENT OF THE OVERALL SITE.

2) YEAR-1 COUNTS OF LIVE AND DEAD PLANTS BY SPECIES. YEAR-2 THROUGH YEAR-5 COUNTS OF ESTABLISHED NATIVE TREES BY SPECIES.

3) COUNTS OF DEAD PLANTS WHERE MORTALITY IS SIGNIFICANT IN ANY MONITORING YEAR.

4) ESTIMATE OF NATIVE SHRUB COVER.

5) ESTIMATE OF NON-NATIVE, INVASIVE WEED COVER.

6) TABULATION OF ESTABLISHED NATIVE SPECIES, INCLUDING BOTH PLANTED AND VOLUNTEER SPECIES.

7) PHOTOGRAPHIC DOCUMENTATION FROM AT LEAST THREE FIXED REFERENCE POINTS.

8) ANY INTRUSIONS INTO OR CLEARING OF THE PLANTING AREAS, VANDALISM, OR OTHER ACTIONS THAT IMPAIR THE INTENDED FUNCTIONS OF THE MITIGATION AREA.

9) RECOMMENDATIONS FOR MAINTENANCE OR REPAIR OF ANY PORTION OF THE MITIGATION AREA.

1.2.4 CONSTRUCTION NOTES AND SPECIFICATIONS

NOTE: SPECIFICATIONS FOR ITEMS IN **BOLD** CAN BE FOUND BELOW UNDER "MATERIAL SPECIFICATIONS AND DEFINITIONS."

NOTE: THE WATERSHED COMPANY [(425) 822-5242] PERSONNEL, OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS, WILL MONITOR:

1. ALL SITE PREPARATION
   A. SOIL PREPARATION.
   B. MULCH PLACEMENT.
2. PLANT MATERIAL INSPECTION
   A. PLANT MATERIAL DELIVERY INSPECTION.
   B. 100% PLANT INSTALLATION INSPECTION.

1.2.5 GENERAL WORK SEQUENCE

1. ALL PLANT INSTALLATION IS TO TAKE PLACE DURING THE DORMANT SEASON (OCTOBER 15TH - MARCH 1ST), FOR BEST SURVIVAL.
2. PREPARE A PLANTING PIT FOR EACH PLANT AND INSTALL PER THE PLANTING DETAILS.
3. MULCH THE ENTIRE PLANTED AREA WITH **WOOD CHIP MULCH** (95 CUBIC YARDS NEEDED), FOUR INCHES THICK.
4. INSTALL A TEMPORARY, ABOVE GROUND **IRRIGATION SYSTEM** TO PROVIDE FULL COVERAGE TO ALL PLANTS WITHIN THE RESTORATION AREA.

1.2.6 MATERIAL SPECIFICATIONS AND DEFINITIONS

1. **FERTILIZER**: SLOW RELEASE, GRANULAR PHOSPHOROUS-FREE FERTILIZER. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR APPLICATION. KEEP FERTILIZER IN A WEATHER-TIGHT CONTAINER WHILE ON SITE. NOTE THAT FERTILIZER IS TO BE APPLIED ONLY IN YEARS 2 THROUGH 5 AND NOT IN THE FIRST YEAR.
2. **IRRIGATION SYSTEM**: AUTOMATED SYSTEM CAPABLE OF DELIVERING AT LEAST ONE INCHES OF WATER PER WEEK FROM JUNE 1 THROUGH SEPTEMBER 30 FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION.
3. **RESTORATION PROFESSIONAL**: WATERSHED COMPANY [(425) 822-5242] PERSONNEL, OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS.
4. **WOOD CHIP MULCH**: ARBORIST CHIPS (CHIPPED WOODY MATERIAL) APPROXIMATELY 1 TO 3 INCHES IN MAXIMUM DIMENSION (NOT SAWDUST OR COARSE HOG FUEL). THIS MATERIAL IS COMMONLY AVAILABLE IN LARGE QUANTITIES FROM ARBORISTS OR TREE-PRUNING COMPANIES. THIS MATERIAL IS SOLD AS "ANIMAL FRIENDLY HOG FUEL" AT PACIFIC TOPSOILS [(800) 884-7645]. MULCH MUST NOT CONTAIN APPRECIABLE QUANTITIES OF GARBAGE, PLASTIC, METAL, SOIL, AND DIMENSIONAL LUMBER OR CONSTRUCTION/DEMOLITION DEBRIS. QUANTITY REQUIRED: 95 CUBIC YARDS.

1.2.7 CONTINGENCIES

IF THERE IS A SIGNIFICANT PROBLEM WITH THE RESTORATION AREAS MEETING PERFORMANCE STANDARDS, A CONTINGENCY PLAN WILL BE DEVELOPED AND IMPLEMENTED. CONTINGENCY PLANS CAN INCLUDE, BUT ARE NOT LIMITED TO: SOIL AMENDMENT; ADDITIONAL PLANT INSTALLATION; AND PLANT SUBSTITUTIONS OF TYPE, SIZE, QUANTITY, AND LOCATION.

1.2.8 MAINTENANCE

THE SITE WILL BE MAINTAINED IN ACCORDANCE WITH THE FOLLOWING INSTRUCTIONS FOR FIVE YEARS FOLLOWING COMPLETION OF THE CONSTRUCTION.

1) FOLLOW THE RECOMMENDATIONS NOTED IN THE PREVIOUS MONITORING SITE VISIT.
2) GENERAL WEEDING FOR ALL PLANTED AREAS:
   A. AT LEAST TWICE YEARLY, REMOVE ALL COMPETING WEEDS AND WEED ROOTS FROM BENEATH EACH INSTALLED PLANT AND ANY DESIRABLE VOLUNTEER VEGETATION TO A DISTANCE OF 18 INCHES FROM THE MAIN PLANT STEM. WEEDING SHOULD OCCUR AT LEAST TWICE DURING THE SPRING AND SUMMER. FREQUENT WEEDING WILL RESULT IN LOWER MORTALITY, LOWER PLANT REPLACEMENT COSTS, AND INCREASED LIKELIHOOD THAT THE PLAN MEETS PERFORMANCE STANDARDS BY YEAR 5.
   B. MORE FREQUENT WEEDING MAY BE NECESSARY DEPENDING ON WEED CONDITIONS THAT DEVELOP AFTER PLAN INSTALLATION.
   C. DO NOT WEED THE AREA NEAR THE PLANT BASES WITH STRING TRIMMER (WEED WHACKER/WEED EATER). NATIVE PLANTS ARE EASILY DAMAGED OR KILLED, AND WEEDS EASILY RECOVER AFTER TRIMMING.
   D. SELECTIVE APPLICATIONS OF HERBICIDE MAY BE NEEDED TO CONTROL INVASIVE WEEDS, ESPECIALLY WHEN INTERMIXED WITH NATIVE SPECIES. HERBICIDE APPLICATION, WHEN NECESSARY, SHALL BE CONDUCTED ONLY BY A STATE-LICENSED APPLICATOR.
3) APPLY SLOW RELEASE GRANULAR FERTILIZER TO EACH INSTALLED PLANT ANNUALLY IN THE SPRING (BY JUNE 1) OF YEARS 2 THROUGH 5.
4) REPLACE MULCH AS NECESSARY TO MAINTAIN A 4-INCH-THICK LAYER, RETAIN SOIL MOISTURE, AND LIMIT WEEDS.
5) REPLACE EACH PLANT FOUND DEAD IN THE SUMMER MONITORING VISITS DURING THE UPCOMING FALL DORMANT SEASON (OCTOBER 15 TO MARCH 1).
6) THE HOMEOWNER WILL ENSURE THAT WATER IS PROVIDED FOR THE ENTIRE PLANTED AREA WITH A MINIMUM OF 1 INCH OF WATER PROVIDED PER WEEK FROM JUNE 1 THROUGH SEPTEMBER 30 FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION THROUGH THE OPERATION OF A TEMPORARY IRRIGATION SYSTEM. LESS WATER IS NEEDED DURING MARCH, APRIL, MAY AND OCTOBER.

MITIGATION PLAN NOTES

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242 f 425.827.8136
www.watershedco.com
Science & Design

PRE-DESIGN DOCUMENTS

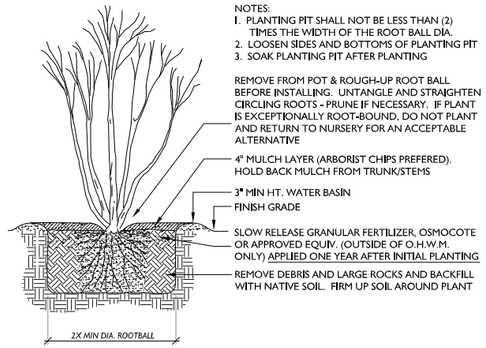
05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL
02.02.2012	PERMIT RESUBMITTAL #2

MITIGATION NOTES

EV1.5

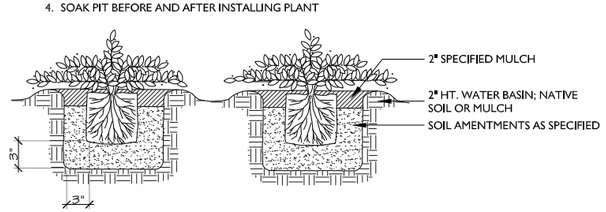
GENERAL PLANTING NOTES:

1. CARE SHOULD BE TAKEN TO PROTECT EXISTING TREES AND NATIVE VEGETATION AS WELL AS EXISTING VEGETATION TO REMAIN.THE LANDSCAPE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES WITHIN THE LIMIT OF WORK AND IS RESPONSIBLE FOR ANY DAMAGE AS A RESULT OF THE LANDSCAPE CONSTRUCTION.
2. PLANTS NOT SPECIFICALLY DESIGNATED FOR PROTECTION WITHIN MITIGATION AREAS ARE TO BE REMOVED.
3. REMOVE INVASIVE PLANTS FROM PLANTING AREA. SPECIES TO TARGET ARE: ENGLISH IVY, HIMALAYAN BLACKBERRY, EVERGREEN BLACKBERRY, SCOTCH BROOM, BUTTERFLY BUSH, ST. JOHN'S WORT.
4. NEWLY INSTALLED PLANTS SHOULD RECEIVE AT LEAST 1" OF WATER PER WEEK DURING SUMMER MONTH. INSTALL A BIDDER DESIGNED IRRIGATION SYSTEM.
5. SOIL WITHIN THE MITIGATION AREAS NEEDS TO BE AMENDED IN THE FOLLOWING WAYS:
   - PLANTING AREAS OUTSIDE OF STEEP SLOPE AREAS AND AREAS OF EXISTING TREE/SHRUB ROOTS: THESE AREAS ARE TO BE ROTOTILLED/SCARIFIED TO A DEPTH OF 6". ALL LARGE ROCKS AND OTHER DEBRIS IS TO BE REMOVED. 4" DEPTH OF COMPOST IS TO BE INCORPORATED INTO THE SUBGRADE. LIGHTLY COMPACT AND USE REMAINING COMPOST TO ACHIEVE FINISH GRADE.
   - STEEP SLOPE AREAS AND AREAS OF EXISTING TREE AND SHRUB ROOTS: DO NOT ROTOTILL IN THESE AREAS. INCORPORATE COMPOST BY HAND IN THESE AREAS. IN AREAS OF THICK EXISTING TREE ROOTS NOT TO BE DISTURBED, COMPOST WILL BE ADDED ON TOP OF ROOTS.
6. LAYOUT PLANT MATERIAL PER PLAN FOR INSPECTION BY THE LANDSCAPE ARCHITECT. PLANT SUBSTITUTIONS WILL NOT BE ALLOWED WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT
7. INSTALL PLANTS PER PLANTING DETAILS (SEE MITIGATION PLAN SET FOR PLANTING DETAILS)
8. WATER EACH PLANT THOROUGHLY.
9. ONE YEAR AFTER INITIAL PLANT INSTALLATION, APPLY ORGANIC, SLOW-RELEASE PHOSPHORUS-FREE FERTILIZER TO EACH PLANT.



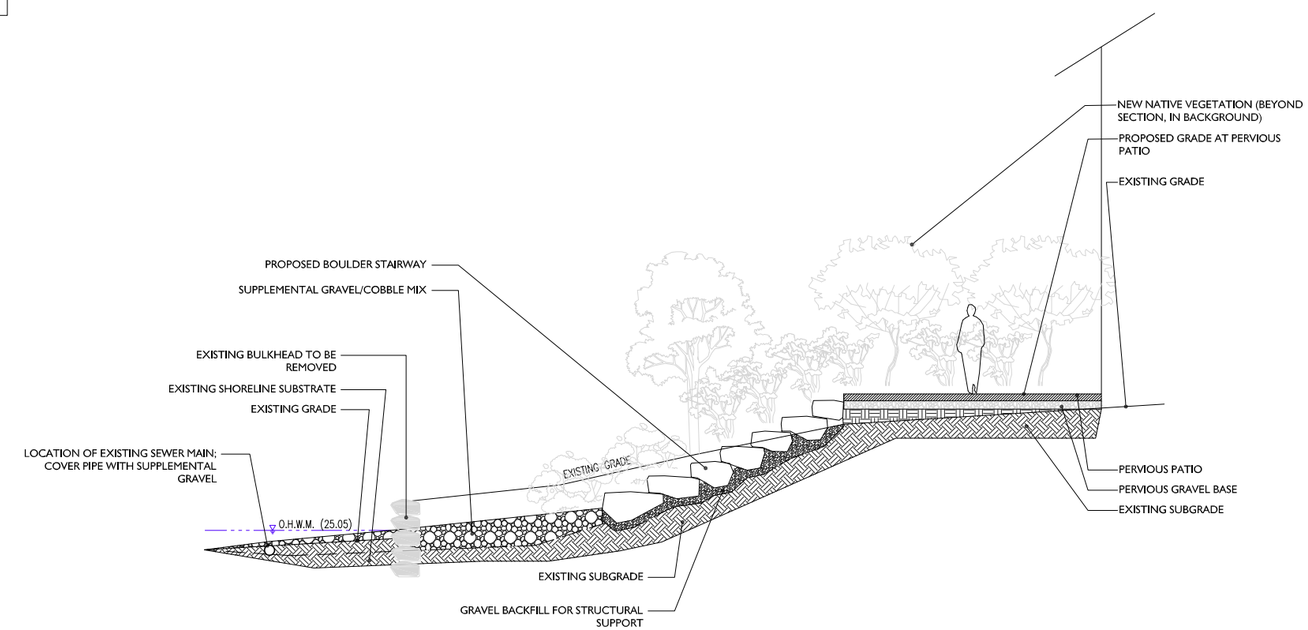
A TREE & SHRUB PLANTING DETAIL
NTS

NOTES:
1. PLANT GROUNDCOVER AT SPECIFIED DISTANCE ON-CENTER (O.C.) USING TRIANGULAR SPACING, TYP.
2. LOOSEN SIDES AND BOTTOM OF PLANTING PIT AND REMOVE DEBRIS
3. LOOSEN ROOTBOUND PLANTS BEFORE INSTALLING
4. SOAK PIT BEFORE AND AFTER INSTALLING PLANT

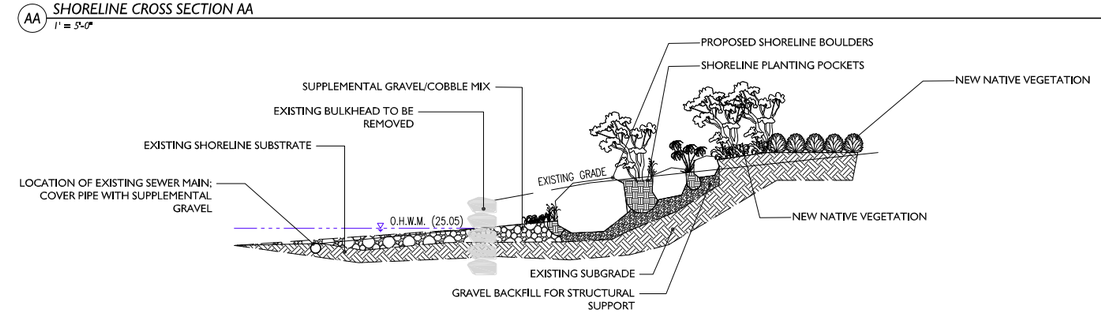


B GROUNDCOVER & PERENNIAL PLANTING DETAIL
NTS

PLANTING NOTES AND DETAILS



AA SHORELINE CROSS SECTION AA
1" = 5'-0"



BB SHORELINE CROSS SECTION BB
1" = 5'-0"

SHORELINE CROSS SECTIONS

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact; Kenny Booth
P: 425.822.5242

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242 f 425.827.8136
www.watershedco.com
Science & Design

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL
02.02.2012	PERMIT RESUBMITTAL #2

SHORELINE CROSS SECTIONS

EV1.4

Attachment 3

Critical Areas Report, Geotech Report, Arborist Report

Critical Areas Report

Shoreland Drive Residence - Bellevue, WA

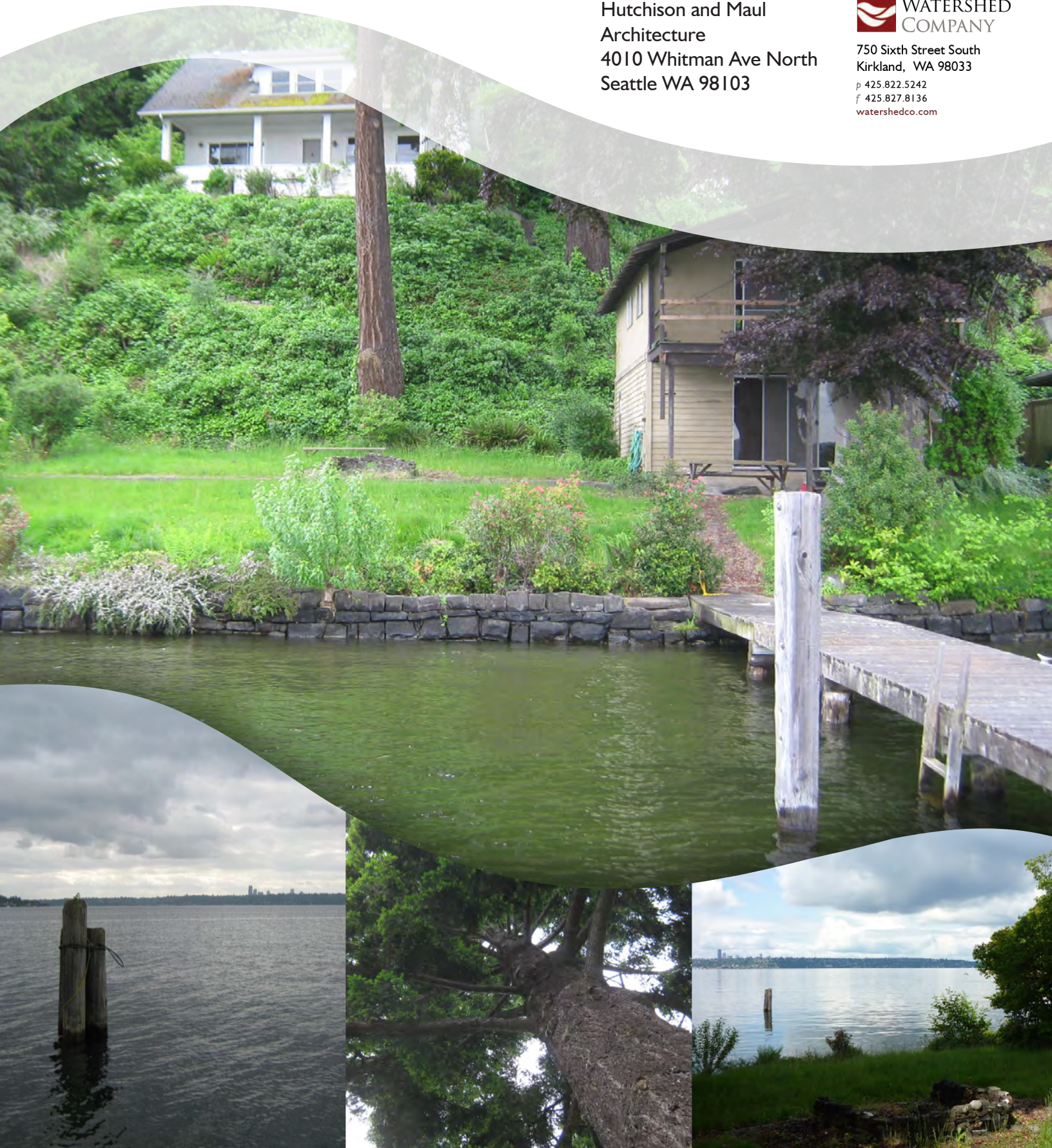
NOVEMBER 2011

Prepared for:

Robert Hutchison
Hutchison and Maul
Architecture
4010 Whitman Ave North
Seattle WA 98103

Prepared by:

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, WA 98033
p 425.822.5242
f 425.827.8136
watershedco.com



CRITICAL AREAS REPORT

Shoreland Drive Residence – Bellevue, WA

Prepared for:

Robert Hutchison
Hutchison and Maul Architecture
4010 Whitman Ave North
Seattle, WA 98103

Prepared by:

THE WATERSHED COMPANY

750 Sixth Street South
Kirkland . WA 98033
p 425.822.5242
f 425.827.8136
watershedco.com

July 2011
Updated November 2011

The Watershed Company Reference Number:
110207

The Watershed Company Contact Person:
Kenny Booth

Cite this document as:
The Watershed Company. November 2011. Critical Areas Report: Shoreland Drive Residence, Bellevue, WA. Prepared for Robert Hutchison, Seattle, WA.

Printed on 30% recycled paper.

TABLE OF CONTENTS

Page #

1 Introduction 3

1.1 Background and Purpose 3

1.2 Description of Project Area 3

2 Species of Local Importance 6

3 Local Regulations 11

4 Project Description 11

5 Impact Assessment / Lift Analysis 14

6 Critical Areas Report Criteria 17

6.1 House Construction 17

6.2 Dock Replacement 31

7 Vegetation Management Objectives 38

7.1 Short-term Objectives 38

7.2 Long-term Objectives 39

7.3 Project Initiation 39

7.4 Year One 39

7.5 Years Two through Five 39

8 Restoration Plan 40

8.1 Overview 40

8.2 Maintenance and Monitoring Plan 40

8.2.1 Goals 40

8.2.2 Performance Standards **40**

8.2.3 Monitoring Methods **41**

8.2.4 Construction Notes and Specifications **42**

8.2.5 General Work Sequence **42**

8.2.6 Material Specifications and Definitions **43**

8.2.7 Contingencies **43**

8.2.8 Maintenance **43**

9 Summary **44**

Appendix A: Restoration Plan

LIST OF EXHIBITS

Figure 1. Vicinity Map..... 4

Figure 2. View of the property (looking east), including the existing residence (background) and the accessory structure (foreground) – photo taken 6-9-11..... 9

Figure 3. View of the existing residence & driveway (looking southwest) – photo taken 6-9-11. 9

Figure 4. View of the existing accessory structure (looking south) – photo taken 6-9-11. 10

Figure 5. View of the existing steep slope critical area. Notice the extensive ivy, Himalayan blackberry, and morning glory bindweed – photo taken 6-9-11. 10

CRITICAL AREAS REPORT

SHORELAND DRIVE RESIDENCE – BELLEVUE, WA

1 INTRODUCTION

1.1 Background and Purpose

The purpose of this report is to document potential critical area impacts associated with the proposed residential development project located on the eastern shore of Lake Washington in the City of Bellevue, Washington (Figure 1). The lot presently contains a house (built in 1909) with attached carport, a driveway, a detached accessory structure with a small attached deck facing the lake, a concrete retaining wall upslope of the house, a residential dock, and rock bulkhead along the entire length of the shoreline.

The applicant proposes to demolish the existing residence and accessory structure and construct a new single-family residence. Portions of the newly constructed residence will be located within a steep slope critical area, as well as the setback and buffer of the steep slope, and the shoreline setback of Lake Washington. The applicant also proposes to remove and reconstruct the dock. Bellevue Land Use Code (LUC) 20.25H.230 requires compliance with specific critical areas report criteria as part of any modification to a critical area. This report fulfills these criteria. Further, pursuant to LUC 20.25H.250(C)(1), this report has been prepared in conjunction with a geotechnical analysis report by PanGeo, Inc. While PanGeo, Inc. has contributed to some degree to this report, the majority of technical geological hazard discussion can be found in their report. Conversely, this report presents a detailed discussion of the habitat and vegetation on-site and how the proposed development can be achieved with no net loss of on-site or off-site critical area functions and values.

1.2 Description of Project Area

The subject property is located at 701 SE Shoreland Drive (parcel 5627300180) in the City of Bellevue. Lake Washington borders the site to the west, and single family residences are located to the north, south, and east of the site. The parcel is rectangular-shaped and approximately 0.52 acre in size. The property slopes downward from SE Shoreland Drive to the lake, with the steepest section in the center of the property and comparatively flat areas in the east, where the existing house is located, and near the shoreline. The lot presently contains a house (built in 1909) with attached carport, a driveway, a detached accessory structure with a

small attached deck facing the lake, a concrete retaining wall upslope of the house, a residential dock, and rock bulkhead along the entire length of the shoreline.

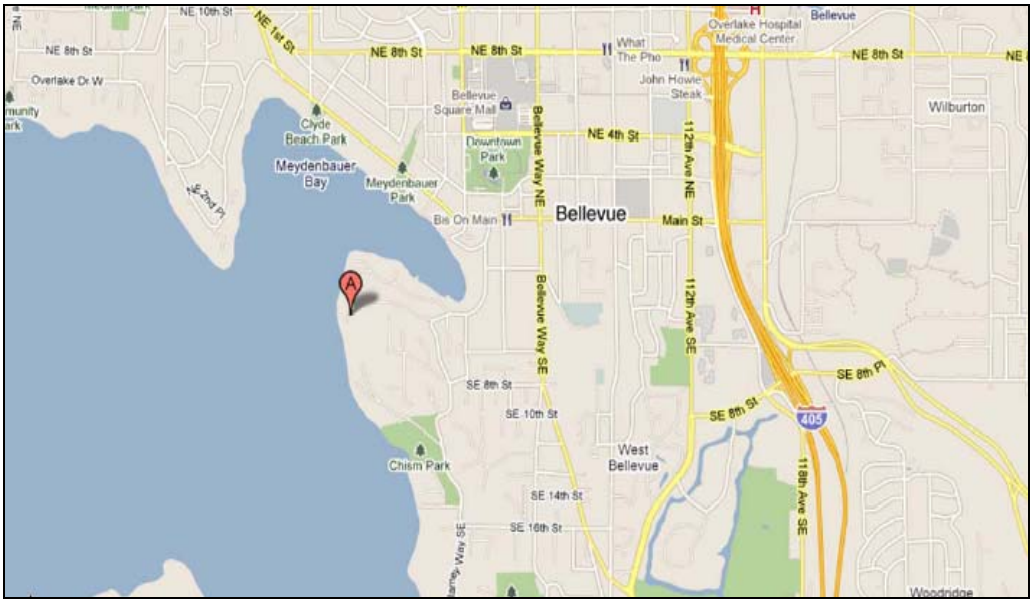


Figure 1. Vicinity Map.

No wetlands or streams were noted on the property, nor do publicly available data indicate the presence of aquatic areas aside from Lake Washington. According to a geotechnical report prepared by PanGeo, Inc. (dated February 25, 2011), the property contains steep slopes but is not identified as a landslide hazard area. According to the report, no noticeable signs of past slope instability were observed.

Vegetation

Vegetation on the parcel consists of several large, mature trees, including Douglas-fir, Sitka spruce, bigleaf maple, and a European beech tree. Other non-invasive vegetation on the site includes Pacific dogwood, beaked hazelnut, rhododendron, snowberry, sword fern, lady fern, salal, and numerous ornamental shrubs. The low area at the base of the steep slope contains mostly lawn grasses with a few of the aforementioned shrubs along the fringes. Native shrub vegetation, including rose, salal, beaked hazelnut, sword fern, and lady fern, occupies a small portion of the northwest corner of the property and a narrow strip directly behind the existing bulkhead. Much of the site, however, is dominated by English ivy, which covers most of the steep slope area. Himalayan blackberry and morning glory bindweed are interspersed throughout the site, and a patch of bamboo is present on the steep slope above the existing carport, as well as at the northwest corner of the property adjoining Lake Washington.

Soils

According to Natural Resources Conservation Service (NRCS) soil maps, the project site is comprised of Kitsap silt loam, 15 to 30 percent slopes. According to PanGeo, Inc., the site consists of loose to medium dense fill over medium dense to dense sand and stiff to hard silt. The dense to very dense sand encountered appears to be consistent with the mapped geology at the site.

Habitat

The shoreline includes approximately 120 linear feet of gravel beach adjacent to a rock bulkhead, with a narrow row of mostly native shrub vegetation behind the bulkhead. During periods of low water, the beach area is approximately five feet wide. No beach gravel is exposed during the higher lake levels in the summer. The beach areas on adjacent properties are similar. Fish and waterfowl are expected to occur in this area, although mostly in a transient capacity. Neighboring docks provide the only obvious fish cover; vegetation is scattered and does not overhang the lake to any great extent on either the study property or adjacent properties. The beach, when exposed, is rocky and provides foraging opportunities for shorebirds but little cover.

Habitat structure on property is relatively simple, with a few large conifers and scattered groups of mixed native and ornamental shrubs providing disconnected patches of mid- and canopy layer vegetation and little low undergrowth apart from invasive ivy and maintained grass. The majority of the vegetation is composed of the low ivy and grass. The ivy may provide cover for small mammals, but in suburban environments, these are usually limited to pest species (mice and rats). The lack of structural diversity limits food and cover opportunities for most wildlife species. Special features such as snags and large woody debris, which provide habitat for birds and small mammals, are not present on the site. There are a few native and non-native nut- and berry-producing plants on the site, including beaked hazelnut, snowberry, and Himalayan blackberry, which provide a food source for songbirds and small mammals. However, these plants are present in low quantities and densities. The conifers on site, mostly Douglas-fir and Sitka spruce, do provide quality perching and nesting opportunities for bald eagles and osprey, which prefer to forage and nest next to large open waters such as Lake Washington. However, these resources are not unique to the site or particularly rare along the shoreline.

The location of the property within the surrounding landscape is relevant in characterizing habitat, as it determines whether the opportunity for wildlife to use a site exists. The subject property is connected to an approximately 5-acre forested area comprising several large residential lots, in which development is concentrated near the lakeshore. These may act as a "source," providing the

potential for wildlife to access and use nearby areas. Because this forested open space is within a developed urban/suburban landscape, it has value as a refuge for urban wildlife. While its size is significant for an urban refuge, it most likely supports only species common in developed areas (e.g., raccoons, coyotes, and "backyard species" of songbirds) and not those that depend on larger, undisturbed forest. Habitat in the adjacent open space includes a generally denser and more diverse understory, as well as a higher concentration of large trees, and animals are more likely to choose forage, nest, and rest sites within the adjacent area than on the subject property.

The presence of Lake Washington at the property edge provides the opportunity for the property to be used by species that frequent the lake. These include the species of significance discussed in the following section, as well as otters, beaver, and birds of shorelines and open water. These may include Vaux's swifts, belted kingfishers, double-crested and Brandt's cormorants, several swallow species, various flycatchers, and other insectivores could use the study property for resting or foraging perches.

2 Species of Local Importance

The City of Bellevue designates habitat associated with species of local importance as a critical area [LUC 20.25H.150(B)]. Species of local importance [LUC 20.25H.150(A)] for which suitable habitat exists on the study property are bald eagle, pileated woodpecker, Vaux's swift, merlin, purple martin, great blue heron, osprey, red-tailed hawk, and common loon. Potential fish use of Lake Washington includes Chinook and coho salmon, bull trout, and river lamprey. The likelihood of each of these species utilizing the property is discussed below.

Bald eagles are common foragers over Lake Washington, and active nests are known in the lake area. Eagles often perch in tall lakeside trees for foraging and resting. Several suitable trees exist on the property, and use by perching eagles of the large Douglas fir proposed for removal has been documented. Eagle nests are most commonly built near broken tops of tall trees, and in western Washington, nests in forks of large deciduous trees are also common. A few potential nesting trees are located on the subject property, but nearby areas provide more suitable nesting habitat, with greater tree density and less human disturbance.

The property is within a Bald Eagle Management Zone, as indicated by Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) data. Specifically, it is near the edge of a shoreline nest buffer. The nest for which this buffer is designated is approximately 0.4 mile southeast of the

subject property. WDFW no longer requires management plans for actions within Bald Eagle Management Zones. However, the U.S. Fish and Wildlife Service (USFWS) recommends the following management actions be taken for construction of a 3-story or higher building within a Management Zone if the nest is not visible from the property:

(1) maintain a buffer of at least 330 feet (100 meters) between construction activities and the nest (including active and alternate nests), or if a similar activity is closer than 330 feet, then maintain a buffer at least as far from the nest as the existing tolerated activity,

(2) within 660 (200 meters) feet of the nest, restrict any clearing, external construction or landscaping activities to outside the nesting season (outside the nesting season is from September through December since the nesting season in the Pacific Northwest is generally from January 1 through August 15), and

(3) maintain established landscape buffers that screen the activity from the nest.

The proposed project is outside of the maximum buffer referenced in these recommendations, is not within view of the nest, and will not impact established landscape buffers.

Pileated woodpeckers commonly use large conifers for drumming and foraging. The species is often spotted in suburban areas in King County. Individuals may occasionally use the large trees on the property, although the species' preferred large snags are not present. Suitable nesting sites for this species do not exist on the property.

Vaux's swifts forage in open skies over forests, lakes, and rivers, where insects are abundant. Lake Washington provides suitable foraging habitat, and the species may be present at times over the study area. Nesting normally takes place in old-growth forest where large, hollow snags are available. The study property does not provide nesting habitat for this species.

Merlins occur throughout western Washington in winter and during migration. Breeding birds are rare in the state. Occurrences are spotty but not uncommon in suburban areas, and the study property may provide a small amount of suitable hunting or perching area in the non-breeding season.

Purple martin is Washington State's least common swallow. The species forages over open water and could potentially use the lake area adjacent to the study

property for foraging. There are no suitable standing snags available on the property for cavity-nesting.

Great blue herons are widespread in western Washington. Outside of breeding, which occurs in tall trees, commonly away from human disturbance, the birds are most often observed in and along rivers, lakes, and wetlands. The adjacent waters of Lake Washington are likely used by foraging and resting herons throughout the year.

Osprey are very common over Lake Washington. Osprey typically nest in trees adjacent and above water. A few potential nest trees occur on the property, and it is likely that they are occasionally used for perching.

Red-tailed hawks nest in large trees, similar to those on the study property, and although no active nests are present, the trees are suitable for the species. However, nests are generally located in more extensive woodlands than the site offers. Red-tailed hawks are ubiquitous in this area and are likely to occasionally perch on or fly over the property.

Common loons prefer large, secluded lakes in the eastern part of the state for breeding. In winter, the species is most common on the coast and in saltwater bays and inlets, but can be seen on freshwater lakes near the coast as well. The open waters of Lake Washington are commonly used by wintering loons, but the species is unlikely to enter the study property.

Chinook and coho salmon migrate through Lake Washington. The lake itself does not provide spawning habitat. The lake is used by juveniles for migration, as well as rearing. Lake temperatures are warmer than preferred by these species, particularly in shallow areas, and the study site provides no cover for hiding or cooling. The lake area immediately adjacent to the property is unlikely to be used extensively by these species.

Bull trout are rare or non-existent in Lake Washington. The species has a narrow temperature tolerance range, and is very unlikely to occur near the shallow waters adjacent to the study property.

River lamprey have been identified in Lake Washington. According to the U.S. Fish and Wildlife Service, the species has declined, present status is unknown, and little is known about their biology.

Figure 2. View of the property (looking east), including the existing residence (background) and the accessory structure (foreground) – photo taken 6-9-11.

Figure 3. View of the existing residence & driveway (looking southwest) – photo taken 6-9-11.

Figure 4. View of the existing accessory structure (looking south) – photo taken 6-9-11.

Figure 5. View of the existing steep slope critical area. Notice the extensive ivy, Himalayan blackberry, and morning glory bindweed – photo taken 6-9-11.

3 LOCAL REGULATIONS

In Bellevue, steep slope critical areas are governed by Critical Areas Ordinance No. 5680. According to LUC 20.25H.120(A)(2), slopes of 40 percent or more that have a rise of at least 10 feet and exceed 1,000 square feet in area are designated as geologic hazard areas and therefore subject to the regulations of LUC 20.25H.120 through 20.25H.125. According to LUC 20.25H.120(B)(1)(b), steep slope critical areas require a top-of-slope buffer of 50 feet. However, because the project site contains an existing primary structure, the footprint of the existing structure is not located within the steep slope buffer. Further, pursuant to LUC 20.25H.120(C)(2), steep slopes require a toe-of-slope setback of 75 feet. The setback is intended to minimize long-term impacts of development and protect the critical area from adverse impacts during construction. Shorelines are regulated by LUC 20.25H.115 and 20.25E. Developed sites on Lake Washington require a 25-foot critical area buffer [LUC 20.25H.115(B)(1)(a)(ii)] and a 25-foot shoreline critical area structure setback [LUC 20.25H.115(C)(2)(b)]. Based upon these regulations and the corresponding buffers and setbacks, the entirety of the project site (with the exception of the footprint of the existing residence) is encumbered by critical areas.

Steep slope, steep slope buffer, steep slope setbacks, shoreline buffers, and shoreline setbacks can only be modified through an approved critical areas report. The applicant must demonstrate that the modifications to the critical area, buffer, and setback, combined with any restoration efforts, will result in equivalent or better protection of critical area functions and values than would result from adhering to the standard application of the regulations (LUC 20.25H.230). Restoration of the critical area may involve restoring the shoreline, removing invasive plant species, and/or planting native vegetation within the critical area and/or buffer. An approved restoration plan would require monitoring and maintenance in accordance with LUC 20.25H.220.

4 PROJECT DESCRIPTION

The proposed project includes the demolition of the existing single-family residence, as well as the existing accessory structure. The existing residence, which includes an attached carport, is located in the eastern portion of the parcel, at the top of the on-site steep slope. The residence and carport will be completely demolished. The accessory structure, located in the southwestern portion of the site, partially within the shoreline setback, will also be entirely demolished. Existing hardscape elements, including concrete pathways and rock/concrete stem walls will also be removed. After removal of all site elements, construction of a new single-family residence would begin. Also proposed as part of the project is removal of the existing rock bulkhead along the

shoreline and restoration of the area with a more natural shoreline. Finally, the existing dock will be removed and a new moorage structure, similar in size and configuration, will be constructed (see Section 6.2 for specific details about the dock replacement).

The new residence will be horseshoe-shaped to limit development on the steep slope, and to preserve an existing large Douglas-fir tree. The eastern portion of the residence, varying in width between 20 and 30 feet, will be positioned at the top of the steep slope in the area currently occupied by the existing residence and carport. An attached garage is also to be located in this area. This upper portion of the residence will be attached to a connecting portion, approximately 25 feet in width, which will extend in an east-west direction through a portion of the on-site steep slope. It will connect to the western (or lower) portion of the residence that will be situated near the base of the steep slope and will extend in a north-south direction, approximately 30 feet in width. The lower section of the residence will partially encroach into the 25-foot shoreline setback.

Due to the steeply sloped nature of the site, the building height varies between one and three stories high relative to existing grade, depending on location on the site. In general, the building steps down with the slope of the site in two building segments (following the City's 'Calculating Building Height' Handout L-11). To minimize shoreline and water view impacts to the south property, the southwest wing of the proposed residence ends 25 feet north of the 10-foot side yard setback (thus 35 feet from the southern property line). No shoreline or water views are impacted to the northern neighbor since the residence on that property is located to the west (closer to the water) of the proposed project, and existing trees will screen the north elevation of the proposed residence from the residence to the north.

The proposed project includes the removal of three trees. The most significant of the trees to be removed is a mature Douglas-fir in the center of the property, located at the toe of the steep slope. This particular tree measures approximately 60 inches in diameter at breast height (dbh). The second tree to be removed is an approximately 12-15-foot tall Pacific dogwood located just south of the existing house. The third and final tree proposed for removal is an 18-inch (dbh) Norway spruce that the project arborist has recommended for removal, in part, to afford more space and sunlight to the adjacent pine and ash trees. The remainder of the on-site existing trees will be preserved.

Project Purpose

The purpose of the proposed project is to replace an outdated and undersized single-family residence with an updated residence. The existing structure, constructed in 1909, is approximately 1,160 square feet in size and in a dilapidated condition. The property owner proposes to demolish and remove the existing structure and construct a new residence. The goal in constructing a new residence is to create a structure that will contain all of the essential components of a modern-day residence, as well be compatible with existing residences within the same area. Of the closest 14 shoreline properties

with single-family structures, the average sized residence is 5,206 square feet, with two of the structures eclipsing 10,000 square feet in size. The proposed residence, with a footprint of approximately 5,600 square feet, would be compatible with existing shoreline residences within the neighborhood.

Mitigation Sequencing

Pursuant to LUC 20.25H.215, attempts to avoid and minimize impacts to the on-site steep slope, buffer, and setback, as well as the shoreline buffer and setback have been taken.

Avoidance: As previously mentioned, the entire site (with the exception of the footprint of the existing residence) is encumbered by critical areas, buffers, or setbacks. Therefore, any construction outside the existing footprint would result in impacts to critical areas, buffers, or setbacks. Because the project purpose is to construct a residence that is compatible with the surrounding neighborhood, building outside the existing residential footprint is required, and therefore, full avoidance of critical area impacts is not feasible.

Minimization: Minimization techniques were utilized during the design process in order to limit impacts to the steep slope critical area, buffer, and setback, as well as the shoreline buffer and setback. Minimization measures included:

1. Utilizing the entirety of the existing residential footprint. A portion of the new residence will be situated in the location of the existing residential footprint, an area that is located outside of all critical areas and buffers.

2. Limiting a significant portion of the residence to the top of the slope.

3. Limiting the width of the 'connector' portion of the residence. This portion will be located directly on the steep slope.

4. Limiting a significant portion of the residence to the toe of the slope.

5. Locating the residence outside of the 25-foot shoreline buffer.

6. International Forestry Consultants, Inc. has prepared a report for the project that addresses how construction of the residence can be accomplished without impacting the large 56-inch diameter Douglas-fir tree (located in the center of the steep slope) and the large 59-inch Beech tree (located in the southwest corner of the site). These recommendations have been utilized in developing the site plan.

Mitigation: As mitigation for placing a portion of the new residence within the steep slope critical area, buffer, and setback, as well as the shoreline setback, 10,562 square feet on the property will be enhanced. Enhancement will occur within the steep slope critical area, buffer, and setback, as well as the shoreline setback and buffer (Appendix

A). Enhancement will consist of planting native trees, shrubs and groundcover throughout the site. Restoration will occur in areas currently occupied by non-native vegetation and structures. Additionally, the existing rock bulkhead will be removed and the shoreline re-graded to create a more natural shoreline gradient. Proposed species for planting include western red cedar, bitter cherry, vine maple, shore pine, sitka willow, red-twig dogwood, evergreen huckleberry, squashberry, sword fern, lady fern, oceanspray, salal, false solomon's seal, beach strawberry, and kinnikinnick. The proposed restoration will provide an additional level of protection for the critical area and will offset the addition of 1,954 square feet of new structural/impervious coverage within the critical area steep slope. Overall, a net improvement in critical area functions is proposed.

5 IMPACT ASSESSMENT / LIFT ANALYSIS

As mentioned in the previous section, portions of the new residence will be located within the steep slope critical area, buffer, and setback, as well as the shoreline setback. New structures/impervious surfaces within the steep slope critical area will total 1,954 square feet while new structures/ impervious surfaces within the steep slope critical area, buffer, setback, and shoreline setback combined will total 4,959 square feet. However, a total of 10,562 square feet of the site will be enhanced with native vegetation or restored through bulkhead removal and re-contouring of the shoreline. A summary of impacts and proposed restoration is presented in the table below.

Table 1. Impact Assessment

	New Structures / Impervious Surfaces (Sq. Ft.)	Restoration Plantings/Enhancement (Sq. Ft.)
Steep Slope Critical Area	1,954	4,100
50' Top of Slope Buffer*	2,004**	1,783
75' Toe of Slope Setback	1,727	415
25' Shoreline Setback	1,228	4,264***
Total	6,913	10,562

*The top of slope buffer is considered to be the entire non-steep slope area above the slope that bisects the middle of the site. The steep slope in the southeast corner of the lot would technically include a toe of slope setback; however, for clarity, the entire area between the two slopes will be considered a top of slope buffer.
**Per LUC 20.25H.035(B), this doesn't include the footprint of the existing primary structure.
***Also includes restoration in shoreline buffer.

As can be seen in the above table, a significant increase in on-site native vegetation will result from the proposed project. Proposed native vegetation is intended to improve the overall functions and values of the on-site critical areas. An analysis of the specific

functions and values provided by the existing site and the post-project site is provided in Table 2.

Table 2. Functional Lift Analysis

Critical Area/ Buffer Functions	Existing Conditions	Proposed Conditions	Functional Improvement?
Water Quality	Most of the existing steep slope and buffer is relatively devoid of native trees and shrubs. The shoreline area is also devoid of significant vegetation capable of filtering stormwater before it enters the lake.	Remove invasive species and enhance/restore with native trees and shrubs. Remove the rock bulkhead and install a more natural shoreline condition.	Water Quality will be maintained. New native plantings will help to filter storm water prior to it reaching receiving waters, particularly along the shoreline where the bulkhead will be removed.
Slope Stability	The existing steep slope is dominated by an English ivy monoculture. Ivy has shallow roots and prevents the growth of other plants.	Remove invasive species and restore with native trees and shrubs.	Yes; new native plantings will have deeper root systems than the current English ivy, reducing erosion potential and improving slope stability.
Habitat	The existing steep slope and buffer lack the native vegetation necessary to provide substantial forage and cover opportunities. Three large trees (>24" dbh) on the property (2 native, 1 ornamental) provide potential nesting, foraging and perching opportunities for several bird species. The rock bulkhead presents a vertical interface with the shoreline, rather than a more natural, sloping gradient. This lack of shallow water habitat prevents significant salmonid usage.	Remove one >24" dbh Douglas-fir, one 12" dbh Pacific dogwood, and one 18" dbh Norway spruce; all other significant trees to remain. Remove invasive species and enhance/restore habitat with native trees and shrubs. Remove the rock bulkhead and restore the shoreline.	Yes; while one significant perch tree will be removed, 10,562 square feet of the site will be enhanced, primarily with new native plantings, which will provide a net increase in species and structural diversity. While removal of the Douglas-fir will decrease perching opportunities for bald eagles, the largest on-site fir tree will be preserved, as will two large firs north of the residence. Further, new plantings will provide organic matter and foraging and nesting opportunities for terrestrial wildlife, including several songbird species. Removal of the

			bulkhead and restoration of the shoreline will enhance near-shore habitat complexity, and maximize nearshore shallow-water habitat for juvenile salmonids.
Net Condition	Degraded critical areas and associated buffers.	Invasive species are removed throughout the steep slope and buffer; native trees, shrubs, and groundcover are planted in the steep slope and buffer. The rock bulkhead is removed and the shoreline restored.	Slope and shoreline habitat restored with an increase in native vegetation; filtering of stormwater by native plantings; improved slope stability; increased habitat structural and compositional complexity, and an increase in organic material to the food chain.

There will be a temporal loss of predominantly shrub habitat on the site, as existing vegetation is replaced with young trees and shrubs. The change from existing state to mitigated state will represent an increase in the quality of habitat from the perspective of the site potential. With the exception of the previously discussed significant trees to be removed, vegetation removal consists largely of invasive species, ornamental species, grass, and scattered native shrubs. Few native tree species are presently growing in the impact areas. The areas have been maintained, presumably for views, and are unlikely to ever develop into mature forest. In particular, the ivy-covered slope is inhospitable to rooting native trees and shrubs. The vegetation management plan requires the removal of invasive vegetation and the establishment of at least 18 individual trees, including three red cedars. The presence of these plants on the site provides greater potential for the site to develop a tree component than exists in the impact area presently.

Although a greater footprint will be covered by the proposed development than the existing development, so will a greater area of diverse, native habitat result from the proposal. The property will be more suitable overall for urban songbird and small mammal species than it is presently; the understory will contain more woody vegetation and a greater structural complexity, which is more attractive to songbirds and small mammals than is lawn and low-growing, homogeneous vegetation. As well, a greater mix of flowering, fruiting and seeding plants will provide forage over a longer yearly timespan than the relatively uniform existing low vegetation. Wildlife species of the Pacific Northwest are also better adapted to forage provided by native plants than non-native and ornamental species. Functional lift specific to the shoreline is presented in Section 6.1

6 CRITICAL AREAS REPORT CRITERIA

6.1 House Construction

As previously mentioned, steep slope critical areas, steep slope buffers, steep slope setbacks, shoreline buffers, and shoreline setbacks may be modified pursuant to LUC 20.25H.230. The Director may approve modifications if it can be shown that, through restoration, the modification will result in equivalent or better protection of critical area functions and values. The existing project site contains areas of low functioning steep slopes and buffers/setbacks, as well as a degraded shoreline buffer and setback. Non-native vegetation occupies nearly the entirety of the steep slope critical area, while the buffer and setback contain existing structures and impervious surfaces. The shoreline buffer and setback includes an aging rock bulkhead, a deteriorated accessory structures, and limited native vegetation. The proposal includes restoration of the steep slope and buffer/setback with native plantings and restoration of the shoreline by removing the rock bulkhead and installing a natural shoreline with native vegetation. These restoration actions will serve as mitigation for the addition of 1,954 square feet of new structural/impervious coverage within the steep slope critical area and a total of 4,959 square feet of new structural/impervious coverage within the steep slope critical area, steep slope buffer, steep slope setback, and shoreline setback combined. A total of 10,562 square feet of the site will be enhanced through bulkhead removal and the planting of native trees, shrubs, and groundcover within the steep slope critical area, steep slope buffer, step slope setback, and shoreline setback and buffer. The planting layout incorporates a diversity of native plant species. The restoration plan will provide for substantially improved critical area and buffer functions and values relative to the existing condition. A monitoring and maintenance plan for the proposed mitigation area is also included in this report.

Per the LUC, the critical areas report must meet specific decision criteria in order for the Director to approve a proposal to modify the regulated steep slope critical area, steep slope buffer, steep slope setback, or shoreline setback. Compliance with the relevant critical areas report criteria listed in LUC 20.25H.250(B) is addressed below. [Note: This section pertains only to house reconstruction and on-site restoration. See Section 6.2 for compliance criteria associated with dock replacement.]

1. *Identification of each regulation or standard of this code proposed to be modified.*

   The subject site contains areas of steep slope, as defined by LUC 20.25H.120(A)(2). Pursuant to LUC 20.25H.120(B)(1)(b) and 20.25H.120(C)(2)(b), a 50-foot top-of-slope buffer and 75-foot toe-of-slope setback are required. The site is also adjacent to Lake Washington, a regulated shoreline that, pursuant to LUC 20.25H.115(B)(1)(a)(ii) and LUC 20.25H.115(C)(2)(b), requires a 25-foot critical area buffer and a 25-foot

shoreline critical area structure setback. The applicant proposes to construct a new single-family residence within portions of the steep slope critical area, steep slope buffer, steep slope setback, and shoreline setback. The proposal complies with the remaining regulations and standards of this code.

3. *A habitat assessment consistent with the requirements of LUC 20.25H.165.*

1. *Detailed description of vegetation and habitat on and adjacent to the site;*

See Section 1.2 and 2.

2. *Identification of any species of local importance that have a primary association with habitat on or adjacent to the site and assessment of potential project impacts to the use of the site by the species;*

See Section 2 and Section 5 (Table 2).

3. *A discussion of any federal, state, or local special management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitats located on or adjacent to the site;*

Because of the potential for species of local significance to be impacted by the proposal, the project is subject to LUC 20.25H.160, which states that a WDFW wildlife management plan be implemented. The only species of local significance potentially using the study site for which such a plan exists is the bald eagle, although recommendations have been established for other species (see following paragraphs). However, WDFW no longer requires or produces bald eagle management plans. Rather, the USFWS recommends specific management procedures for projects that might impact nesting bald eagles. Compliance with these procedures is described in Section 2.

Pileated woodpeckers are highly affected by the loss of remnant forests. Retention of the largest forest patches in urbanizing areas is the most direct approach to managing for this species, and retention of snags and decaying large trees is recommended by WDFW. These features do not presently exist on the subject property.

Vaux's swifts are most likely to use only the adjacent lake area and skies over the study area, as suitable nesting snags and trees are not present on the property. WDFW recommendations include retaining hollow snags and live trees, which are not present on the site. Purple martin recommendations also include only actions not relevant to the project and

property. Written WDFW recommendations are not available for other species of local importance that might use the site.

4. A detailed discussion of the direct and indirect potential impacts on habitat by the project, including potential impacts to water quality;

See Table 2. The most notable wildlife impact of the residential construction is the loss of a bald eagle perching tree. Eagles will be displaced to surrounding areas or to other trees on the property, at least one of which appears to be suitable for perching. Although replacement trees will be planted, there will be an extended temporal loss of eagle perching habitat as the trees mature. Offsets to this impact are provided by the enhancement of the property through improvements and increases in native vegetation, and by the removal of the bulkhead and enhancements to the shoreline.

The mitigated shoreline will provide habitat and water quality function where none exists today. The restored shoreline area would help attenuate wave energy, enhance near-shore habitat complexity, and maximize nearshore shallow-water habitat for juvenile salmonids. In addition to increasing the native plant structural and compositional diversity and enhancing terrestrial songbird and small mammal habitat, the restored shoreline will improve conditions for and have the potential to attract species using Lake Washington, including fish, invertebrates and some shorebirds. Species using the nearshore area will benefit as the abrupt, mostly unvegetated rock armoring is replaced by a soft shoreline with overhanging vegetation that will enhance fish habitat by providing overwater shade, cover, and allochthonous input of detritus and insects. A graded, natural shoreline will also provide direct access to the property from the lake, whereas the bulkhead inhibits access by waterfowl. Wildlife using the restored shoreline will also have easier access to the lake from the property, rather than the vertical drop from the top of the bulkhead. Replacement of the bulkhead and adjacent grass with densely planted shoreline vegetation will allow for more effective filtering of runoff, improving water quality to the lake over existing conditions.

Section 2 further describes habitat impacts and mitigation not specific to critical habitats or species.

5. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing habitats and restore any habitat that was degraded prior

to the current proposed use or activity and to be conducted in accordance with the mitigation sequence set forth in LUC 20.25H.215; and

See Section 4 for mitigation sequencing and Section 5 for habitat restoration details.

6. A discussion of ongoing management practices that will protect habitat after the site has been developed, including proposed monitoring and maintenance programs.

See Sections 7 and 8.

4. An assessment of the probable cumulative impacts to critical areas resulting from development of the site and the proposed development.

Indirect and cumulative impacts can be addressed insofar as land use of the surrounding landscape can be expected to change over time. The lots surrounding the property are zoned R-2.5, with several not yet achieving maximum allowable density. Therefore, it is possible that additional development of these properties may occur. In the event that the adjacent, undeveloped forest is fragmented further, the restored areas of the property will gain "refuge" value. Small and/or isolated forested patches within a developed landscape act as refuges to traveling wildlife and are extremely important for keeping wildlife within urban and suburban areas, as well as for facilitating movement through and within such areas. Thus, the increase in habitat complexity associated with the restoration plan for the study site will improve future refuge value of the site in the event that nearby properties are further developed.

5. An analysis of the level of protection of critical area functions and values provided by the regulations or standards of this Code, compared with the level of protection provided by the proposal. The analysis shall include:

a. A discussion of the functions and values currently provided by the critical area and critical area buffer on the site and their relative importance to the ecosystem in which they exist;

The shoreline is presently armored and vegetated primarily with non-native species and maintained grass. A narrow strip of woody and herbaceous vegetation is growing along the shoreline, on top of the rock bulkhead. A small amount of low-growing ornamental shrub overhangs the bulkhead. Some water quality and hydrologic function is provided by the existing vegetation, but function is limited by the predominance of grass and the armored shore. The bulkhead also allows only simple habitat to exist in the nearshore area by presenting a vertical interface with the ordinary high

water mark. This limits organic input and prevents the formation of quality shallow water habitat.

Hydrologic function of the Lake Washington shoreline is not critical, as the lake does not have a floodplain. Water quality is more important, and this function is limited by the bulkhead and simple buffer vegetation. The proposed mitigation will increase the ability of the shoreline buffer to improve water quality in the lake by increasing the filtering area and density of low woody growth. The softened shoreline and overhanging vegetation will also increase organic input to the lake and allow for more vegetation and greater vegetative structural diversity to develop in the nearshore area. See also Table 2.

b. A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through application of the regulations and standards of this Code over the anticipated life of the proposed development;

The strict application of the regulations and standards of LUC 20.25H would prevent the proposed project from being constructed, as the significant majority of the new residence is to be located within a steep slope critical area, steep slope buffer, steep slope setback, and shoreline setback. Under strict application of the code, the footprint of the existing residence could be utilized for a new home. However, at approximately 950 square feet, the footprint is not large enough for a residence that would be compatible with existing homes in the surrounding neighborhood and overall property value. Further, the existing degraded steep slope and portions of the buffer and setback, as well as the shoreline would remain in their existing degraded condition and no restoration would occur. Other than remaining free of any additional structure, the steep slope critical area would remain void of any significant native vegetation that would help to improve ecological functions over existing conditions. Meanwhile, the existing rock bulkhead would remain in place and the benefits of a softened and enhanced shoreline buffer would not be realized.

Instead, the proposed project will result in the addition of substantial native vegetation within the steep slope critical area, buffer, and setback. The native plantings will maintain stormwater infiltration and provide increased species and structural habitat diversity within the steep slope critical area and buffer, and improved slope stability. Further, the existing rock bulkhead will be removed and replaced with a more natural contoured shoreline with adjacent and overhanging native vegetation. [See also Table 2.]

c. A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through the modifications and performance standards included in the proposal over the anticipated life of the proposed development; and

By requesting a critical area modification pursuant to LUC 20.25H.230, the applicant is provided the opportunity to restore portions of the on-site steep slope critical area, buffer, and setback, as well as the shoreline critical area, buffer, and setback. A restoration plan has been prepared (see Appendix A) that details the area proposed for restoration. This plan mitigates for the construction of the proposed residence within the steep slope critical area, buffer, and setback, and the shoreline setback. Restoration will involve the enhancement of 10,562 square feet of the site through bulkhead removal and the planting of native vegetation within the steep slope critical area, buffer, and setback. The planting layout incorporates a diversity of native plant species. Proposed plantings include trees, shrubs, and groundcover. Restoration of the shoreline will involve removal of the existing rock bulkhead and the construction of a new more naturally contoured shoreline with adjacent, overhanging native vegetation. A monitoring and maintenance plan for the proposed mitigation is also included in this report. Overall, a net gain in critical area functions is proposed. Therefore, modification of the on-site critical areas, and subsequent restoration, will provide a substantially higher level of protection than provided through the application of the regulations of LUC 20.25H. [See also Table 2]

6. *A discussion of the performance standards applicable to the critical area and proposed activity pursuant to LUC 20.25H.160, and recommendation for additional or modified performance standards, if any.*

The proposed project and restoration plan will comply with USFWS recommendations (see Section 2).

7. *A discussion of the mitigation requirements applicable to the proposal pursuant to LUC 20.25H.210, and a recommendation for additional or modified mitigation, if any.*

The proposed restoration plan has been developed in accordance with the standards of LUC 20.25H.210 through 20.25H.225. The project applicant proceeded through the design of the proposed project by first attempting to avoid impacts to the on-site critical areas, buffers, and setbacks. However, because strict application of LUC 20.25H would result in the applicant being unable to construct a residence consistent with existing homes in the neighborhood, the applicant proceeded with an alternative design and attempted to minimize impacts to the greatest extent possible. Subsequently, the residence has been configured in a shape that most

effectively avoids impacts to the on-site steep slope critical areas. The applicant has compensated for impacts to the critical area, buffer, and setbacks by proposing a restoration plan that will improve the critical area functions and values relative to the existing condition. A monitoring and maintenance plan for the proposed restoration area has also been prepared and is included in this report. The plan includes the components required by LUC 20.25H.220.

To allow a steep slope critical area or shoreline setback modification through an approved critical areas report, the Director must also find compliance with the decision criteria established in LUC 20.25H.255(A) and (B). Compliance with the relevant sections listed in LUC 20.25H.255(A) and (B) is addressed below.

1. *The modifications and performance standards included in the proposal lead to levels of protection of critical area functions and values at least as protective as application of the regulations and standards of this code.*

A restoration plan that details the areas proposed for restoration as a result of the critical area, buffer, and setback modifications has been prepared. The plan mitigates for the proposed construction of a single-family residence within portions of the steep slope critical area, buffer, and setback, and the shoreline setback. Restoration will involve the planting of native vegetation (trees, shrubs, and groundcover) within the critical area, buffer, and setbacks. Additionally, the existing rock bulkhead will be removed and a more naturally contoured shoreline with adjacent, overhanging vegetation will be constructed. The overall planting layout incorporates a diversity of native plant species.

On the slope, proposed native plantings will increase species diversity, providing a variety of foraging resources for wildlife. An increase in structural diversity over existing conditions will also result, providing more suitable year-round cover conditions for wildlife, particularly songbirds. The proposed native plantings will also maintain stormwater functions within the slope, allowing filtration of stormwater adjacent to the lake and by helping to remove pollutants from stormwater on the slope. Along the shoreline, bulkhead removal and restoration will introduce sinuosity to what is currently a linear bulkheaded shoreline which lacks habitat complexity. The new shoreline edge and shallow gradient will reduce water depth and improve refuge and foraging conditions for fish species in the project area. The addition of new substrate will provide improved habitat for fish. The nearshore vegetation will enhance the aquatic community by providing overhanging vegetation, which will increase allochthonous input of detritus and insects and provide an overall benefit to fish habitat.

Overall, the restoration plan will provide for substantially improved critical area and buffer functions and values relative to the existing condition. The monitoring and maintenance plan will ensure long-term success of the mitigation. [See also Table 2.]

2. *Adequate resources to ensure completion of any required mitigation and monitoring efforts.*

   A comprehensive five-year maintenance and monitoring plan is included in this report (Section 8). The plan specifies appropriate species for planting and planting techniques, describes proper maintenance activities, and sets forth performance standards to be met yearly during monitoring. This will ensure that restoration plantings will be maintained, monitored, and successfully established within the first five years following implementation. Furthermore, to ensure that the proposed plantings are installed and that the five-year maintenance and monitoring plan is implemented, the applicant will post an Installation Assurance Device and a Maintenance Assurance Device prior to building permit issuance.

3. *The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site.*

   The on-site steep slopes (and Lake Washington) continue off-site to the north and south. However, restoration of significant portions of the on-site steep slopes will provide maintained water quality, improved erosion control, and slope stability. The steep slope is currently dominated by an English ivy monoculture. English ivy creates a dense, shallow root system that does little to reduce the probability of landslides. The native trees and shrubs included in the restoration plan will provide a more complex and deeper root system, improving slope stabilization. The dense vegetation will also help to reduce storm water velocities and filter associated sediments, improving water quality. Furthermore, restoration of the on-site slope, as well as the shoreline, will increase the overall habitat function of the area, thereby improving habitat functions on adjacent properties.

4. *The resulting development is compatible with other uses and development in the same land use district.*

   The proposed single-family residence will be compatible with adjacent properties and surrounding development within the same land use district (Single Family R-1.8). Adjacent properties also contain single-family land uses, all of a similar size.

1. *The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in overall critical area or critical area buffer functions.*

   See preceding paragraphs and Section 5.

2. *The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in the most important critical area or critical area buffer functions to the ecosystem in which they exist.*

   The most significant function provided by the vegetation and condition of steep slopes and their associated buffers is the protection of slope stability and reduction of erosion potential. The existing steep slope and much of the associated buffer are dominated by English ivy. The shallow root system of English ivy does not sufficiently maintain slope stability, and the dense mat created by the vines can serve to hide potential erosion problems. During periods of heavy rain, the ivy patches and the saturated soils can become too heavy for the shallow root system to support, increasing the likelihood of erosion. English ivy also destabilizes existing trees by covering the trunks and making the tree top heavy and, therefore, more likely to fall during periods of heavy rain and wind. With the implementation of the proposed restoration plan along the slope, the risks associated with ivy-covered slopes and trees will be greatly diminished. A combination of trees and shrubs on the steep slopes and in the buffer will provide deeper and stronger root systems, increasing slope stability. By removing the ivy, the risk to existing trees will also be greatly diminished.

   The most important function provided by the shoreline is overall habitat complexity, through organic input and shading from shoreline plantings and from shallow water conditions for salmonids and other fish species. The rock bulkhead and degraded buffer do not offer significant habitat complexity. With implementation of the restoration plan, complexity will be greatly improved through bulkhead removal/regrading and the addition of native overhanging vegetation.

3. *The proposal includes a net gain in stormwater water quality function by the critical area buffer or by elements of the development proposal outside of the reduced regulated critical area buffer.*

   It is proposed that all roof stormwater from the new residence be connected via downspouts directly into a series of bio-retention planters which are dispersed throughout the site, as shown on the project plans. Per PanGeo, Inc., existing soil conditions appear to consist of loose to medium dense fill over medium dense to dense sand and stiff to hard silt. Based on these soil

conditions, an infiltration rate of between 1 and 5 inches per hour is assumed. The proposal includes approximately 300 square feet of bio-retention planter area and a roof area of 5,600 square feet, resulting in a 5.4 percent planter sizing factor. This planter sizing factor is within the criteria listed in the Surface Water Engineering Standards Table 6.13: Sizing Factors for On-site BMP's, and thus we anticipate that the proposed quantity of bio-retention planters will be adequate to accommodate all roof stormwater. As the project design is developed, should additional stormwater management capacity be required, additional methods can be considered, such as rain recycling cisterns for greywater reuse. Combined with native restoration of significant portions of the degraded steep slope, steep slope buffer, and shoreline buffer and setback, these stormwater management techniques will ensure a net gain in stormwater quality function.

Modification of a critical area requires the applicant to apply for and receive a Critical Areas Land Use Permit. Before issuing a Critical Areas Land Use Permit, the Director must find that the project meets specific decision criteria. Compliance with the applicable Critical Areas Land Use Permit decision criteria listed in LUC 20.30P.140 is addressed below.

A. *The proposal obtains all other permits required by the Land Use Code.*

The project applicant has applied for a Critical Areas Land Use Permit (LO) to modify the on-site steep slope critical area, buffer, and setback, as well as the shoreline buffer and setback. An application for a Shoreline Substantial Development Permit (WG) has also been submitted. No other City of Bellevue land use permits will be required of the project at this time. A Building Permit will be applied for after approval of the LO and WG .

B. *The proposal utilizes to the maximum extent possible the best available construction, design and development techniques, which result in the least impact on the critical area and critical area buffer.*

As mitigation for impacts of the proposed residence, the existing degraded steep slope critical area, buffer, and setback, along with the shoreline critical area, buffer, and setback will be restored.

The applicant has used the best available design and development techniques to design the new residence. The design constitutes the minimum necessary impact on the critical area by minimizing the amount of direct steep slope impacts and concentrating development within the adjacent steep slope buffer and steep slope setback. As previously noted, minimization techniques were utilized in an attempt to further limit impacts

to the critical area and buffer. However, the slopes, buffers, and setbacks encumber the entirety of the site (with the exception of the existing residential footprint) and some level of critical area intrusion is necessary to construct a residence compatible with other residences within the surrounding neighborhood. A non-standard home configuration has been proposed as a means of preserving a significant portion of the on-site steep slope critical area. Bio-retention planters will be used as a means of capturing stormwater runoff from the roof. These development techniques, coupled with shoreline restoration and the planting of native vegetation, will result in the least possible impact on the critical area and critical area buffer.

C. *The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable.*

See below for steep slope performance standard compliance (per LUC 20.25H.125).

D. *The proposal will be served by adequate public facilities including streets, fire protection, and utilities.*

The proposed project will be served by adequate public facilities. No new streets will be needed to serve the site and the project site will utilize existing utilities available to the site. Additionally, fire and police protection are currently available at the site.

E. *The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan.*

A mitigation and restoration plan has been prepared in accordance with the requirements of LUC 20.25H.210. See Section 8 and Appendix A.

F. *The proposal complies with other applicable requirements of this code.*

The proposed project complies with all other applicable City of Bellevue Land Use Codes.

Modification of a geologic hazard area requires the applicant to show compliance with the specific performance standards for landslide hazards and steep slopes as set forth in LUC 20.25H.125. Compliance with the applicable criteria listed in LUC 20.25H.125 is addressed below.

A. *Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to existing topography;*

See PanGEO, Inc. geotechnical report.

B. *Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation;*

A non-standard home configuration has been proposed as a means of preserving a significant portion of the on-site steep slope critical area. A minimal intrusion into the steep slope is proposed. Otherwise, development has been concentrated at the top and toe of the slope. International Forestry Consultants, Inc. has prepared a report for the project that addresses how construction of the residence can be accomplished without impacting the large 56-inch diameter Douglas-fir tree (located in the center of the steep slope) and the large 59-inch Beech tree (located in the southwest corner of the site). These recommendations have been utilized in developing the site plan.

C. *The proposed development shall not result in greater risk or a need for increased buffers on neighboring properties;*

See PanGEO, Inc. geotechnical report.

D. *The use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes where graded slopes would result in increased disturbance as compared to use of retaining wall;*

See PanGEO, Inc. geotechnical report.

E. *Development shall be designed to minimize impervious surfaces within the critical area and critical area buffer;*

Innovative design techniques were utilized as a means of minimizing total impervious surfaces within the steep slope critical and buffer. These include design of a non-standard home configuration, as a means of limiting development within the steep slope. Bio-retention planters are proposed as a means of capturing stormwater runoff from the roof and infiltrating runoff on-site.

F. *Where change in grade outside the building footprint is necessary, the site retention system should be stepped and regrading should be designed to minimize topographic*

modification. On slopes in excess of 40 percent, grading for yard area may be disallowed where inconsistent with this criteria;

The change in grade outside of the new building footprint is very minimal and the proposed improvements are designed to minimize site topographic modifications.

G. *Building foundation walls shall be utilized as retaining walls rather than rockeries or retaining structures built separately and away from the building wherever feasible. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation;*

See PanGEO, Inc. geotechnical report.

H. *On slopes in excess of 40 percent, use of pole-type construction which conforms to the existing topography is required where feasible. If pole-type construction is not technically feasible, the structure must be tiered to conform to the existing topography and to minimize topographic modification;*

See PanGEO, Inc. geotechnical report.

I. *On slopes in excess of 40 percent, piled deck support structures are required where technically feasible for parking or garages over fill-based construction types; and*

See PanGEO, Inc. geotechnical report.

J. *Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210.*

A restoration plan has been developed, pursuant to LUC 20.25H.120, and is included in Appendix A. The plan will mitigate for areas of permanent disturbance and restore areas of temporary disturbance.

Finally, modifications to steep slope critical areas and critical area buffers can only be approved if the Director determines that compliance with LUC 20.25H.145 has occurred. Compliance with the applicable decision criteria listed in LUC 20.25H.145 is addressed below.

A. *Will not increase the threat of the geological hazard to adjacent properties over conditions that would exist if the provisions of this part were not modified;*

See PanGEO, Inc. geotechnical report.

B. Will not adversely impact other critical areas;

See PanGEO, Inc. geotechnical report.

C. Is designed so that the hazard to the project is eliminated or mitigated to a level equal to or less than would exist if the provisions of this part were not modified;

See PanGEO, Inc. geotechnical report.

D. Is certified as safe as designed and under anticipated conditions by a qualified engineer or geologist, licensed in the state of Washington;

See PanGEO, Inc. geotechnical report.

E. The applicant provides a geotechnical report prepared by a qualified professional demonstrating that modification of the critical area or critical area buffer will have no adverse impacts on stability of any adjacent slopes, and will not impact stability of any existing structures. Geotechnical reporting standards shall comply with requirements developed by the Director in City of Bellevue Submittal Requirements Sheet 25, Geotechnical Report and Stability Analysis Requirements, now or as hereafter amended;

See PanGEO, Inc. geotechnical report.

F. Any modification complies with recommendations of the geotechnical support with respect to best management practices, construction techniques or other recommendations; and

See PanGEO, Inc. geotechnical report.

G. The proposed modification to the critical area or critical area buffer with any associated mitigation does not significantly impact habitat associated with species of local importance, or such habitat that could reasonably be expected to exist during the anticipated life of the development proposal if the area were regulated under this part.

Vegetation in most of the additional proposed construction footprint within the steep slope and setback consists of invasive and ornamental species, with some native shrubs. Few trees are growing within the construction footprint. On the slope, non-native species either colonized or were planted and now dominate. Such dense, low growth vegetation, particularly of the dominant English ivy, prohibits growth of native shrubs and effectively prevents the successful establishment of native trees. Ivy also spreads prolifically. As well, because of its highly invasive nature, ivy often infests and kills mature trees if not controlled. Further downslope, residential lawn has been maintained and maintenance would likely continue in the event that no further construction were to take place. In that no-action scenario,

the property would likely remain largely as an ivy-dominated slope and homogeneous lawn. While dense low vegetation would remain, it would remain predominantly non-native and invasive, and perhaps infestation would worsen if not controlled. While the large Douglas-fir would remain and continue to serve as an eagle perch, the likelihood of additional native trees reaching maturity is low, and the understory would be unlikely to improve in terms of community composition and foliage height diversity.

6.2 Dock Replacement

Existing Condition

As part of the overall site development project, reconstruction of the existing dock is also proposed. The existing dock measures 84 feet in total length, with a six-foot-wide walkway extending 73 feet from the OHWM. The walkway leads to a rectangular shaped ell, measuring 11 feet by 22 feet. The existing dock totals 690 square feet in size and includes a total of 21 support pilings and three dolphin piles. A total of eight moorage piles are found adjacent to the dock; two just north of the walkway and two separate sets of three piles situated west of the dock. The dock is outdated and in disrepair.

Proposed Improvements

Repair of the dock structure is not feasible and therefore, it is proposed that the entire dock, including all support pilings be removed. All eight moorage piles are also to be removed; with two new moorage piles being installed. A replacement dock, very similar in size and configuration to the existing dock, will be constructed in its place. Specifically, the replacement dock will be situated in the same area on the site; that is, extending from the shoreline at the same point. The replacement dock will be fully grated and will include a narrower four-foot-wide walkway extending from the OHWM a distance of 73 feet. The walkway will lead to a 22-foot by 11-foot ell. The proposed dock will measure 534 square feet in size, a reduction of 156 square feet from the existing condition. With the exception of the narrower walkway, the proposed dock will be identical to the existing dock, both in location and configuration. The two moorage piles north of the walkway are to be removed. The remaining six moorage piles will also be removed. However, two moorage piles will be placed in the location of the two sets of existing piles.

Regulatory Implications

Removal of the existing dock and construction of a replacement dock does not meet the City's definition of 'normal maintenance or repair'. Therefore, construction of the replacement dock is subject to the City's regulations pertaining to new or expanded

residential moorage facilities. Specifically, LUC 20.25E.080(N)(1) requires, among other standards, that new docks maintain a maximum four-foot-wide walkway, that ells be no larger than 26-feet by 6-feet (156 square feet), and that the surface coverage of the dock not exceed 480 square feet. As mentioned, the replacement walkway will be four-feet-wide, meeting the new dock standard. However, the replacement ell will measure 22-feet by 11-feet (242 square feet) and will therefore not meet the ell dimensional standards [LUC 20.25E.080)(N)(1)(b)(iv)(3)(c)]. Because of this, the overall surface coverage of the dock will be 534 square feet, thereby not complying with the overall coverage standard by 54 square feet. The replacement dock will comply with the remainder of the new moorage facility development standards, including pile size, pile spacing, and nearshore pile spanning. Pursuant to LUC 20.25E.080(N), moorage regulations may be modified. Modification must be consistent with the standard critical areas report process found in LUC 20.25H.230.

Critical Areas Report Criteria

This section is intended to be independent from the remainder of this document which details how the proposed residential development will impact and mitigate for encroachment within a steep slope, buffer, and setback, as well as the shoreline setback. This section will pertain only to the proposed modification of the dock development standards associated with required ell dimensions [LUC 20.25E.080)(N)(1)(b)(iv)(3)(c)] and overall surface coverage [LUC 20.25E.080(N)(1)(b)(iii)(1)].

Pursuant to LUC 20.25H.230, the Director may approve modifications to development standards if it can be shown that, through project implementation, the modification will result in equivalent or better protection of critical area functions and values. The existing project site contains a dilapidated dock structure measuring 690 square feet in size. A total of 32 support and moorage piles are also present.

Per the LUC, the critical areas report must meet specific decision criteria in order for the Director to approve a proposal to modify the requested development standards. Compliance with the relevant critical areas report criteria listed in LUC 20.25H.250(B) is addressed below. [Note: a majority of the compliance criteria applies to the entire site and has been discussed in Section 6.1.]

4. *An assessment of the probable cumulative impacts to critical areas resulting from development of the site and the proposed development.*

    The site contains an existing dock structure. The structure is to be removed and replaced with a fully grated dock that will be 156 square feet smaller than the existing dock. In addition to being fully grated and smaller in total size, the walkway width will be reduced from six feet to four feet and the total number of in-water piles (support and moorage combined) will

decrease from 32 to 13, including a span of over 18 feet between the OHWM and the first set of 4-inch piles. Improvement to nearshore conditions have been specifically made to reduce dock impacts related to juvenile salmonid use of the shoreline. Within the critical nearshore 30 feet, large piles will be removed, dock width will be reduced to the recommended width of 4 feet, and grated decking will be installed to reduce shading impacts. Due to the significant improvements in dock design, particularly in the nearshore area, the cumulative effect of the replacement dock on critical areas is expected to result in a net improvement.

While no long term cumulative impacts will occur, impacts associated with in-water work may occur during dock removal and reconstruction. However, impact minimization techniques and BMPs will be followed during construction to limit impacts to the greatest extent feasible. This includes:

1. Compliance with state and federal timing restrictions to ensure that protected fish species are not within the project area during construction.
2. Use of an in-water sediment curtain to isolate the work area and prevent turbid water from leaving the area.
3. Techniques designed to limit substrate impacts during pile removal and pile driving. Existing piles will either be completely extracted using a vibratory system or cut below the mud-line and filled with gravel.
4. Use of sound attenuating devices during the driving of replacement piles.
5. Any barge or workboat used for construction would not be allowed to ground.

5. *An analysis of the level of protection of critical area functions and values provided by the regulations or standards of this Code, compared with the level of protection provided by the proposal. The analysis shall include:*

b. A discussion of the functions and values currently provided by the critical area and critical area buffer on the site and their relative importance to the ecosystem in which they exist;

The existing dock includes a six-foot-wide solid-decked walkway extending 73 feet from shore and a 22-foot by 11-foot solid-decked ell. The dock is supported by 24 large (≥ 12") wood piles. This area of the Lake Washington shoreline, while not adjacent to or near the mouth of tributary streams or other well-known rearing habitat for juvenile salmon, may be utilized as

part of the migration route as juvenile salmon pass through Lake Washington into Lake Union and eventually through the Ballard Locks. Recent studies have shown that overwater structures in Lake Washington alter the migration behavior of juvenile chinook salmon causing them to swim around such structures into deeper water, potentially exposing them to higher predation rates. It is theorized that with dock size reduction (specifically nearshore width) and shade mitigation (use of grated decking), impacts to migrating juvenile salmon may be reduced.

Overwater structures also shade the aquatic substrate and thereby reduce the ability of aquatic vegetation to grow. Specific to docks which face an east-west direction (as the existing dock does), shading is likely continuous throughout the day such that vegetative growth is hindered beneath the dock. In circumstances where re-orientation of the overwater structure to a more north-south direction is not feasible, use of shade minimization techniques (i.e. grated decking) will reduce shading impacts and potentially provide light to the aquatic substrate and allow native plants to recruit naturally.

While pilings do not necessarily provide shade to aquatic substrate, they are known to attract predatory fish species such as bass. When pilings are located in nearshore shallow water, they may result in unintended increases in predation rates on juvenile salmon.

b. A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through application of the regulations and standards of this Code over the anticipated life of the proposed development;

Under the strict application of the regulations and standards of LUC 20.25E, the following dock would be proposed:

Walkway	4′ x 90′ (360 SF) – fully grated
Ell	6′ x 20′ (120 SF) – 40 SF grated
Total Size	480 SF
Total Grating	400 SF (83% of structure)
Support Piles	11 total piles, 2 of which will be 4″ in diameter located 18-ft from the OHWM. Remaining piles will be a maximum 12″ in diameter and spaced 18-ft apart.
Moorage Piles	8 existing piles remain
Mitigation	N/A (due to shoreline being restored as mitigation for house reconstruction)

Under this scenario, the nearshore walkway is reduced to the recommended width of 4 feet and fully grated. The ell size is limited in length and width with a 2-foot wide strip of grating down the middle to provide some shade mitigation in deeper water. Support piles are replaced with new piles with a minimum nearshore span of 18 feet. The 8 existing moorage piles may remain.

Overall, the strict application of the above code requirements would improve nearshore conditions by minimizing shading impacts (reduced walkway width and grated decking), reduced shading impacts in deeper water (partially grated ell of reduced size), and reduced predatory cover in the nearshore (nearshore support pile removal).

c. A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through the modifications and performance standards included in the proposal over the anticipated life of the proposed development; and

By requesting a critical area modification pursuant to LUC 20.25H.230, the applicant is proposing a replacement dock structure with the following components:

Walkway	4′ x 73′ (292 SF) – fully grated
Ell	11′ x 22′ (242 SF) – fully grated
Total Size	534 SF
Total Grating	534 SF (100% of structure)
Support Piles	11 total piles, 2 of which will be 4″ in diameter located 18-ft from the OHWM. Remaining piles will be a maximum 12″ in diameter and spaced 18-ft apart.
Moorage Piles	6 of 8 existing piles would be removed. Remaining 2 piles are to be replaced.
Mitigation	N/A (due to shoreline being restored as mitigation for house reconstruction)

Under this scenario, the nearshore walkway is similarly reduced to the recommended 4-foot width and fully grated. The ell size is larger than allowed under the strict code application, but it would be fully grated in order to maximize shade mitigation in deeper water. Support piles are similarly replaced with new piles with a minimum nearshore span of 18 feet. Further improvements to reduce predatory cover include the net removal of 6 mooring piles.

8. *A discussion of the mitigation requirements applicable to the proposal pursuant to LUC 20.25H.210, and a recommendation for additional or modified mitigation, if any.*

   Pursuant to LUC 20.25E.080(N)(1)(b)(vi)(3), shoreline plantings shall be used to mitigate for new or expanded docks. However, as mentioned in this specific critical areas report criterion and pursuant to LUC 20.25H.225, *modified* and/or *innovative* mitigation may be proposed. As previously discussed, removal of the existing dock and reconstruction of a smaller, narrower, and fully grated dock will result in a net improvement to the shoreline environment. Therefore, the action of replacing the existing dock with a newer dock is self mitigating.

To allow a dock development standard modification through an approved critical areas report, the Director must also find compliance with the decision criteria established in LUC 20.25H.255(A) and (B). Compliance with the relevant sections listed in LUC 20.25H.255(A) and (B) is addressed below.

5. *The modifications and performance standards included in the proposal lead to levels of protection of critical area functions and values at least as protective as application of the regulations and standards of this code.*

   The proposed dock will measure 534 square feet in size (54 square feet larger than the normal code standard) and will include an 11-foot-wide ell (5 feet wider than the code standard). Application of the regulations and standards of the code would result in a 480 square foot dock (400 square feet of which would be grated) with a 6-foot-wide ell. However, as mentioned, implementation of the proposed plan will include a fully grated structure and removal of eight existing moorage piles (two of which will be replaced).

   Both the standard code requirements and the proposed replacement dock materials and dimensions, provide equivalent nearshore protection of critical area functions and values through width minimization, grated decking, and pile sizes and spanning. Variations occur with both the size and decking of the ell and the number of mooring piles.

   With regards to the ell, the proposed structure, while larger than the standard, does provide full deck grating to minimize shade while the standard requirement would allow for some solid decking. The location of the ell in deep water, 73 feet off-shore, significantly reduces the potential impacts of both solid decking and wider structures. The application of nearshore width reduction and nearshore grating should encourage most migratory salmonids to pass under the proposed dock within the shallow nearshore.

The reduction in the number of moorage piles under the proposed plan would constitute an improvement over the standard code requirement. Overall, in comparing the standard application of the code and the proposed deviation, equivalent protection of critical area functions and values is proposed.

6. *Adequate resources to ensure completion of any required mitigation and monitoring efforts.*

The proposal is self-mitigating and does not include plantings. Therefore, no monitoring or assurance device is necessary for work associated with the replacement dock.

7. *The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site.*

The additional overwater cover requested by this modification is an overall decrease in coverage compared to the existing condition. Further, compared to the existing condition, the entire structure will be grated and the walkway will be decreased in width two feet. Therefore, a net gain in functions and values is proposed and no detrimental impacts will occur to areas off-site.

8. *The resulting development is compatible with other uses and development in the same land use district.*

The proposed dock will be compatible with adjacent properties and surrounding development within the same land use district (Single Family R-1.8). Adjacent properties also contain moorage facilities.

Modification of a critical area requires the applicant to apply for and receive a Critical Areas Land Use Permit. Before issuing a Critical Areas Land Use Permit, the Director must find that the project meets specific decision criteria. Compliance with the applicable (several of the criteria have already been addressed above) Critical Areas Land Use Permit decision criteria listed in LUC 20.30P.140 is addressed below.

A. *The proposal obtains all other permits required by the Land Use Code.*

The project applicant has applied for a Critical Areas Land Use Permit (LO) to remove and reconstruct the dock. An application for a Shoreline Substantial Development Permit (WG) has also been submitted. No other City of Bellevue land use permits will be required of the project at this time. A Building Permit will be applied for after approval of the LO and WG.

B. *The proposal utilizes to the maximum extent possible the best available construction, design and development techniques, which result in the least impact on the critical area and critical area buffer.*

See response #4 above for minimization techniques and proposed BMPs.

F. *The proposal complies with other applicable requirements of this code.*

The proposed project complies with all other applicable City of Bellevue Land Use Codes.

7 VEGETATION MANAGEMENT OBJECTIVES

The management objective is to replace functions and values provided by removed native trees. The shoreline is being restored by removing the existing bulkhead and replacing it with a natural rockery that incorporates a cove and native plant vegetation. A total of three significant trees are proposed for removal from the site. The trees are a mature Douglas-fir, a Norway Spruce (non-native) and a Pacific dogwood. As mitigation for tree removal, a total of three western red cedar trees, four shore pines and 18 smaller deciduous trees will be planted within the restoration area for the site. In addition to the replacement trees, the restoration area also includes 171 native shrubs and numerous groundcover species as mitigation for steep slope critical area, buffer, and setback impacts associated with construction of the new residence.

7.1 Short-term Objectives

1. Remove rock bulkhead from the shoreline and restore to a more natural state.
2. Establish new, native sapling trees on the property.
3. Reduce invasive weed cover, specifically remove non-native English ivy and Himalayan blackberry from the restoration area.
4. Increase native plant density as per the planting plan (see Appendix A).
5. Maintain existing habitat features, specifically preserve and protect existing native vegetation to the greatest extent feasible.
6. Properly mulch and irrigate installed plants to help them become established (see Appendix A).
7. 100 percent survival of all installed plants in the first year.

7.2 Long-term Objectives

Provide a more complex shoreline dominated by native plants

Establish native trees along the steep slope and new shoreline to help maintain stability and provide increased habitat opportunities. Long-term, the planting plan and general maintenance practices are intended to improve the ecologic services provided by the restoration area.

The long-term objectives should be substantially achieved when the following performance standards are met:

1. Establish and retain at least three western red cedar trees and at least 18 other individual trees from the plant list or other suitable native volunteer tree species.

7.3 Project Initiation

1. Remove invasive weeds from the restoration area. Cut English ivy and Himalayan blackberry vines back and grub out the roots. (Take care not to damage existing native vegetation in that area.)

2. Prepare the site for planting and install the planting plan per the planting notes, including mulch and temporary irrigation (see Appendix A).

3. Provide as-built documentation to the City of Bellevue.

7.4 Year One

1. Check the irrigation system in the late spring to ensure proper operation over the dry season (June 1 to September 30).

2. Remove any sprouting weeds in the early spring to reduce weed competition going into the growing season and keep weed cover below 10 percent.

3. Conduct a survival plant count in the late summer/early fall and replace any dead plants to achieve 100 percent survival.

4. Replenish wood chip mulch as needed.

7.5 Years Two through Five

1. Check the irrigation system in the late spring to ensure proper operation over the dry season (June 1 to September 30).

2. Remove any sprouting weeds in the early spring to reduce weed competition going into the growing season and keep weed cover below 10 percent.

3. Apply a slow-release granular fertilizer to the drip-line of each plant.

4. Conduct a survival plant count in the late summer/early fall to ensure that the management area is on-track to achieve a minimum of 85 percent survival by year five. Replace dead plants as needed.

5. Replenish wood chip mulch as needed.

8 RESTORATION PLAN

8.1 Overview

The proposed restoration plan fulfills the requirements of LUC 20.25H.220(B). The plan seeks to restore and enhance substantial portions of the Lake Washington shoreline and on-site steep slope critical area and buffer. The existing shoreline bulkhead will be removed and replaced with a more natural rockery that incorporates native plants. The steep slope has a high potential for enhancement to increase several important functions, as it presently contains non-native vegetation. To achieve this, the plan calls for the enhancement of 10,562 square feet of the site through bulkhead removal and the planting of native trees, shrubs and groundcover within the steep slope critical area, buffer, setback, and the shoreline buffer and setback. The restoration plan can be found in Appendix A. Species include western red cedar, shore pine, bitter cherry, vine maple, red-twig dogwood, oceanspray, evergreen huckleberry, squashberry (high bush cranberry), sword fern, lady fern, beach strawberry, salal, false solomon's seal and kinnikinnick.

8.2 Maintenance and Monitoring Plan

Appendix A includes details of the 5-year maintenance and monitoring plan, also detailed below.

8.2.1 Goals

1) Within the proposed restoration area, establish dense native vegetation that is appropriate to the eco-region and site.

2) Where indicated on the plan, areas within the restoration area will remain substantially vegetated with a preponderance of native plants and will contain little invasive or noxious weed cover.

3) Increase habitat cover and refuge for amphibians, small mammals, and invertebrates. Provide perching habitat for native birds.

8.2.2 Performance Standards

The standards listed below will be used to judge the success of the installation over time. If performance standards are met at the end of Year 5, the site will

then be deemed successful and the performance security bond will be eligible for release by the City of Bellevue.

1) Survival: Achieve 100% survival of installed plants by the end of Year 1. This standard can be met through plant establishment or through replanting as necessary to achieve the required numbers.

2) Native cover:

   a. Achieve 40% understory cover of native shrubs and sapling trees by Year 2. Native volunteer species may count towards this cover standard.

   b. Achieve 60% understory cover of native shrubs and sapling trees by Year 3. Native volunteer species may count towards this cover standard.

   c. Achieve 80% understory cover of native shrubs and sapling trees by Year 3. Native volunteer species may count towards this cover standard.

3) Species diversity: Establish at least three native shrub species by Year 3 and maintain this diversity through Year 5. Native volunteer species may count towards this standard. Establish at least three western red cedar trees and at least 18 other individual trees from the plant list or other suitable native volunteer tree species.

4) Invasive cover: Aerial cover for all non-native, invasive and noxious weeds will not exceed 10% at any year during the monitoring period. Invasive plants include Himalayan blackberry (*Rubus armeniacus*), cut leaf blackberry (*Rubus laciniatus*), reed canarygrass (*Phalaris arundinacea*), cherry (hedge) laurel (*Prunus laurocerasus*), English holly (*Ilex aquifolium*), and ivy species (*Hedera* spp.).

8.2.3 Monitoring Methods

This monitoring program is designed to track the success of the mitigation site over time and to measure the degree to which it is meeting the performance standards outlined in the preceding section.

An as-built plan will be prepared by the **restoration professional** (Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects) prior to the beginning of the monitoring period. The as-built plan will be a mark-up of the planting plans included in this plan set. The as-built plan will document any departures in plant placement or other components from the proposed plan.

Monitoring will take place once annually in the fall for five years. Year-1 monitoring will commence in the first fall subsequent to installation.

The formal monitoring visit shall record and report the following in an annual report submitted to the City of Bellevue:

1) Visual assessment of the overall site.
2) Year-1 counts of live and dead plants by species. Year-2 through Year-5 counts of established native trees by species.
3) Counts of dead plants where mortality is significant in any monitoring year.
4) Estimate of native shrub cover.
5) Estimate of non-native, invasive weed cover.
6) Tabulation of established native species, including both planted and volunteer species.
7) Photographic documentation from at least three fixed reference points.
8) Any intrusions into or clearing of the planting areas, vandalism, or other actions that impair the intended functions of the mitigation area.
9) Recommendations for maintenance or repair of any portion of the mitigation area.

8.2.4 Construction Notes and Specifications

Note: specifications for items in **bold** can be found below under "Material Specifications and Definitions."

Note: The Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects, will monitor:

1. All site preparation
   a. Soil preparation.
   b. Mulch placement.
2. Plant material inspection
   a. Plant material delivery inspection.
   b. 100% plant installation inspection.

8.2.5 General Work Sequence

1. All plant installation is to take place during the dormant season (October 15th – March 1st), for best survival.
2. Prepare a planting pit for each plant and install per the planting details.
3. Mulch the entire planted area with **wood chip mulch** (95 cubic yards needed), four inches thick.

4. Install a temporary, above ground **irrigation system** to provide full coverage to all plants within the restoration area.

8.2.6 Material Specifications and Definitions

1. **Fertilizer**: Slow release, granular PHOSPHOROUS-FREE fertilizer. Follow manufacturer's instructions for application. Keep fertilizer in a weather-tight container while on site. Note that fertilizer is to be applied only in Years 2 through 5 and not in the first year.
2. **Irrigation system:** Automated system capable of delivering at least one inches of water per week from June 1 through September 30 for the first two years following installation.
3. **Restoration Professional**: Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects.
4. **Wood chip mulch**: Arborist chips (chipped woody material) approximately 1 to 3 inches in maximum dimension (not sawdust or coarse hog fuel). This material is commonly available in large quantities from arborists or tree-pruning companies. This material is sold as "Animal Friendly Hog Fuel" at Pacific Topsoils [(800) 884-7645]. Mulch must not contain appreciable quantities of garbage, plastic, metal, soil, and dimensional lumber or construction/demolition debris. Quantity required: 95 cubic yards.

8.2.7 Contingencies

If there is a significant problem with the restoration areas meeting performance standards, a contingency plan will be developed and implemented. Contingency plans can include, but are not limited to: soil amendment; additional plant installation; and plant substitutions of type, size, quantity, and location.

8.2.8 Maintenance

The site will be maintained in accordance with the following instructions for five years following completion of the construction.

1) Follow the recommendations noted in the previous monitoring site visit.
2) General weeding for all planted areas:
   a. At least twice yearly, remove all competing weeds and weed roots from beneath each installed plant and any desirable volunteer vegetation to a distance of 18 inches from the main plant stem. Weeding should occur at least twice during the spring and summer. Frequent weeding will result in lower mortality, lower plant replacement costs, and increased likelihood that the plan meets performance standards by Year 5.
   b. More frequent weeding may be necessary depending on weed conditions that develop after plan installation.

c. Do not weed the area near the plant bases with string trimmer (weed whacker/weed eater). Native plants are easily damaged or killed, and weeds easily recover after trimming.
d. Selective applications of herbicide may be needed to control invasive weeds, especially when intermixed with native species. Herbicide application, when necessary, shall be conducted only by a state-licensed applicator.

3) Apply slow release granular fertilizer to each installed plant annually in the spring (by June 1) of Years 2 through 5.
4) Replace mulch as necessary to maintain a 4-inch-thick layer, retain soil moisture, and limit weeds.
5) Replace each plant found dead in the summer monitoring visits during the upcoming fall dormant season (October 15 to March 1).
6) The homeowner will ensure that water is provided for the entire planted area with a minimum of 1 inch of water provided per week from June 1 through September 30 for the first two years following installation through the operation of a temporary irrigation system. Less water is needed during March, April, May and October.

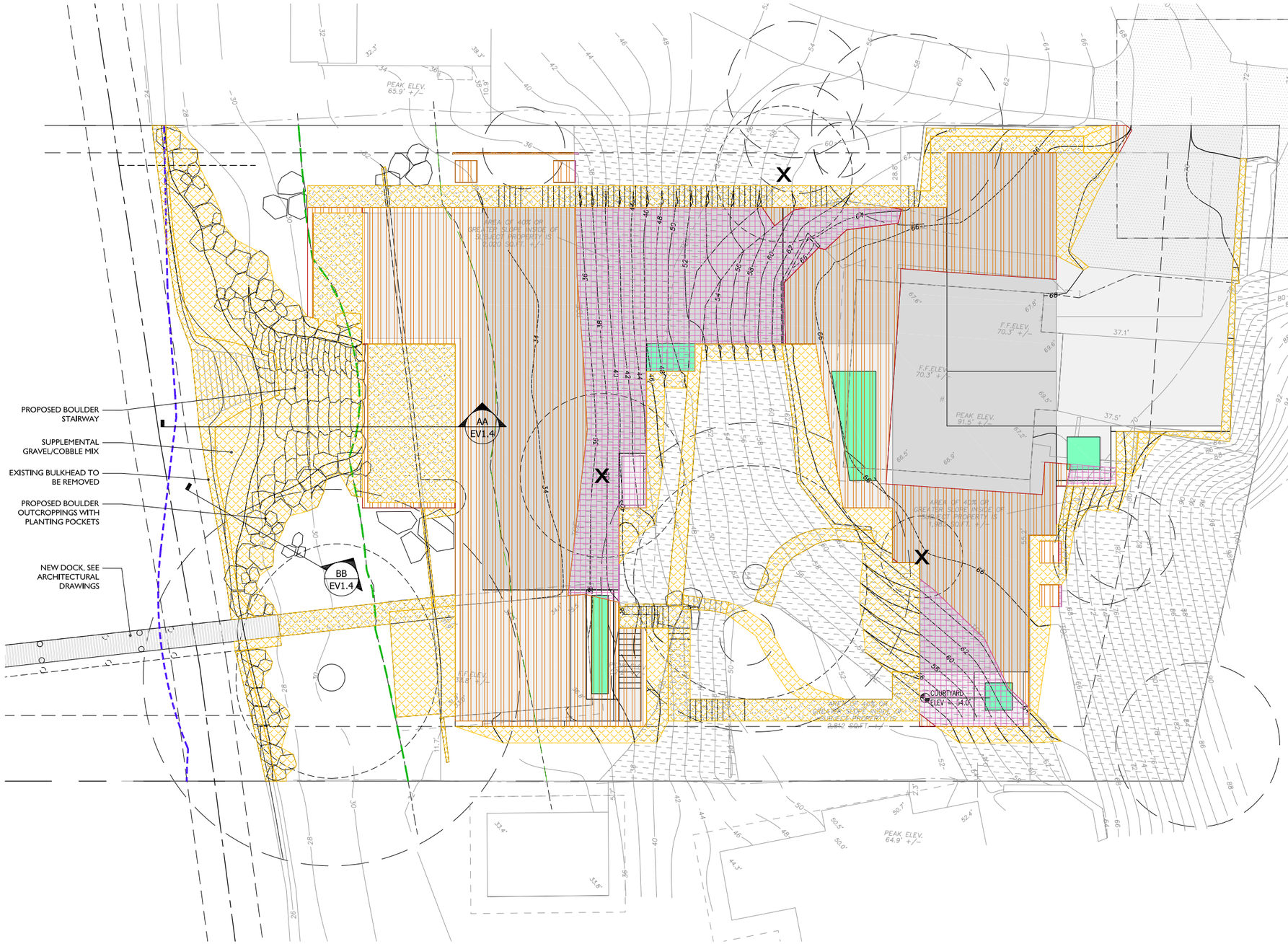
9 SUMMARY

Construction of a new single-family residence within a steep slope critical area, steep slope buffer, steep slope setback, and shoreline setback is proposed. The proposal includes the addition of 1,954 square feet of new structural/impervious coverage within the steep slope critical area and a total of 4,959 square feet of new structural/impervious coverage within the steep slope critical area, buffer, and the shoreline buffer and setback combined. As mitigation for the new residence, the shoreline will be restored and remaining areas of the site currently covered in non-native vegetation, will be restored with native vegetation. A total of 10,562 square feet of site enhancement is proposed. Native species include western red cedar, bitter cherry, vine maple, shore pine, sitka willow, red-twig dogwood, evergreen huckleberry, squashberry, sword fern, lady fern, oceanspray, salal, false solomon's seal, beach strawberry, and kinnikinnick.

The planting layout incorporates a diversity of native plant species. The restoration plan will provide significantly better protection of those critical area functions and values than would be provided by the standard application of the geologic hazard area regulations. Therefore, an overall net gain in critical area buffer functions and values is proposed.

APPENDIX A

Restoration Plan



PLAN LEGEND

- LAKE WASHINGTON 25'-0" BUFFER
- LAKE WASHINGTON 25'-0" SHORELINE SETBACK
- 50'-0" TOP OF SLOPE BUFFER
- 75'-0" TOE OF SLOPE SETBACK
- STEEP SLOPE AREA — 6,815 SF
- NEW HOUSE FOOTPRINT (SEE ARCH)
- NEW IMPERVIOUS SURFACE (SEE ARCH)
- BIOREMEDIATION PLANTERS (SEE ARCH)

IMPACT LEGEND

NEW STRUCTURE AND/OR IMPERVIOUS SURFACE IN STEEP SLOPE	1,954 SF
NEW STRUCTURE AND/OR IMPERVIOUS SURFACE IN: • 50'-0" TOP OF SLOPE BUFFER • 75'-0" TOE OF SLOPE SETBACK • 25'-0" SHORELINE SETBACK	4,959 SF
TOTAL NET NEW IMPACT	6,913 SF
TEMPORARY DISTURBANCE TO BE REVEGETATED, RESTORED OR TO REMAIN PERVIOUS	5,348 SF
X — TREES TO BE REMOVED (3)	

SHEET INDEX

EV 1.1 - IMPACT ANALYSIS
EV 1.2 - MITIGATION LAYOUT
EV 1.3 - MITIGATION PLANTING PLAN
EV 1.4 - SHORELINE CROSS SECTIONS
EV 1.5 - MITIGATION NOTES

IMPACT ANALYSIS

0 10' 20' 40'

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

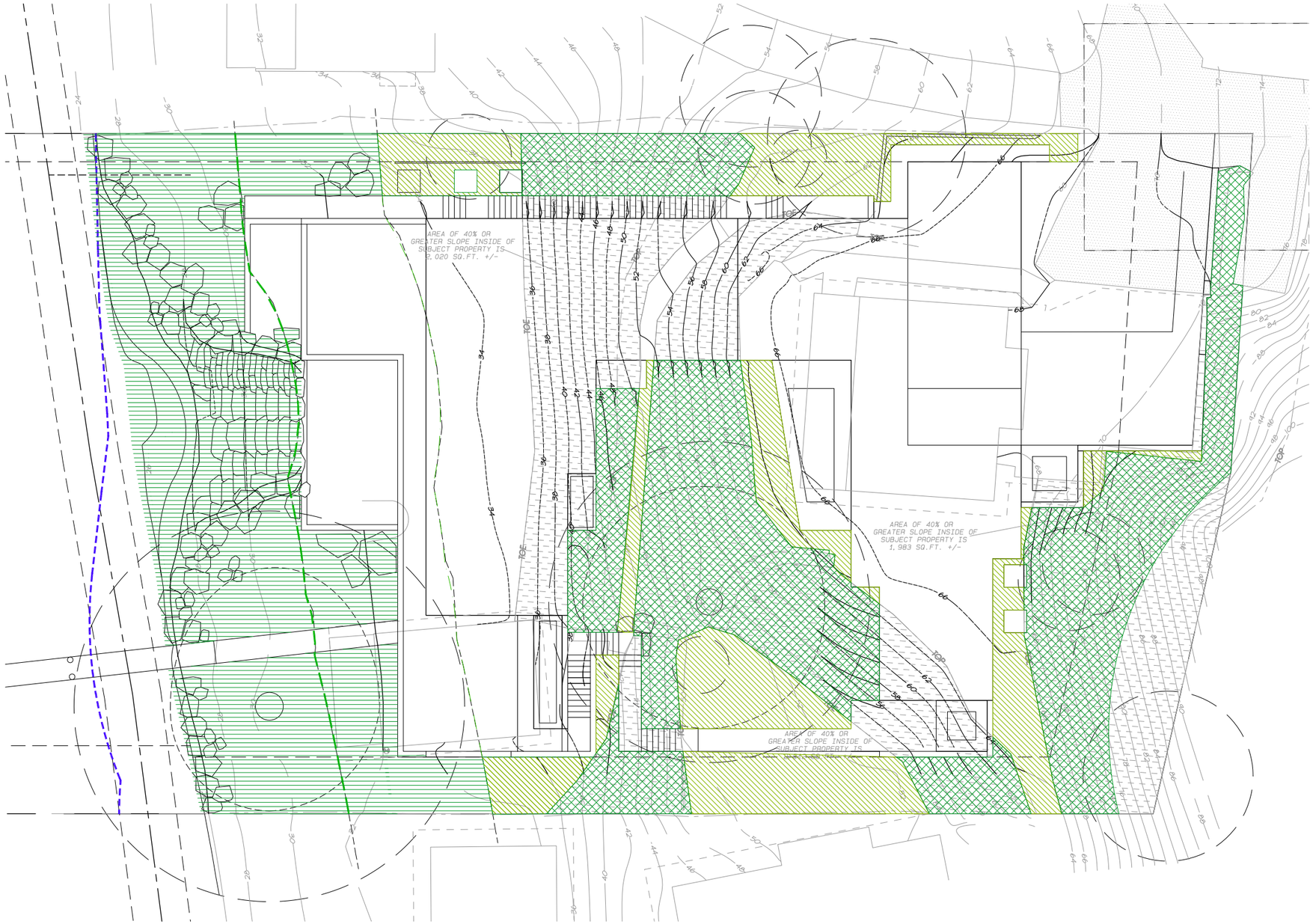
THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242 f 425.827.8136
www.watershedco.com
Science & Design

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL

IMPACT ANALYSIS

EV1.1



MITIGATION LEGEND

PROPOSED STEEP SLOPE MITIGATION AREA (REMOVE INVASIVES & INSTALL NATIVE PLANTS)	4,100 SF
PROPOSED STEEP SLOPE BUFFER & SETBACK MITIGATION AREA (REMOVE INVASIVES & INSTALL NATIVE PLANTS)	2,198 SF
SHORELINE REVEGETATION AND RESTORATION	4,264 SF
TOTAL MITIGATION	10,562 SF

MITIGATION LAYOUT

0 10' 20' 40'

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

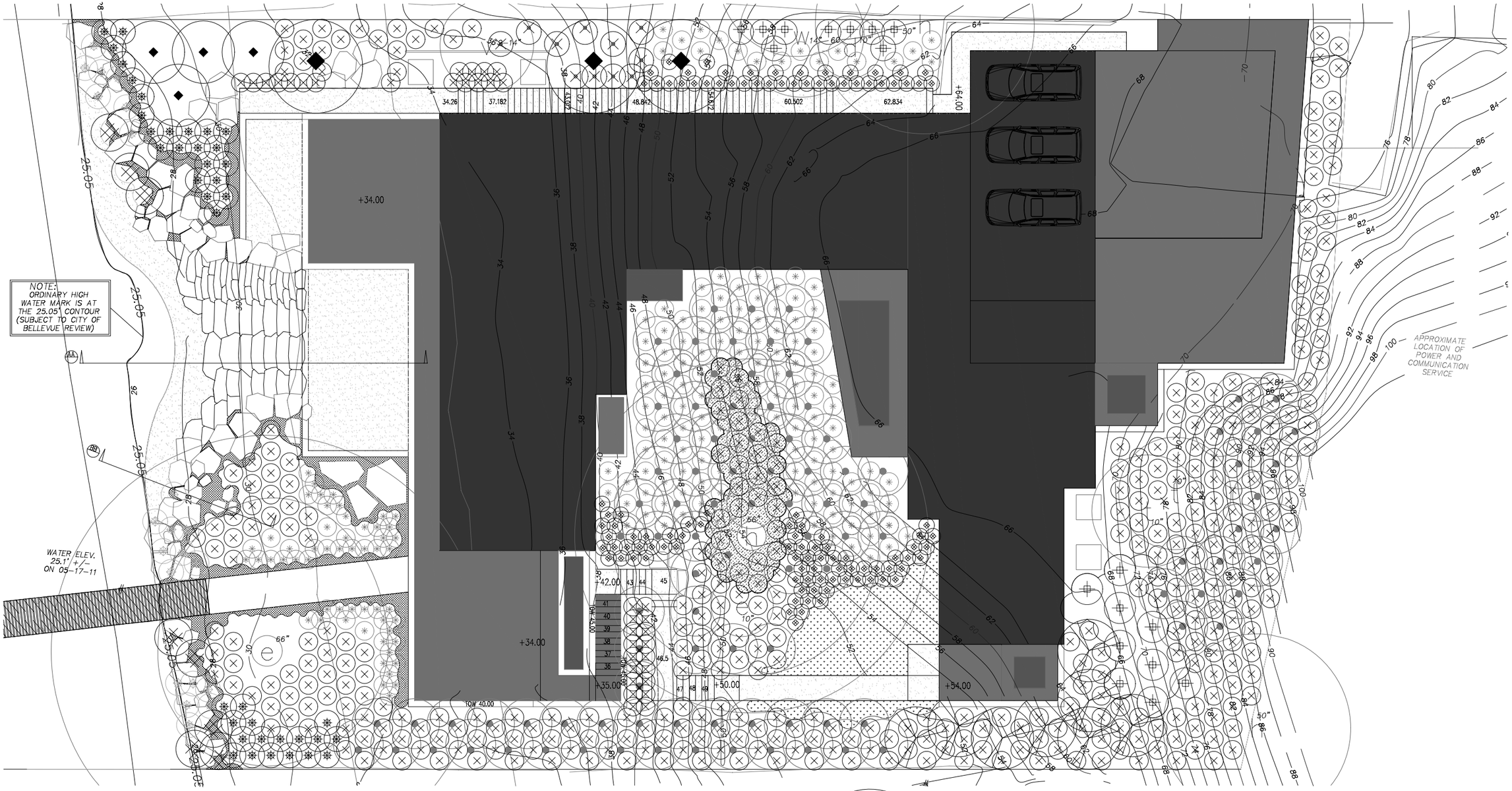
THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242 f 425.827.8136
www.watershedco.com
Science & Design

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL

MITIGATION LAYOUT

EV1.2



WANG/CHEN PLANT SCHEDULE

	QUANTITY	SCIENTIFIC NAME	COMMON NAME	SPACING	SIZE	CONDITION	REMARKS
TREES	102	ACER CIRCINATUM	VINE MAPLE	6' O.C	3'	B & B	SHADE – PS, MULTI–TRUNK
	4	PINUS CONTORTA CONTORTA	SHORE PINE	8' O.C	8'	B & B	SUN, WELL DRAINED
	8	PRUNUS EMARGINATA	BITTER CHERRY	AS SHOWN	5 GALLON	CONTAINER	SUN – PS, DRY – MOIST
	8	SALIX SITCHENSIS	SITKA WILLOW	AS SHOWN	1 GALLON	CONTAINER	SUN, WELL DRAINED
	3	THUJA PLICATA	WESTERN RED CEDAR	AS SHOWN	8'	B & B	SUN – PS
SHRUBS	40	CORNUS STOLONIFERA	REDTWIG DOGWOOD	3' O.C	1 GALLON	CONTAINER	SUN – PS
	397	GAULTHERIA SHALLON	SALAL	AS SHOWN	1 GALLON	CONTAINER	SUN – SHADE
	21	HOLODISCUS DISCOLOR	OCEAN SPRAY	AS SHOWN	1 GALLON	CONTAINER	PS – DRY
	18	VACINNIUM OVATUM	EVERGREEN HUCKLEBERRY	AS SHOWN	1 GALLON	CONTAINER	SUN – SHADE
	11	VIBURNUM EDULE	SQUASHBERRY	AS SHOWN	1 GALLON	CONTAINER	SUN – PS, MOIST
GROUND COVERS	400 SQ FT	ARCTOSTAPHYLOS UVA–URSI	KINNIKINNICK	12" O.C		FLATS	SUN – DRY
	110	ATHERIUM FELIX FEMINA	LADY FERN	24" O.C	1 GALLON	CONTAINER	PS – SHADE, MOIST
	500 SQ FT	FRAGARIA CHILOENSIS	BEACH STRAWBERRY	12" O.C		FLATS	SUN – PS, WELL DRAINED
	350 SQ FT	MAIANTHEMUM RACEMOSUM	FALSE SOLOMON'S SEAL	18" O.C	4" POTS	CONTAINER	PS – SHADE, MOIST
	187	POLYSTICHUM MUNITUM	SWORD FERN	42" O.C	1 GALLON	CONTAINER	PS – SHADE

WESTERN RED CEDAR – 3

BITTER CHERRY – 8

VINE MAPLE – 102

SHORE PINE – 4

SITKA WILLOW – 8

REDTWIG DOGWOOD – 40

HUCKLEBERRY – 18

SQUASHBERRY – 11

SALAL – 397

OCEAN SPRAY – 21

SWORD FERN – 187

LADY FERN – 110

FALSE SOLOMON'S SEAL – 350 SQ FT

KINNIKINNICK – 400 SQ FT

BEACH STRAWBERRY – 500 SQ FT

(206) 910 2625
Alchemie
アルカミ
75 S. MAIN STREET #313, SEATTLE, WA 98104 USA

0 4' 8' 16' 32' 64'

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991
Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

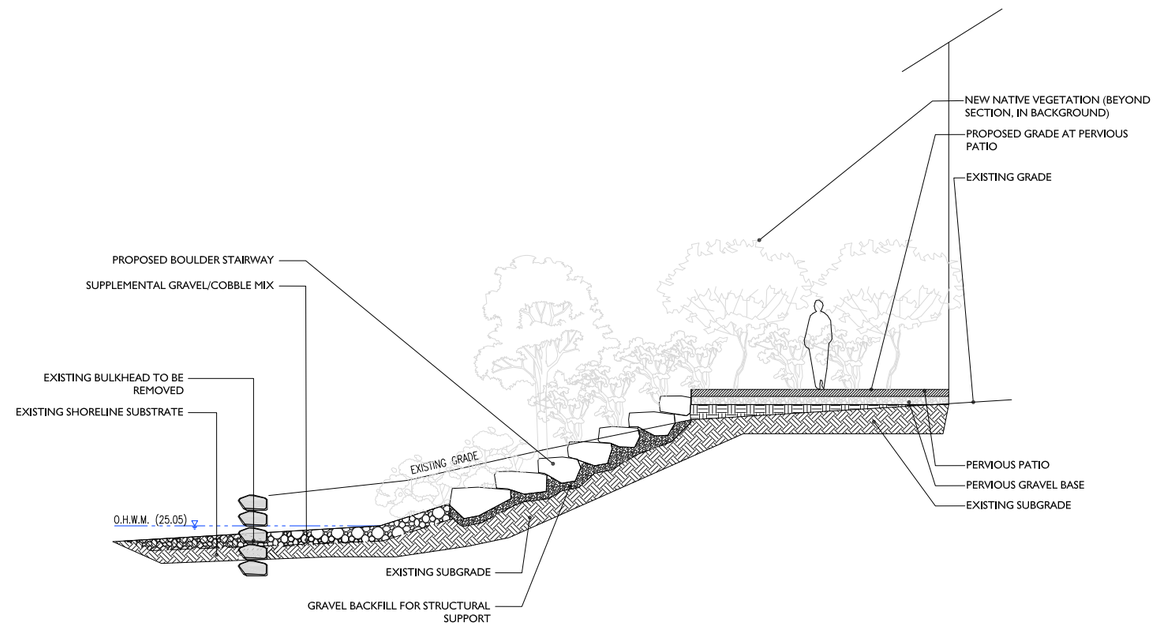
STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
BRUCE DAVIS HINCKLEY
CERTIFICATE NO. 445

PRE-DESIGN DOCUMENTS

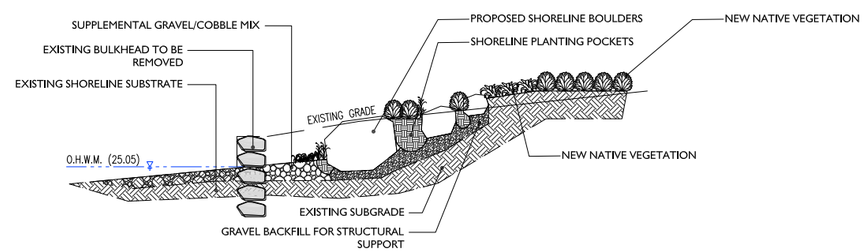
05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL

MITIGATION PLANTING PLAN

EV 1.3



AA *SHORELINE CROSS SECTION AA*
1" = 5'-0"



BB *SHORELINE CROSS SECTION BB*
1" = 5'-0"

SHORELINE CROSS SECTIONS

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242 f 425.827.8136
www.watershedco.com
Science & Design

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL

SHORELINE CROSS SECTIONS

EV1.4

VEGETATION MANAGEMENT OBJECTIVES

THE MANAGEMENT OBJECTIVE IS TO REPLACE FUNCTIONS AND VALUES PROVIDED BY REMOVED NATIVE TREES. THE SHORELINE IS BEING RESTORED BY REMOVING THE EXISTING BULKHEAD AND REPLACING IT WITH A NATURAL ROCKERY THAT INCORPORATES A COVE AND NATIVE PLANT VEGETATION. A TOTAL OF THREE SIGNIFICANT TREES ARE PROPOSED FOR REMOVAL FROM THE SITE. THE TREES ARE A MATURE DOUGLAS-FIR, A NORWAY SPRUCE (NON-NATIVE) AND A PACIFIC DOGWOOD. AS MITIGATION FOR TREE REMOVAL, A TOTAL OF THREE WESTERN RED CEDAR TREES, FOUR SHORE PINES AND 18 SMALLER DECIDUOUS TREES WILL BE PLANTED WITHIN THE RESTORATION AREA FOR THE SITE. IN ADDITION TO THE REPLACEMENT TREES, THE RESTORATION AREA ALSO INCLUDES 171 NATIVE SHRUBS AND NUMEROUS GROUNDCOVER SPECIES AS MITIGATION FOR STEEP SLOPE CRITICAL AREA, BUFFER, AND SETBACK IMPACTS ASSOCIATED WITH CONSTRUCTION OF THE NEW RESIDENCE.

1.1 SHORT-TERM OBJECTIVES

- REMOVE ROCK BULKHEAD FROM THE SHORELINE AND RESTORE TO A MORE NATURAL STATE.
- ESTABLISH NEW, NATIVE SAPLING TREES ON THE PROPERTY.
- REDUCE INVASIVE WEED COVER, SPECIFICALLY REMOVE NON-NATIVE ENGLISH IVY AND HIMALAYAN BLACKBERRY FROM THE RESTORATION AREA.
- INCREASE NATIVE PLANT DENSITY AS PER THE PLANTING PLAN (SEE APPENDIX A).
- MAINTAIN EXISTING HABITAT FEATURES, SPECIFICALLY PRESERVE AND PROTECT EXISTING NATIVE VEGETATION TO THE GREATEST EXTENT FEASIBLE.
- PROPERLY MULCH AND IRRIGATE INSTALLED PLANTS TO HELP THEM BECOME ESTABLISHED (SEE APPENDIX A).
- 100 PERCENT SURVIVAL OF ALL INSTALLED PLANTS IN THE FIRST YEAR.

1.2 LONG-TERM OBJECTIVES

PROVIDE A MORE COMPLEX SHORELINE DOMINATED BY NATIVE PLANTS

ESTABLISH NATIVE TREES ALONG THE STEEP SLOPE AND NEW SHORELINE TO HELP MAINTAIN STABILITY AND PROVIDE INCREASED HABITAT OPPORTUNITIES. LONG-TERM, THE PLANTING PLAN AND GENERAL MAINTENANCE PRACTICES ARE INTENDED TO IMPROVE THE ECOLOGIC SERVICES PROVIDED BY THE RESTORATION AREA.

THE LONG-TERM OBJECTIVES SHOULD BE SUBSTANTIALLY ACHIEVED WHEN THE FOLLOWING PERFORMANCE STANDARDS ARE MET:

1) ESTABLISH AND RETAIN AT LEAST THREE WESTERN RED CEDAR TREES AND AT LEAST 18 OTHER INDIVIDUAL TREES FROM THE PLANT LIST OR OTHER SUITABLE NATIVE VOLUNTEER TREE SPECIES.

1.3 PROJECT INITIATION

1. REMOVE INVASIVE WEEDS FROM THE RESTORATION AREA. CUT ENGLISH IVY AND HIMALAYAN BLACKBERRY VINES BACK AND GRUB OUT THE ROOTS. (TAKE CARE NOT TO DAMAGE EXISTING NATIVE VEGETATION IN THAT AREA.)
2. PREPARE THE SITE FOR PLANTING AND INSTALL THE PLANTING PLAN PER THE PLANTING NOTES, INCLUDING MULCH AND TEMPORARY IRRIGATION (SEE APPENDIX A).
3. PROVIDE AS-BUILT DOCUMENTATION TO THE CITY OF BELLEVUE.

1.4 YEAR ONE

1. CHECK THE IRRIGATION SYSTEM IN THE LATE SPRING TO ENSURE PROPER OPERATION OVER THE DRY SEASON (JUNE 1 TO SEPTEMBER 30).
2. REMOVE ANY SPROUTING WEEDS IN THE EARLY SPRING TO REDUCE WEED COMPETITION GOING INTO THE GROWING SEASON AND KEEP WEED COVER BELOW 10 PERCENT.
3. CONDUCT A SURVIVAL PLANT COUNT IN THE LATE SUMMER/EARLY FALL AND REPLACE ANY DEAD PLANTS TO ACHIEVE 100 PERCENT SURVIVAL.
4. REPLENISH WOOD CHIP MULCH AS NEEDED.

1.5 YEARS TWO THROUGH FIVE

1. CHECK THE IRRIGATION SYSTEM IN THE LATE SPRING TO ENSURE PROPER OPERATION OVER THE DRY SEASON (JUNE 1 TO SEPTEMBER 30).
2. REMOVE ANY SPROUTING WEEDS IN THE EARLY SPRING TO REDUCE WEED COMPETITION GOING INTO THE GROWING SEASON AND KEEP WEED COVER BELOW 10 PERCENT.
3. APPLY A SLOW-RELEASE GRANULAR FERTILIZER TO THE DRIP-LINE OF EACH PLANT.
4. CONDUCT A SURVIVAL PLANT COUNT IN THE LATE SUMMER/EARLY FALL TO ENSURE THAT THE MANAGEMENT AREA IS ON-TRACK TO ACHIEVE A MINIMUM OF 85 PERCENT SURVIVAL BY YEAR FIVE. REPLACE DEAD PLANTS AS NEEDED.
5. REPLENISH WOOD CHIP MULCH AS NEEDED.

GENERAL PLANTING NOTES:

1. CARE SHOULD BE TAKEN TO PROTECT EXISTING TREES AND NATIVE VEGETATION AS WELL AS EXISTING VEGETATION TO REMAIN. THE LANDSCAPE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES WITHIN THE LIMIT OF WORK AND IS RESPONSIBLE FOR ANY DAMAGE AS A RESULT OF THE LANDSCAPE CONSTRUCTION.
2. PLANTS NOT SPECIFICALLY DESIGNATED FOR PROTECTION WITHIN MITIGATION AREAS ARE TO BE REMOVED.
3. REMOVE INVASIVE PLANTS FROM PLANTING AREA. SPECIES TO TARGET ARE: ENGLISH IVY, HIMALAYAN BLACKBERRY, EVERGREEN BLACKBERRY, SCOTCH BROOM, BUTTERFLY BUSH, ST. JOHN'S WORT.
4. NEWLY INSTALLED PLANTS SHOULD RECEIVE AT LEAST 1" OF WATER PER WEEK DURING SUMMER MONTH. INSTALL A BIDDER DESIGNED IRRIGATION SYSTEM.
5. SOIL WITHIN THE MITIGATION AREAS NEEDS TO BE AMENDED IN THE FOLLOWING WAYS:
   - PLANTING AREAS OUTSIDE OF STEEP SLOPE AREAS AND AREAS OF EXISTING TREE/SHRUB ROOTS: THESE AREAS ARE TO BE ROTOTILLED/SCARIFIED TO A DEPTH OF 6". ALL LARGE ROCKS AND OTHER DEBRIS IS TO BE REMOVED. 4" DEPTH OF COMPOST IS TO BE INCORPORATED INTO THE SUBGRADE. LIGHTLY COMPACT AND USE REMAINING COMPOST TO ACHIEVE FINISH GRADE.
   - STEEP SLOPE AREAS AND AREAS OF EXISTING TREE AND SHRUB ROOTS: DO NOT ROTOTILL IN THESE AREAS. INCORPORATE COMPOST BY HAND IN THESE AREAS. IN AREAS OF THICK EXISTING TREE ROOTS NOT TO BE DISTURBED, COMPOST WILL BE ADDED ON TOP OF ROOTS.
6. LAYOUT PLANT MATERIAL PER PLAN FOR INSPECTION BY THE LANDSCAPE ARCHITECT. PLANT SUBSTITUTIONS WILL NOT BE ALLOWED WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT
7. INSTALL PLANTS PER PLANTING DETAILS (SEE MITIGATION PLAN SET FOR PLANTING DETAILS)
8. WATER EACH PLANT THOROUGHLY.
9. ONE YEAR AFTER INITIAL PLANT INSTALLATION, APPLY ORGANIC, SLOW-RELEASE PHOSPHORUS-FREE FERTILIZER TO EACH PLANT.

RESTORATION PLAN

1.1 OVERVIEW

THE PROPOSED RESTORATION PLAN FULFILLS THE REQUIREMENTS OF LUC 20.25H.220(B). THE PLAN SEEKS TO RESTORE AND ENHANCE SUBSTANTIAL PORTIONS OF THE LAKE WASHINGTON SHORELINE AND ON-SITE STEEP SLOPE CRITICAL AREA AND BUFFER. THE EXISTING SHORELINE BULKHEAD WILL BE REMOVED AND REPLACED WITH A MORE NATURAL ROCKERY THAT INCORPORATES NATIVE PLANTS. THE STEEP SLOPE HAS A HIGH POTENTIAL FOR ENHANCEMENT TO INCREASE SEVERAL IMPORTANT FUNCTIONS, AS IT PRESENTLY CONTAINS NON-NATIVE VEGETATION. TO ACHIEVE THIS, THE PLAN CALLS FOR THE ENHANCEMENT OF 10,562 SQUARE FEET OF THE SITE THROUGH BULKHEAD REMOVAL AND THE PLANTING OF NATIVE TREES, SHRUBS AND GROUNDCOVER WITHIN THE STEEP SLOPE CRITICAL AREA, BUFFER, SETBACK, AND THE SHORELINE BUFFER AND SETBACK. THE RESTORATION PLAN CAN BE FOUND IN APPENDIX A. SPECIES INCLUDE WESTERN RED CEDAR, SHORE PINE, BITTER CHERRY, VINE MAPLE, RED-TWIG DOGWOOD, OCEANSPRAY, EVERGREEN HUCKLEBERRY, SQUASHBERRY (HIGH BUSH CRANBERRY), SWORD FERN, LADY FERN, BEACH STRAWBERRY, SALAL, FALSE SOLOMON'S SEAL AND KINNIKINNICK.

1.2 MAINTENANCE AND MONITORING PLAN

APPENDIX A INCLUDES DETAILS OF THE 5-YEAR MAINTENANCE AND MONITORING PLAN, ALSO DETAILED BELOW.

1.2.1 GOALS

1) WITHIN THE PROPOSED RESTORATION AREA, ESTABLISH DENSE NATIVE VEGETATION THAT IS APPROPRIATE TO THE ECO-REGION AND SITE.
2) WHERE INDICATED ON THE PLAN, AREAS WITHIN THE RESTORATION AREA WILL REMAIN SUBSTANTIALLY VEGETATED WITH A PREPONDERANCE OF NATIVE PLANTS AND WILL CONTAIN LITTLE INVASIVE OR NOXIOUS WEED COVER.
3) INCREASE HABITAT COVER AND REFUGE FOR AMPHIBIANS, SMALL MAMMALS, AND INVERTEBRATES. PROVIDE PERCHING HABITAT FOR NATIVE BIRDS.

1.2.2 PERFORMANCE STANDARDS

THE STANDARDS LISTED BELOW WILL BE USED TO JUDGE THE SUCCESS OF THE INSTALLATION OVER TIME. IF PERFORMANCE STANDARDS ARE MET AT THE END OF YEAR 5, THE SITE WILL THEN BE DEEMED SUCCESSFUL AND THE PERFORMANCE SECURITY BOND WILL BE ELIGIBLE FOR RELEASE BY THE CITY OF BELLEVUE.

1) SURVIVAL: ACHIEVE 100% SURVIVAL OF INSTALLED PLANTS BY THE END OF YEAR 1. THIS STANDARD CAN BE MET THROUGH PLANT ESTABLISHMENT OR THROUGH REPLANTING AS NECESSARY TO ACHIEVE THE REQUIRED NUMBERS.
2) NATIVE COVER:
   a. ACHIEVE 40% UNDERSTORY COVER OF NATIVE SHRUBS AND SAPLING TREES BY YEAR 2. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
   b. ACHIEVE 60% UNDERSTORY COVER OF NATIVE SHRUBS AND SAPLING TREES BY YEAR 3. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
   c. ACHIEVE 80% UNDERSTORY COVER OF NATIVE SHRUBS AND SAPLING TREES BY YEAR 3. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
3) SPECIES DIVERSITY: ESTABLISH AT LEAST THREE NATIVE SHRUB SPECIES BY YEAR 3 AND MAINTAIN THIS DIVERSITY THROUGH YEAR 5. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS STANDARD. ESTABLISH AT LEAST THREE WESTERN RED CEDAR TREES AND AT LEAST 18 OTHER INDIVIDUAL TREES FROM THE PLANT LIST OR OTHER SUITABLE NATIVE VOLUNTEER TREE SPECIES.
4) INVASIVE COVER: AERIAL COVER FOR ALL NON-NATIVE, INVASIVE AND NOXIOUS WEEDS WILL NOT EXCEED 10% AT ANY YEAR DURING THE MONITORING PERIOD. INVASIVE PLANTS INCLUDE HIMALAYAN BLACKBERRY (*RUBUS ARMENIACUS*), CUT LEAF BLACKBERRY (*RUBUS LACINIATUS*), REED CANARYGRASS (*PHALARIS ARUNDINACEA*), CHERRY (HEDGE) LAUREL (*PRUNUS LAUROCERASUS*), ENGLISH HOLLY (*ILEX AQUIFOLIUM*), AND IVY SPECIES (*HEDERA SPP.*).

1.2.3 MONITORING METHODS

THIS MONITORING PROGRAM IS DESIGNED TO TRACK THE SUCCESS OF THE MITIGATION SITE OVER TIME AND TO MEASURE THE DEGREE TO WHICH IT IS MEETING THE PERFORMANCE STANDARDS OUTLINED IN THE PRECEDING SECTION.

AN AS-BUILT PLAN WILL BE PREPARED BY THE **RESTORATION PROFESSIONAL** (WATERSHED COMPANY [(425) 822-5242] PERSONNEL, OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS) PRIOR TO THE BEGINNING OF THE MONITORING PERIOD. THE AS-BUILT PLAN WILL BE A MARK-UP OF THE PLANTING PLANS INCLUDED IN THIS PLAN SET. THE AS-BUILT PLAN WILL DOCUMENT ANY DEPARTURES IN PLANT PLACEMENT OR OTHER COMPONENTS FROM THE PROPOSED PLAN.

MONITORING WILL TAKE PLACE ONCE ANNUALLY IN THE FALL FOR FIVE YEARS. YEAR-1 MONITORING WILL COMMENCE IN THE FIRST FALL SUBSEQUENT TO INSTALLATION.

THE FORMAL MONITORING VISIT SHALL RECORD AND REPORT THE FOLLOWING IN AN ANNUAL REPORT SUBMITTED TO THE CITY OF BELLEVUE:

1) VISUAL ASSESSMENT OF THE OVERALL SITE.
2) YEAR-1 COUNTS OF LIVE AND DEAD PLANTS BY SPECIES. YEAR-2 THROUGH YEAR-5 COUNTS OF ESTABLISHED NATIVE TREES BY SPECIES.
3) COUNTS OF DEAD PLANTS WHERE MORTALITY IS SIGNIFICANT IN ANY MONITORING YEAR.
4) ESTIMATE OF NATIVE SHRUB COVER.
5) ESTIMATE OF NON-NATIVE, INVASIVE WEED COVER.
6) TABULATION OF ESTABLISHED NATIVE SPECIES, INCLUDING BOTH PLANTED AND VOLUNTEER SPECIES.
7) PHOTOGRAPHIC DOCUMENTATION FROM AT LEAST THREE FIXED REFERENCE POINTS.
8) ANY INTRUSIONS INTO OR CLEARING OF THE PLANTING AREAS, VANDALISM, OR OTHER ACTIONS THAT IMPAIR THE INTENDED FUNCTIONS OF THE MITIGATION AREA.
9) RECOMMENDATIONS FOR MAINTENANCE OR REPAIR OF ANY PORTION OF THE MITIGATION AREA.

1.2.4 CONSTRUCTION NOTES AND SPECIFICATIONS

NOTE: SPECIFICATIONS FOR ITEMS IN **BOLD** CAN BE FOUND BELOW UNDER "MATERIAL SPECIFICATIONS AND DEFINITIONS."

NOTE: THE WATERSHED COMPANY [(425) 822-5242] PERSONNEL, OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS, WILL MONITOR:

1. ALL SITE PREPARATION
   A. SOIL PREPARATION.
   B. MULCH PLACEMENT.
2. PLANT MATERIAL INSPECTION
   A. PLANT MATERIAL DELIVERY INSPECTION.
   B. 100% PLANT INSTALLATION INSPECTION.

1.2.5 GENERAL WORK SEQUENCE

1. ALL PLANT INSTALLATION IS TO TAKE PLACE DURING THE DORMANT SEASON (OCTOBER 15TH - MARCH 1ST), FOR BEST SURVIVAL.
2. PREPARE A PLANTING PIT FOR EACH PLANT AND INSTALL PER THE PLANTING DETAILS.
3. MULCH THE ENTIRE PLANTED AREA WITH **WOOD CHIP MULCH** (95 CUBIC YARDS NEEDED), FOUR INCHES THICK.
4. INSTALL A TEMPORARY, ABOVE GROUND **IRRIGATION SYSTEM** TO PROVIDE FULL COVERAGE TO ALL PLANTS WITHIN THE RESTORATION AREA.

1.2.6 MATERIAL SPECIFICATIONS AND DEFINITIONS

1. **FERTILIZER**: SLOW RELEASE, GRANULAR PHOSPHOROUS-FREE FERTILIZER. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR APPLICATION. KEEP FERTILIZER IN A WEATHER-TIGHT CONTAINER WHILE ON SITE. NOTE THAT FERTILIZER IS TO BE APPLIED ONLY IN YEARS 2 THROUGH 5 AND NOT IN THE FIRST YEAR.
2. **IRRIGATION SYSTEM**: AUTOMATED SYSTEM CAPABLE OF DELIVERING AT LEAST ONE INCHES OF WATER PER WEEK FROM JUNE 1 THROUGH SEPTEMBER 30 FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION.
3. **RESTORATION PROFESSIONAL**: WATERSHED COMPANY [(425) 822-5242] PERSONNEL, OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS.
4. **WOOD CHIP MULCH**: ARBORIST CHIPS (CHIPPED WOODY MATERIAL) APPROXIMATELY 1 TO 3 INCHES IN MAXIMUM DIMENSION (NOT SAWDUST OR COARSE HOG FUEL). THIS MATERIAL IS COMMONLY AVAILABLE IN LARGE QUANTITIES FROM ARBORISTS OR TREE-PRUNING COMPANIES. THIS MATERIAL IS SOLD AS "ANIMAL FRIENDLY HOG FUEL" AT PACIFIC TOPSOILS [(800) 884-7645]. MULCH MUST NOT CONTAIN APPRECIABLE QUANTITIES OF GARBAGE, PLASTIC, METAL, SOIL, AND DIMENSIONAL LUMBER OR CONSTRUCTION/DEMOLITION DEBRIS. QUANTITY REQUIRED: 95 CUBIC YARDS.

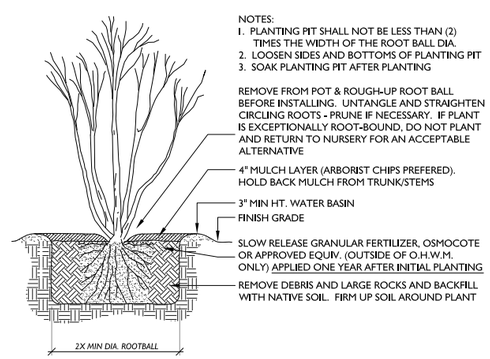
1.2.7 CONTINGENCIES

IF THERE IS A SIGNIFICANT PROBLEM WITH THE RESTORATION AREAS MEETING PERFORMANCE STANDARDS, A CONTINGENCY PLAN WILL BE DEVELOPED AND IMPLEMENTED. CONTINGENCY PLANS CAN INCLUDE, BUT ARE NOT LIMITED TO: SOIL AMENDMENT; ADDITIONAL PLANT INSTALLATION; AND PLANT SUBSTITUTIONS OF TYPE, SIZE, QUANTITY, AND LOCATION.

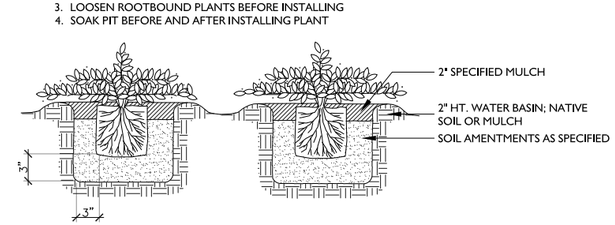
1.2.8 MAINTENANCE

THE SITE WILL BE MAINTAINED IN ACCORDANCE WITH THE FOLLOWING INSTRUCTIONS FOR FIVE YEARS FOLLOWING COMPLETION OF THE CONSTRUCTION.

1) FOLLOW THE RECOMMENDATIONS NOTED IN THE PREVIOUS MONITORING SITE VISIT.
2) GENERAL WEEDING FOR ALL PLANTED AREAS:
   A. AT LEAST TWICE YEARLY, REMOVE ALL COMPETING WEEDS AND WEED ROOTS FROM BENEATH EACH INSTALLED PLANT AND ANY DESIRABLE VOLUNTEER VEGETATION TO A DISTANCE OF 18 INCHES FROM THE MAIN PLANT STEM. WEEDING SHOULD OCCUR AT LEAST TWICE DURING THE SPRING AND SUMMER. FREQUENT WEEDING WILL RESULT IN LOWER MORTALITY, LOWER PLANT REPLACEMENT COSTS, AND INCREASED LIKELIHOOD THAT THE PLAN MEETS PERFORMANCE STANDARDS BY YEAR 5.
   B. MORE FREQUENT WEEDING MAY BE NECESSARY DEPENDING ON WEED CONDITIONS THAT DEVELOP AFTER PLAN INSTALLATION.
   C. DO NOT WEED THE AREA NEAR THE PLANT BASES WITH STRING TRIMMER (WEED WHACKER/WEED EATER). NATIVE PLANTS ARE EASILY DAMAGED OR KILLED, AND WEEDS EASILY RECOVER AFTER TRIMMING.
   D. SELECTIVE APPLICATIONS OF HERBICIDE MAY BE NEEDED TO CONTROL INVASIVE WEEDS, ESPECIALLY WHEN INTERMIXED WITH NATIVE SPECIES. HERBICIDE APPLICATION, WHEN NECESSARY, SHALL BE CONDUCTED ONLY BY A STATE-LICENSED APPLICATOR.
3) APPLY SLOW RELEASE GRANULAR FERTILIZER TO EACH INSTALLED PLANT ANNUALLY IN THE SPRING (BY JUNE 1) OF YEARS 2 THROUGH 5.
4) REPLACE MULCH AS NECESSARY TO MAINTAIN A 4-INCH-THICK LAYER, RETAIN SOIL MOISTURE, AND LIMIT WEEDS.
5) REPLACE EACH PLANT FOUND DEAD IN THE SUMMER MONITORING VISITS DURING THE UPCOMING FALL DORMANT SEASON (OCTOBER 15 TO MARCH 1).
6) THE HOMEOWNER WILL ENSURE THAT WATER IS PROVIDED FOR THE ENTIRE PLANTED AREA WITH A MINIMUM OF 1 INCH OF WATER PROVIDED PER WEEK FROM JUNE 1 THROUGH SEPTEMBER 30 FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION THROUGH THE OPERATION OF A TEMPORARY IRRIGATION SYSTEM. LESS WATER IS NEEDED DURING MARCH, APRIL, MAY AND OCTOBER.



A TREE & SHRUB PLANTING DETAIL
NTS



B GROUNDCOVER & PERENNIAL PLANTING DETAIL
NTS

MITIGATION PLAN NOTES

HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242 f 425.827.8136
www.watershedco.com
Science & Design

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)
09.01.2011	MEETING W/ OWNER
09.22.2011	CONSULTANT MEETING
11.15.2011	PERMIT RESUBMITTAL

MITIGATION NOTES

EV1.5

PanGEO
INCORPORATED
Geotechnical & Earthquake
Engineering Consultants

July 5, 2011
File No. 11-016

Mr. David Wang
c/o Ms. Jessica Wang
4465 Forest Ave Se
Mercer island WA 98040

Subject: **Preliminary Geotechnical Engineering Study**
Proposed Single-Family Residence
701 Shoreland Drive SE, Bellevue, Washington

Dear Mr. Wang,

As requested, PanGEO, Inc. has completed a preliminary geotechnical engineering study to assist you and your project team with the design and permitting of the proposed single-family residence at the above-referenced site. This study was performed in general accordance with our mutually agreed scope of work outlined in our proposal dated February 4, 2011, and was subsequently approved on the same day. Our service scope included reviewing readily available geologic and geotechnical data, reviewing preliminary site layout, drilling three geotechnical borings, conducting a site reconnaissance, and developing the conclusions and recommendations presented in this report.

SITE AND PROJECT DESCRIPTION

The subject site is located at 701 Shoreland Drive SE, on the Lake Washington shore, in Bellevue, Washington (see Vicinity Map, Figure 1). The subject property is approximately rectangular in shape, and is bordered to the west by Lake Washington, and to the east, south, and north by existing single-family dwellings (see Figure 2). An existing one and one-half story house with a partial basement and an attached carport currently occupies the northeastern portion of the lot (see Plate 1 and Figure 2). A two-story shed is currently located at the southwest corner of the lot with its lower floor near the lake level. Based on a review of the topographic survey map and our field observations, the existing grade of the eastern and western portions of the site are relatively level. The middle portion of the site slopes down from east to west with gradients of approximately 30 to 45 percent. The total vertical relief from the east property line to the west property line is estimated to be about 40 feet. The lower terrace is covered with short grass, and the slope portion of the lot is covered with bushes and several large diameter mature evergreen trees (see Plate 2).

3213 Eastlake Ave E, Ste B
Seattle, WA 98102
Tel (206) 262-0370
Fax (206) 262-0374

Plate 1. View of the existing house and carport, looking southwest.

Plate 2. Partial view of site slope with existing house in the background, looking east.

We understand that you plan to remove the existing house and shed, and construct a new single-family residence at the site. Design details of the new development were not available at the time this report was prepared. However, we understand that the current design concept consists of construction of a single, south facing U-shaped residence across the slope. One wing of the house will be located on the upper flat bench area south of the existing house, while the other wing will be located at the toe of the slope (see Plate 3). The new building will vary in height from one story to three stories depending on location on the site.

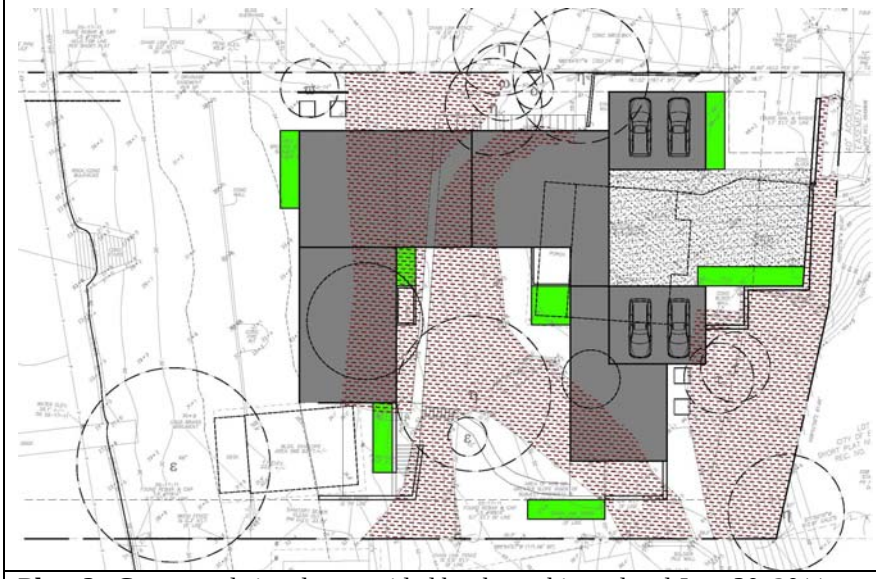


Plate 3. Conceptual site plan provided by the architect dated June 30, 2011.

The conclusions and recommendations in this report are based on our understanding of the proposed development, which is in turn based on the project information provided. If the above project description is incorrect, or the project information changes, we should be consulted to review the recommendations contained in this study and make modifications, if needed.

SUBSURFACE EXPLORATIONS

Three borings (BH-1 through BH-3) were drilled at the site on February 7, 2011, using a hand-operated portable drill rig owned and operated by CN Drilling of Seattle, Washington. The approximate boring locations were taped in the field from on-site features, and are shown on Figure 2. The borings were terminated at depths of about 16½ and 19 feet below the existing grade.

The drill rig was equipped with 4-inch outside diameter hollow stem augers. Soil samples were obtained from the borings at 2½- and 5-foot depth intervals in general accordance with Standard Penetration Test (SPT) sampling methods (ASTM test method D-1586) in which the samples are obtained using a 2-inch outside diameter split-spoon sampler. The sampler was driven into the soil a distance of 18 inches using a 140-pound weight freely falling a distance of 30 inches. The number of blows required for each 6-inch increment of sampler penetration was recorded. The number of blows required to achieve the last 12 inches of sample penetration is defined as the SPT N-value. The N-value provides an empirical measure of the relative density of cohesionless soil, or the relative consistency of fine-grained soils.

An engineer from PanGEO was present during the field exploration to observe the drilling, assist in sampling, and to describe and document the soil samples obtained from the borings. The soil samples were described and field classified in general accordance with the symbols and terms outlined in Figure 3, and the summary boring logs are included as Figures 4, 5 and 6.

SITE GEOLOGY AND SUBSURFACE CONDITIONS

The Geologic Map of King County (Booth, et. al. 2007) mapped the surficial geologic unit at the subject site as Advance Outwash (Map Unit Qva). Advance Outwash deposit is described by Booth, et al. as moderately to well sorted, slightly oxidized sand and gravel that had been overridden by glacial ice. Advance Outwash typically exhibits low compressibility and high strength characteristics in its undisturbed state.

The soils observed in the borings consisted of loose to medium dense fill over medium dense to dense sand and stiff to hard silt. The dense to very dense sand encountered in BH-2 and BH-3 appears to be consistent with the mapped geology at the site. The following is a description of the soils encountered in the three borings advanced at the site. Please refer to the summary boring logs (Figures 4, 5, and 6) for additional details.

> ***UNIT 1: Fill*** – Approximately 2 to 7 feet of loose, silty sand and sandy gravel with some roots and organics was encountered in the borings. We interpret this unit as fill.
>
> ***UNIT 2: Ice-Contact Deposits*** – Below the fill, approximately 5 and 6½ feet of loose to medium dense silty sand and stiff sandy silt was encountered in BH-1 and BH-3, respectively. We interpret this unit as Ice-Contact deposits. This unit was not encountered in BH-2.

UNIT 3 – Advance Outwash: Below the fill in BH-2 and ice-contact deposits in BH-3, dense to very dense sand and silty sand was encountered and extended to at least the maximum depth drilled of these two borings at about 16½ feet. We interpret this soil unit as Advance Outwash deposits. This unit was not encountered in boring BH-1.

UNIT 4 – Glaciolacustrine: Below the Ice-Contact deposit, boring BH-1 encountered very stiff to hard, sandy silt, silt, and clayey silt extending to the bottom of the boring at about 19 feet below the surface. We interpret this soil unit as Glaciolacustrine deposits.

Perched groundwater was encountered at about 5½ feet below the surface in boring BH-1 during drilling. Groundwater was not encountered in borings BH-2 and BH-3 during drilling. It should be noted that groundwater elevations and seepage rates are likely to vary depending on the seasonal precipitation, local subsurface conditions, and other factors. Groundwater levels and seepage rates are normally highest during the winter and early spring.

GEOTECHNICAL DESIGN RECOMMENDATIONS

GEOLOGIC HAZARDS ASSESSMENT

We conducted a geologic hazards assessment for the proposed development as part of our study. The assessment includes evaluation of Landslide Hazards, Seismic (Earthquake) Hazards, and Erosion Hazards. Based on our review of the City of Bellevue's Geologic Hazards Map and site topographic map, the project site contains steep slopes (40 percent and greater) and is mapped within an erosion hazard area. The west edge of the site is also mapped within a seismic hazard area. The following sections contain our assessment of potential Geologic Hazards and their possible effects on the proposed development.

Landslide Hazards and Steep Slopes Evaluation

The site is not mapped as a landslide hazard area in accordance with City of Bellevue's Geologic Hazards Map, but contains slopes of 40% or greater. As part of our study, we conducted a site reconnaissance to observe signs of past slope movement and instability. Based on observations made during our site reconnaissance, we did not observe any noticeable signs of past slope instability. Based on our observations of ground features and the results of our field exploration, it is our opinion that the site is globally stable in its current configuration. It is also our opinion that the proposed development will not adversely impact the overall stability of the subject site and surrounding properties, provided that the recommendations presented in this report and provided in the future design phase are properly incorporated into the design and construction of the project.

Erosion Hazards Evaluation

The site is mapped within a potential erosion control area in accordance with the City of Bellevue's Surface Geology and Soils with Severe Erosion Potential Map. Based on our test borings, the site soils are anticipated to exhibit low to moderate erosion potential when disturbed and left unprotected. However, in our opinion, the erosion hazards at the site can be effectively mitigated with the best management practice during construction and with properly designed and implemented landscaping for permanent erosion control. During construction, the temporary erosion hazard can also be effectively managed with an appropriate erosion and sediment control plan, including but not limited to installing a silt fence at the construction perimeter, placing quarry spalls or hay bales at the disturbed and traffic areas, covering stockpiled soil or cut slopes with plastic sheets, constructing a temporary drainage pond to control surface runoff and sediment trap, placing rocks at the construction entrance, etc.

Permanent erosion control measures should be applied to the disturbed areas as soon as feasible. These measures may include but not limited to planting and hydroseeding. The use of permanent erosion control mat may also be considered in conjunction with planting/hydroseeding to protect the soils from erosion.

Seismic Hazards Evaluation

The City of Bellevue defines seismic hazard areas as those areas subject to severe risk of earthquake damage as a result of seismically induced settlement or soil liquefaction. According to the City of Bellevue's Geologic Hazards Map, the western flat portion of the site is mapped within a seismic hazard area. As such, a seismic hazards evaluation was conducted as part of our study.

Soil liquefaction is a condition where saturated cohesionless soils undergo a substantial loss of strength due to the build-up of excess pore water pressures resulting from cyclic stress applications induced by earthquakes. Soils most susceptible to liquefaction are loose, uniformly graded sands and loose silts with little cohesion.

Based on the fine-grained nature of the site soils at shallow depths and dense sand encountered during our field exploration, in our opinion, the potential for soil liquefaction at the site during a design earthquake is considered to be low, and associated seismic settlement should be negligible. As such, special considerations associated with soil liquefaction are not needed for this project.

SEISMIC DESIGN PARAMETERS

The following provides seismic design parameters for the site that are in conformance with the 2006 and later editions of the International Building Code (IBC), which specifies a design

earthquake having a 2% probability of occurrence in 50 years (return interval of 2,475 years), and the 2002 USGS seismic hazard maps:

Site Class	Spectral Acceleration at 0.2 sec. (g) S_S	Spectral Acceleration at 1.0 sec. (g) S_1	Site Coefficients		Design Spectral Response Parameters		Control Periods (sec.)		Design PGA (S_{DS}/2.5)
			F_a	F_v	S_{DS}	S_{D1}	T_O	T_S	
D	1.41	0.48	1.00	1.52	0.94	0.48	0.09	0.45	0.38

The spectral response accelerations were obtained from the USGS Earthquake Hazards Program Interpolated Probabilistic Ground Motion website (2002 data) for the project latitude and longitude.

BUILDING FOUNDATIONS

Based on the subsurface conditions anticipated at the site and our understanding of the design, it is our opinion that a shallow foundation system consisting of a mat foundation/structural slab with thickened edge may be used to support new building. Use of conventional continuous/spread footings could lead to undesirable post-construction settlement due to the site soil conditions, and therefore is not recommended for this project. Alternatively, a deep foundation system consisting of driven, small diameter steel piles (pin piles) may be used, if a higher foundation performance is desired. The deep foundation system would also reduce the excavation/over-excavation depths to reach competent bearing soil for the mat foundation construction. The following sections present our design recommendations for the mat foundation/structural slab and pin pile foundations. PanGEO should review the design plans and make necessary modifications to the recommendations contained in this report once more advanced project plans are developed.

Mat Foundation/Structural Slabs

The mat foundation/structural slab should bear on a minimum of 12 inches compacted structural fill. The native soil should be properly compacted prior to structural fill placement. The structural fill should extend horizontally a minimum of 12 inches beyond the edge of the footing. The foundation should be thickened a minimum depth of 18 inches below the adjacent finish grade around the perimeter of the mat. The thickened edge of the structural slabs should have a minimum width of 18 inches. For design of the mat foundation/structural slab with thickened edge bearing on the prepared subgrade as discussed above, a modulus of subgrade reaction, k_s, of 120 pounds per cubic inch (p.c.i) may be used. With the mat foundation/structural slab foundation, we anticipate the average bearing pressure to be less than 1,000 psf.

Foundation Performance – Footing settlement for the mat foundation/structural slab foundation system is estimated to be less than about 1 inch and differential settlement should be less than about ½ inch. Most of the anticipated settlements are likely to occur during construction as dead loads are applied. If a high level of foundation performance is desired, a deep foundation system consisting of small diameter driven steel piles (pin pile) may be used. The total footing settlement for the pin pile foundation is estimated to be on the order of about ½ inch with differential settlement on the order of ¼ inch. Pin pile recommendations are presented on pages 7 through 9.

Lateral Resistance – Lateral loads acting on the structures supported by a shallow foundation system may be resisted by passive earth pressure developed against the embedded portion of the foundation system and by frictional resistance at the bottom of the footings. For footings bearing on the compacted structural fill, a frictional coefficient of 0.4 may be used to evaluate sliding resistance. Passive soil resistance may be calculated using an equivalent fluid unit weight of 300 pcf, assuming properly re-compacted native sandy soil or compacted structural fill will be placed against the footings. The above values include a factor of safety of 1.5. Unless covered by pavements or slabs, the passive resistance in the upper 12 inches of soil should be neglected.

Pin Pile Foundations

As previously discussed, pin pile foundations may be used to support the new buildings if a higher foundation performance is desired or to reduce the foundation excavation depth to reach competent bearing soils. The pin pile foundation should consist of 3- or 4-inch diameter, galvanized, schedule-40 steel pipe piles connected with concrete grade beams. Allowable axial compression capacity of 12 and 20 kips may be used for the 3- and 4-inch diameter pin piles, respectively.

The number of pin piles needed and pile layout should be determined by your structural engineer. We estimate that piles with lengths of 25 to 30 feet would likely be needed to achieve refusal end bearing conditions and that actual pile lengths should be determined during construction based on the actual driving conditions. Total and differential foundation settlements are anticipated to be within tolerable limits. Foundation settlements under static and seismic loading conditions are estimated to be about ½ inch.

Pile splices may be made with compression fitted sleeve pipe couplers (see Typical Splicing Detail on the following page). Splicing using welding of pipe joints should not be used, as welds will typically be broken during driving.

3- or 4-inch diameter piles are typically installed using small (approximately 650 to 1,100 pound) hammers mounted to a small excavator. The criterion for driving refusal is defined as the minimum amount of time (in seconds) required to achieve one inch of penetration, and it varies with the size of hammer used for pile driving. The following is a summary of driving

refusal criteria for different hammer sizes that are commonly used for nominal 3- or 4-inch pipe piles:

Summary of Commonly-Accepted Driving Criteria for 3- or 4-inch Pin Piles

Hammer Model	Hammer Weight (lb) / Blows per minute	Refusal Criteria (seconds per inch of penetration)	
		3" Piles	4" Piles
Hydraulic TB 225	650 / 550 - 1100	12	20
Hydraulic TB 325	850 / 550 - 1100	10	16
Hydraulic TB 425	1,100 / 550 - 1100	16	10

Please note that these refusal criteria were established empirically based on previous load tests. Contractors may select a different hammer for driving these piles, and propose a different driving criterion. In this case, it is the contractor's responsibility to demonstrate to the Owner's satisfaction that the design load can be achieved based on their selected equipment and driving criteria.

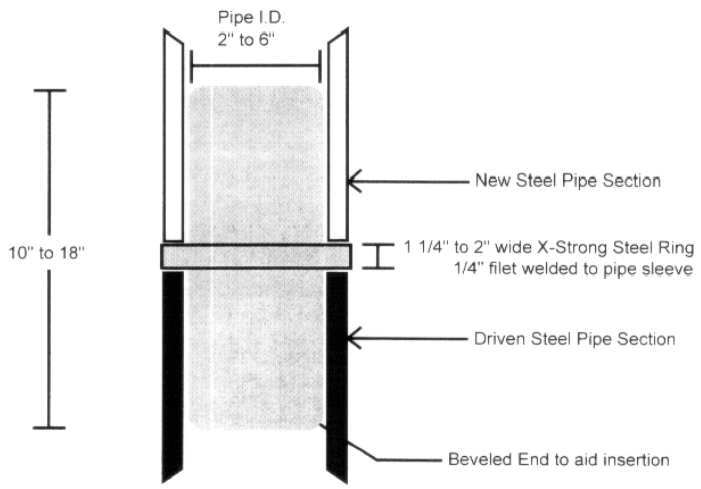
The quality of a pin pile foundation is dependent in part on the experience and professionalism of the installation company. Therefore, a qualified contractor with pin pile driving experience on similar projects should be selected to install the piles. We recommend that the following specifications be included on the foundation plan:

1. All piles shall consist of galvanized 3- or 4-inch diameter Schedule-40, ASTM A-53 Grade "A" pipe.

2. Piles shall be driven to refusal with a minimum 650-lb hydraulic hammer. Refusal is defined as less than 1 inch of penetration in 20 seconds of continuous driving with a 650-lb hammer. The driving/refusal criteria will be verified based on results of a load test program (see item 4). If a hammer of different size is used, the refusal criteria will be revised accordingly.

3. Piles shall be driven in nominal sections and connected with compression fitted sleeve couplers (see detail below – Courtesy of McDowell Pile King, Kent, WA).

4. The geotechnical engineer of record or his/her representative shall provide full time observation of pile installation and testing. A minimum of 3% of the piles (1 minimum and maximum 5 piles) shall be tested to two times (200%) of their design capacity. The tests should be performed in general accordance with ASTM D1143-81.



Typical Pin Pile Splicing Detail

Lateral Resistance: The capacity of vertical pin pipes to resist lateral loads is very limited and should be ignored in design. Lateral forces from wind or seismic loading should be resisted by the passive earth pressures acting against the pile caps and below-grade walls or batter piles. Passive resistance values may be determined using an equivalent fluid weight of 150 pounds per cubic foot (pcf) for sloping grounds or 300 pcf for the level ground (at least 10 feet level ground). This value includes a safety factor of about 1.5 assuming that properly compacted granular fill will be placed adjacent to and surrounding the pile caps and grade beams. Alternatively, pin piles may be battered no flatter than 4V:1H to resist the lateral loads.

Floor Slabs: In our opinion, conventional concrete slab-on-grade floors may be used in combination with the pin pile foundations. A minimum of 6-inch structural fill is recommended below the slabs to provide better support for the slabs. Additionally, the concrete slab floors should be underlain by a capillary break consisting of at least 4 inches of compacted ¾-inch, clean crushed rock (less than 3 percent fines). The capillary break material should also have no more than 10 percent passing the No. 4 sieve and less than 5 percent by weight of the material passing the U.S. Standard No. 100 sieve. The capillary break should be placed on a subgrade that has been compacted to a dense and unyielding condition. A 10-mil polyethylene vapor barrier should also be placed directly below the slab.

PERIMETER FOOTING AND SUBSLAB DRAINS

Perimeter Footing Drains

Footing drains may be installed around the perimeter of the building, at or just below the invert of the footings to promote the subsurface drainage around the footings. Under no circumstances should roof downspout drain lines be connected to the footing drain systems. Roof downspouts must be separately tightlined to a suitable discharge point. Cleanouts should be installed at

strategic locations to allow for periodic maintenance of the footing drain and downspout tightline systems.

Subslab Drains

We recommend a subslab drainage system be placed below the concrete slabs of the lower building in addition to perimeter footing drains. The subslab drainage system should consist of one foot deep (measured from the bottom of the slab) gravel-filled trenches spaced no more than 20 feet apart. A 4-inch perforated PVC (Schedule 35 minimum) pipe should be placed at the bottom of the trench, and the collected water should be discharged to an appropriate drainage outlet. A minimum 10-mil polyethylene vapor barrier should be placed directly below all concrete slabs. We also recommend that construction joints be incorporated into the floor slab to control cracking.

BUILDING SETBACKS

Based on site conditions and conceptual design plans, in our opinion, the building setback may be waived for the proposed project. The new building may extend into the steep slopes as currently planned. However, the building should be designed in such way that the overall site stability will not be decreased and the proposed construction will not have adverse impacts on the subject and adjacent properties. PanGEO should review the more advanced design plans and provide additional geotechnical design recommendations as needed.

RETAINING AND BELOW-GRADE WALL DESIGN PARAMETERS

Retaining and below-grade walls should be properly designed to resist the lateral earth pressures exerted by the soils behind the walls. Proper drainage provisions should also be provided behind the walls to intercept and remove groundwater that may be present behind the walls. Our geotechnical recommendations for the design and construction of the retaining/below-grade walls are presented below.

Wall Foundations

In our opinion, wall foundations should consist of conventional shallow footings. An allowable soil bearing pressure of 2,500 pounds per square feet (psf) may be used for sizing the wall footings. The recommended allowable bearing pressure is for dead plus live loads. For allowable stress design, the recommended bearing pressure may be increased by one-third for transient loading, such as seismic forces. For allowable stress design, the recommended bearing pressure may be increased by one-third for transient loading, such as wind or seismic forces. The wall footings should have a minimum width of 24 inches.

Wall footing subgrades should be compacted to a dense and unyielding condition prior to concrete pour. If the footing subgrade soil is still loose and yielding after re-compaction, they should be over-excavated down to dense bearing soil and the over-excavation should be replaced

with compacted structural fill or lean-mix concrete. The over-excavation width should extend at least one-half the over-excavation depth beyond the edge of footing.

Lateral Earth Pressures

Concrete cantilever walls should be designed for an equivalent fluid pressure of 35 pcf for level backfills behind the walls assuming the walls are free to rotate. If walls are to be restrained at the top from free movement, such as basement walls, equivalent fluid pressures of 45 pcf should be used for level backfills behind the walls. Walls with a maximum 2H:1V backslope should be designed for an active and at rest earth pressure of 45 and 55 pcf, respectively.

Permanent walls should be designed for an additional uniform lateral pressure of 7H psf for seismic loading, where H corresponds to the buried depth of the wall. The recommended lateral pressures assume that the backfill behind the wall consists of a free draining and properly compacted fill with adequate drainage provisions.

Surcharge

Surcharge loads, where present, should also be included in the design of retaining walls. We recommend that a lateral load coefficient of 0.3 be used to compute the lateral pressure on the wall face resulting from surcharge loads located within a horizontal distance of one-half wall height.

Lateral Resistance

Lateral forces from seismic loading and unbalanced lateral earth pressures may be resisted by a combination of passive earth pressures acting against the embedded portions of the foundations and by friction acting on the base of the foundations. Passive resistance on the upslope side of the wall foundations may be determined using an equivalent fluid weight of 300 pounds per cubic foot (pcf). The passive soil resistance on the down slope side of the wall foundations should be reduced to 150 pcf. These values include a factor of safety of 1.5, assuming the footing is poured against dense native sand and stiff silt or properly compacted structural fill adjacent to the sides of footing. A friction coefficient of 0.35 may be used to determine the frictional resistance at the base of the footings. The coefficient includes a factor safety of 1.5.

Wall Drainage

Provisions for wall drainage should consist of a 4-inch diameter perforated drainpipe behind and at the base of the wall footings, embedded in 12 to 18 inches of clean crushed rock and pea gravel wrapped with a layer of filter fabric. A minimum 18-inch wide zone of free draining granular soils (i.e. pea gravel or washed rock) is recommended to be placed adjacent to the wall for the full height of the wall. Alternatively, a composite drainage material, such as Miradrain 6000, may be used in lieu of the clean crushed rock or pea gravel. The drainpipe at the base of the wall should be graded to direct water to a suitable outlet.

Wall Backfill

In our opinion, the existing on-site sandy soil may be re-used as wall backfill provided they can be compacted to a dense condition. On-site fine-grained soil (silt and clay) should not be used as wall backfill. Use of on-site soil as wall backfill should be approved by the project geotechnical engineer. If imported wall backfill is needed, they should consist of free draining granular soils, such as WSDOT Gravel Borrow. In areas where the space is limited between the wall and the face of excavation, pea gravel may be used as backfill without compaction.

Wall backfill should be moisture conditioned to within about 3 percent of optimum moisture content, placed in loose, horizontal lifts less than 8 inches in thickness, and systematically compacted to a dense and relatively unyielding condition and to at least 95 percent of the maximum dry density, as determined using test method ASTM D 1557. Within 5 feet of the wall, the backfill should be compacted with hand-operated equipment to at least 90 percent of the maximum dry density.

EXISTING RETAINING WALL RECONSTRUCTION

We understand that existing retaining walls along the east and south of the existing carport will be repaired/reconstructed. In our opinion, the most feasible method to reconstruct the walls will be to construct new walls inside of the existing walls. The existing walls will act as temporary shoring walls. This method will eliminate excavation/disturbance into the upper steep slopes. The geotechnical recommendations contained in the section "**Retaining and Below-Grade Wall Design Parameters**" on pages 10 through 12 may be used for design of the new walls.

CONSTRUCTION CONSIDERATIONS

SITE PREPARATION

Site preparation for the proposed project mainly includes removing existing buildings, site clearing, and excavations to the design subgrade. All stripped surface materials should be properly disposed off-site or be "wasted" on site in non-structural landscaping areas. Following site clearing and excavations, the adequacy of the subgrade where structural fill, foundations, slabs, or pavements are to be placed should be verified by a representative of PanGEO. Soft, organic rich soils, if encountered in the improvement areas, should be over-excavated and replaced with compacted structural fill.

TEMPORARY EXCAVATIONS

Details of the proposed project are not available at the time this report was prepared. We envisage that temporary excavations up to 6 to 7 feet deep will be needed for the proposed construction. We anticipate the excavations to encounter loose to medium sand and stiff silt. All temporary excavations deeper than 4 feet should be sloped or shored. All temporary excavations

should be performed in accordance with Part N of WAC (Washington Administrative Code) 296-155. The contractor is responsible for maintaining safe excavation slopes and/or shoring.

Based on the soil conditions at the site, in general, it is our opinion that temporary excavations may be sloped 1H:1Vor flatter. The temporary excavations and cut slopes should be re-evaluated in the field during construction based on actual observed soil conditions. The cut slopes may also need to be flattened in the wet seasons and should be covered with clear plastic sheets. We also recommend that heavy construction equipment, building materials, excavated soil, and vehicular traffic should not be allowed within a distance equal to 1/3 the slope height from the top of any excavation.

MATERIAL REUSE

In our opinion, the on-site fine-grained soil (silt and clay) should not be used as structural fill but may be used as general fill in the non-structural landscape areas. However, the on-site relatively clean sand may be considered as a resource for structural fill provided they can be compacted to a dense condition. It should be noted that on-site sandy soil is poorly graded and may be difficult to compact to the required degree because of the poor gradation and over-optimum moisture content. If the on-site sand cannot be compacted to a dense condition, imported well-grade granular material, such as WSDOT (2010) Gravel Borrow should be used as structural fill. Recycled concrete may also be considered as a source of structural fill. Use of on-site soil and recycled concrete as structural fill should be approved by the project geotechnical engineer. If use of the existing sandy soils is planned, the excavated soil should be stockpiled and protected with plastic sheeting to prevent softening from rainfall.

STRUCTURAL FILL PLACEMENT AND COMPACTION

In the context of this report, structural fill is defined as compacted fill placed under footings, concrete stairs and landings, and slabs, or other load-bearing areas. Structural fill should be moisture conditioned to within about 3 percent of optimum moisture content, placed in loose, horizontal lifts less than 8 inches in thickness, and systematically compacted to a dense and relatively unyielding condition and to at least 95 percent of the maximum dry density, as determined using test method ASTM D 1557.

Depending on the type of compaction equipment used and depending on the type of fill material, it may be necessary to decrease the thickness of each lift in order to achieve adequate compaction. PanGEO can provide additional recommendations regarding structural fill and compaction during construction.

WET WEATHER EARTHWORK

In our opinion, the proposed site construction may be accomplished during wet weather (such as in winter) without adversely affecting the site stability. However, earthwork construction performed during the drier summer months likely will be more economical. Winter construction will require the implementation of best management erosion and sedimentation control practices to reduce the chance of off-site sediment transport. Some of the site soils contain a high percentage of fines and are moisture sensitive. Any footing subgrade soils that become softened either by disturbance or rainfall should be removed and replaced with structural fill, Controlled Density Fill (CDF), or lean-mix concrete. General recommendations relative to earthwork performed in wet conditions are presented below:

- Site stripping, excavation and subgrade preparation should be followed promptly by the placement and compaction of clean structural fill or CDF;
- The size and type of construction equipment used may have to be limited to prevent soil disturbance;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Bales of straw and/or geotextile silt fences should be strategically located to control erosion and the movement of soil;
- Structural fill should consist of less than 5% fines; and
- Excavation slopes should be covered with plastic sheets.

SURFACE DRAINAGE AND EROSION CONSIDERATIONS

Surface runoff can be controlled during construction by careful grading practices. Typically, this includes the construction of shallow, upgrade perimeter ditches or low earthen berms in conjunction with silt fences to collect runoff and prevent water from entering excavations or to prevent runoff from the construction area from leaving the immediate work site. Temporary erosion control may require the use of hay bales on the downhill side of the project to prevent water from leaving the site and potential storm water detention to trap sand and silt before the water is discharged to a suitable outlet. All collected water should be directed under control to a positive and permanent discharge system.

Permanent control of surface water should be incorporated in the final grading design. Adequate surface gradients and drainage systems should be incorporated into the design such that surface runoff is directed away from structures. Potential problems associated with erosion may also be reduced by establishing vegetation within disturbed areas immediately following grading operations.

ADDITIONAL SERVICES

Once more advanced design plans are developed, PanGEO should review the project design and modify our recommendations contained in this report if needed. PanGEO should also be retained to monitor the construction of geotechnical elements. The City of Bellevue, as part of the permitting conditions, will also require geotechnical construction inspection services. PanGEO can provide you a cost estimate for construction monitoring services at a later date.

We anticipate that the following additional services will be required during permitting and construction:

- Review project design plans and provide additional recommendations as needed;
- Verify implementation of erosion control measures;
- Evaluate and confirm the stability of temporary excavation slopes;
- Observe foundation construction including pin pile installation;
- Verify the adequacy of subsurface drainage installation;
- Confirm the adequacy of the compaction of structural backfill; and
- Other consultation as may be required during construction

Modifications to our recommendations presented in this report may be necessary, based on the actual conditions encountered during construction.

CLOSURE

We have prepared this report for Mr. David Wang, and the project design team. Recommendations contained in this report are based on a site reconnaissance, a subsurface exploration program, review of pertinent subsurface information, and our understanding of the project. The study was performed using a mutually agreed-upon scope of work.

Variations in soil conditions may exist between the locations of the explorations and the actual conditions underlying the site. The nature and extent of soil variations may not be evident until construction occurs. If any soil conditions are encountered at the site that are different from those described in this report, we should be notified immediately to review the applicability of our recommendations. Additionally, we should also be notified to review the applicability of our recommendations if there are any changes in the project scope.

The scope of our work does not include services related to construction safety precautions. Our recommendations are not intended to direct the contractors' methods, techniques, sequences or procedures, except as specifically described in our report for consideration in design. Additionally, the scope of our work specifically excludes the assessment of environmental characteristics, particularly those involving hazardous substances. We are not mold consultants

nor are our recommendations to be interpreted as being preventative of mold development. A mold specialist should be consulted for all mold-related issues.

This report has been prepared for planning and design purposes for specific application to the proposed project in accordance with the generally accepted standards of local practice at the time this report was written. No warranty, express or implied, is made.

This report may be used only by the client and for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both off and on-site), or other factors including advances in our understanding of applied science, may change over time and could materially affect our findings. Therefore, this report should not be relied upon after 24 months from its issuance. PanGEO should be notified if the project is delayed by more than 24 months from the date of this report so that we may review the applicability of our conclusions considering the time lapse.

It is the client's responsibility to see that all parties to this project, including the designer, contractor, subcontractors, etc., are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk. Any party other than the client who wishes to use this report shall notify PanGEO of such intended use and for permission to copy this report. Based on the intended use of the report, PanGEO may require that additional work be performed and that an updated report be reissued. Noncompliance with any of these requirements will release PanGEO from any liability resulting from the use this report.

We appreciate the opportunity to be of service.

Sincerely,

Michael H. Xue, P.E.
Senior Geotechnical Engineer

Siew L. Tan, P.E.
Principal Geotechnical Engineer

Enclosures:

Figure 1	Vicinity Map
Figure 2	Site and Exploration Plan

Figure 3 Terms and Symbols for Boring and Test Pit Logs
Figure 4 Log of Test Borings BH-1
Figure 5 Log of Test Borings BH-2
Figure 6 Log of Test Borings BH-3

REFERENCES

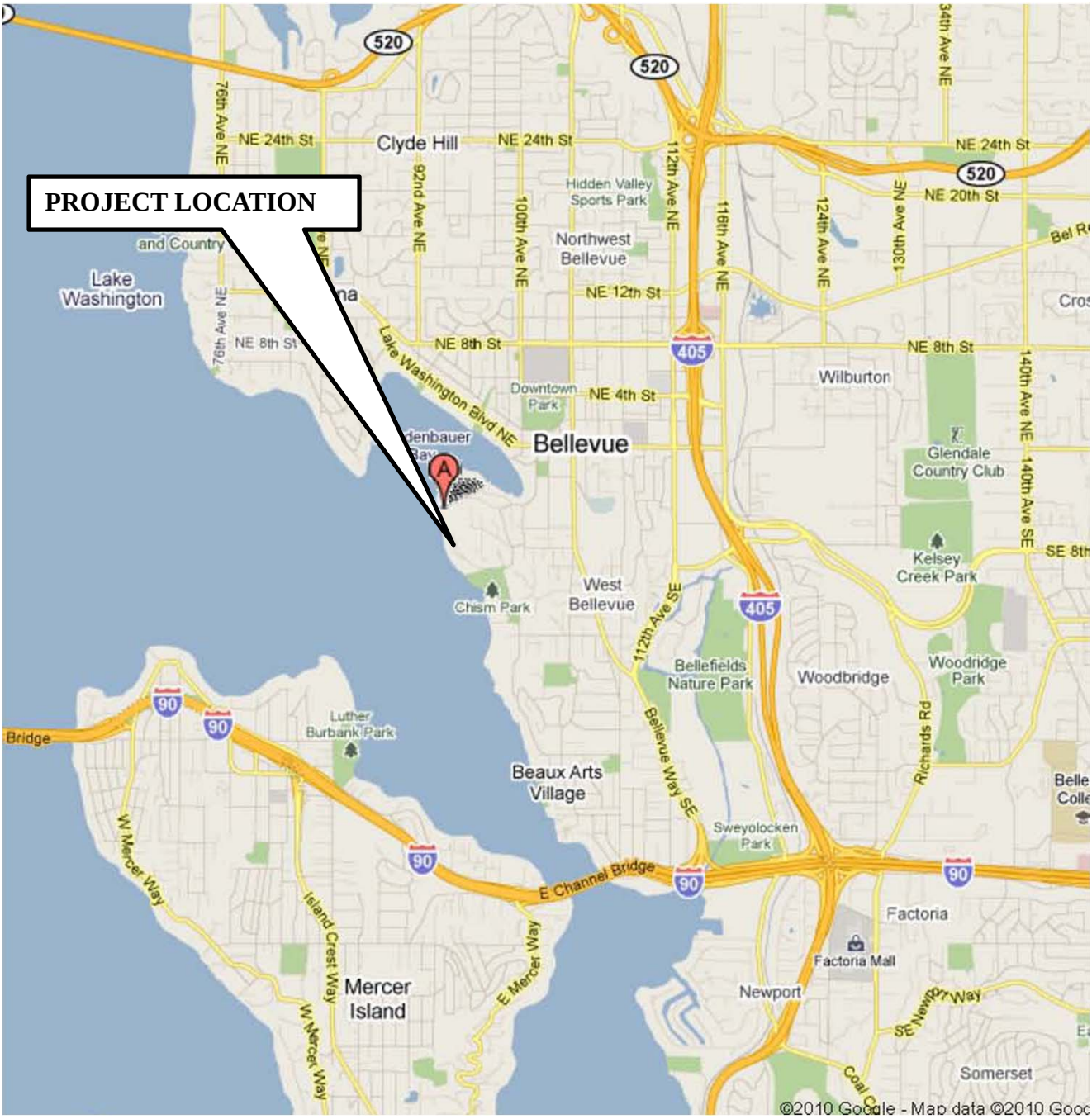
Booth, D. B., Troost, K.G., Wisher, A. P., 2007, *The Geologic Map of King County, Washington, scale 1:100,000.*

City of Bellevue GIS Map, 2007, *Surface Geology and Soils with Severe Erosion Potential Map*.

City of Bellevue GIS Map, 2007, *Geologic Hazards Map.*

International Code Council, 2006, *International Building Code (IBC).*

WSDOT, 2010, *Standard Specifications for Road, Bridges, and Municipal Construction*.



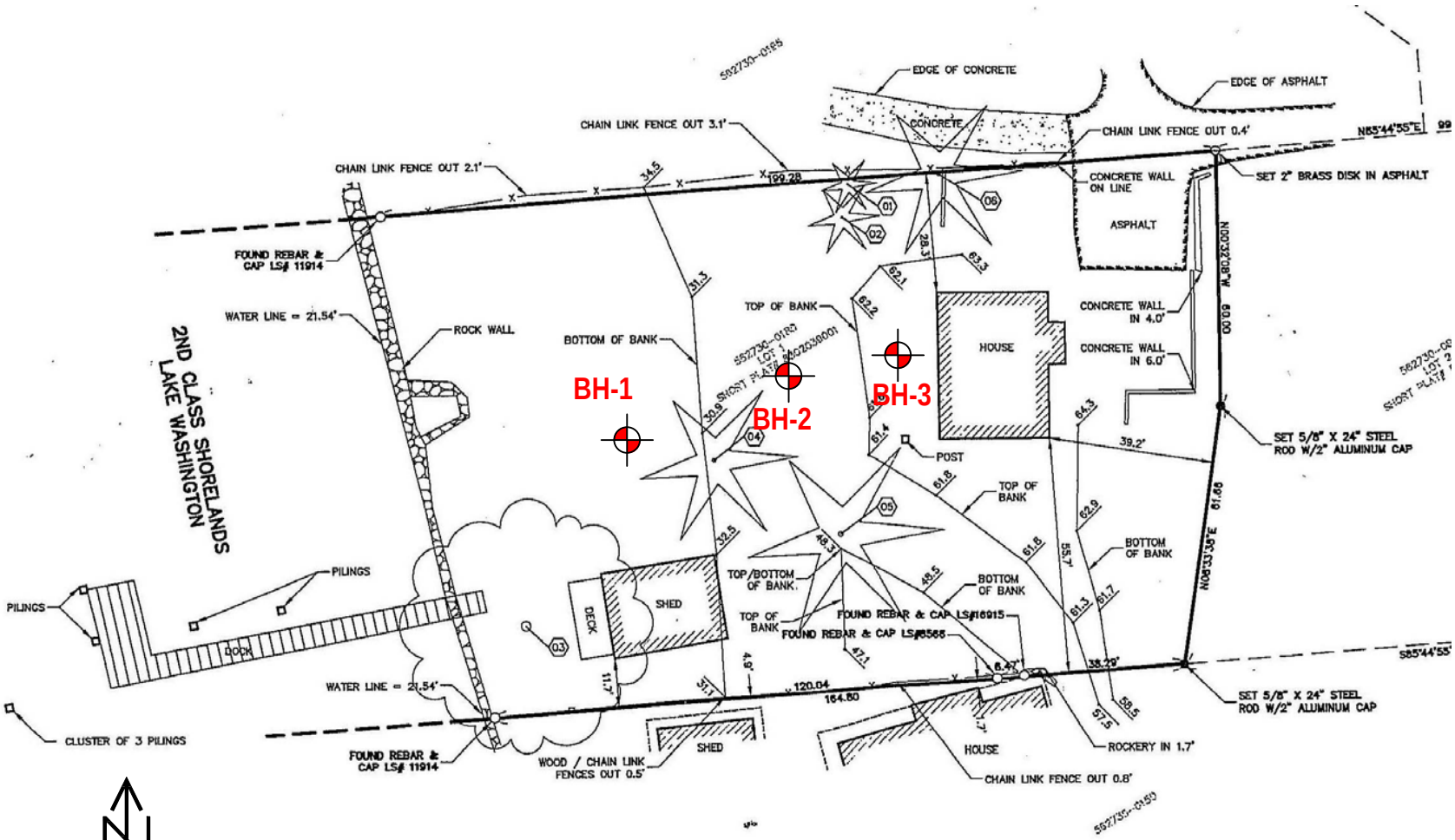
N

Reference: Google Map

PanGEO INCORPORATED	**Proposed Single-Family Residence** **701 Shoreland Drive SE** **Bellevue, Washington**	**VICINITY MAP** Project No. 11-016 Figure No. 1

Fig1_vicinity.ppt 2/16/2011(1:12 PM) MHX

file.grf w/ file.dat 2/16/11 (17:55) TEA2



Approx. Scale
1" = 40'

Note: Base map modified from Topographic Survey Map provided to us.

Legend:

BH-1 Approx. Test Boring Location

PanGEO INCORPORATED

Proposed Single-Family Residence
701 Shoreland Drive SE
Bellevue, Washington

SITE AND EXPLORATION PLAN

Project No.	Figure No.
11-016	2

RELATIVE DENSITY / CONSISTENCY

SAND / GRAVEL			SILT / CLAY		
Density	SPT N-values	Approx. Relative Density (%)	Consistency	SPT N-values	Approx. Undrained Shear Strength (psf)
Very Loose	<4	<15	Very Soft	<2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Med. Dense	10 to 30	35 - 65	Med. Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	>50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	>30	>4000

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		GROUP DESCRIPTIONS	
Gravel 50% or more of the coarse fraction retained on the #4 sieve. Use dual symbols (eg. GP-GM) for 5% to 12% fines.	GRAVEL (<5% fines)	GW	Well-graded GRAVEL
		GP	Poorly-graded GRAVEL
	GRAVEL (>12% fines)	GM	Silty GRAVEL
		GC	Clayey GRAVEL
Sand 50% or more of the coarse fraction passing the #4 sieve. Use dual symbols (eg. SP-SM) for 5% to 12% fines.	SAND (<5% fines)	SW	Well-graded SAND
		SP	Poorly-graded SAND
	SAND (>12% fines)	SM	Silty SAND
		SC	Clayey SAND
Silt and Clay 50%or more passing #200 sieve	Liquid Limit < 50	ML	SILT
		CL	Lean SILT
		OL	Organic SILT or CLAY
	Liquid Limit > 50	MH	Elastic SILT
		CH	Fat CLAY
		OH	Organic SILT or CLAY
Highly Organic Soils		PT	PEAT

Notes: 1. Soil exploration logs contain material descriptions based on visual observation and field tests using a system modified from the Uniform Soil Classification System (USCS). Where necessary laboratory tests have been conducted (as noted in the "Other Tests" column), unit descriptions may include a classification. Please refer to the discussions in the report text for a more complete description of the subsurface conditions.

2. The graphic symbols given above are not inclusive of all symbols that may appear on the borehole logs. Other symbols may be used where field observations indicated mixed soil constituents or dual constituent materials.

DESCRIPTIONS OF SOIL STRUCTURES

Layered:	Units of material distinguished by color and/or composition from material units above and below	Fissured:	Breaks along defined planes
Laminated:	Layers of soil typically 0.05 to 1mm thick, max. 1 cm	Slickensided:	Fracture planes that are polished or glossy
Lens:	Layer of soil that pinches out laterally	Blocky:	Angular soil lumps that resist breakdown
Interlayered:	Alternating layers of differing soil material	Disrupted:	Soil that is broken and mixed
Pocket:	Erratic, discontinuous deposit of limited extent	Scattered:	Less than one per foot
Homogeneous:	Soil with uniform color and composition throughout	Numerous:	More than one per foot
		BCN:	Angle between bedding plane and a plane normal to core axis

COMPONENT DEFINITIONS

COMPONENT	SIZE / SIEVE RANGE	COMPONENT	SIZE / SIEVE RANGE
Boulder:	> 12 inches	Sand	
Cobbles:	3 to 12 inches	Coarse Sand:	#4 to #10 sieve (4.5 to 2.0 mm)
Gravel		Medium Sand:	#10 to #40 sieve (2.0 to 0.42 mm)
Coarse Gravel:	3 to 3/4 inches	Fine Sand:	#40 to #200 sieve (0.42 to 0.074 mm)
Fine Gravel:	3/4 inches to #4 sieve	Silt	0.074 to 0.002 mm
		Clay	<0.002 mm

TEST SYMBOLS

for In Situ and Laboratory Tests listed in "Other Tests" column.

CBR	California Bearing Ratio
Comp	Compaction Tests
Con	Consolidation
DD	Dry Density
DS	Direct Shear
%F	Fines Content
GS	Grain Size
Perm	Permeability
PP	Pocket Penetrometer
R	R-value
SG	Specific Gravity
TV	Torvane
TXC	Triaxial Compression
UCC	Unconfined Compression

SYMBOLS

Sample/In Situ test types and intervals

- 2-inch OD Split Spoon, SPT (140-lb. hammer, 30" drop)
- 3.25-inch OD Spilt Spoon (300-lb hammer, 30" drop)
- Non-standard penetration test (see boring log for details)
- Thin wall (Shelby) tube
- Grab
- Rock core
- Vane Shear

MONITORING WELL

- Groundwater Level at time of drilling (ATD)
- Static Groundwater Level
- Cement / Concrete Seal
- Bentonite grout / seal
- Silica sand backfill
- Slotted tip
- Slough
- Bottom of Boring

MOISTURE CONTENT

Dry	Dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water

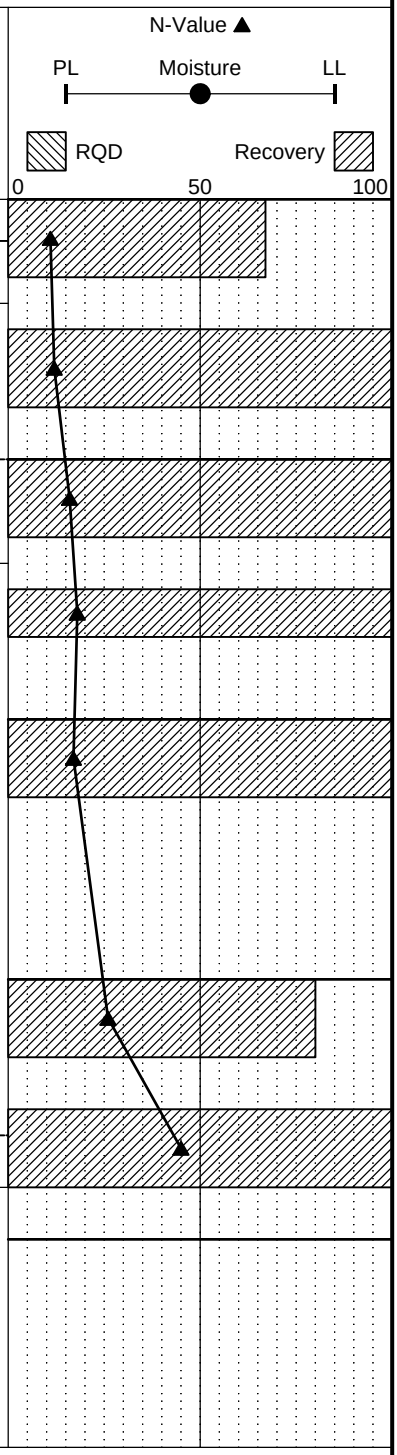
PanGEO INCORPORATED
Phone: 206.262.0370

Terms and Symbols for Boring and Test Pit Logs

Figure 3

Project:	701 Shoreland Drive SE	Surface Elevation:	~31'
Job Number:	11-016	Top of Casing Elev.:	
Location:	Bellevue, Washington	Drilling Method:	Hollow Stem Auger
Coordinates:	Northing: , Easting:	Sampling Method:	SPT

Depth, (ft)	Sample No.	Sample Type	Blows / 6 in.	Other Tests	Symbol	MATERIAL DESCRIPTION
0	S-1		2 5 6			Medium Stiff, dark brown, sandy SILT, some organics and roots, very moist **(Fill).**
						Medium dense, brown-dark brown, slightly silty sandy GRAVEL, moist.
	S-2		3 5 7			Stiff, gray mottled with rusty brown, sandy SILT/silty fine SAND, some iron-oxide stains, moist **(Ice-Contact Deposits?).**
5	S-3		5 8 8			Medium dense, gray-light gray, silty fine SAND, very moist to wet.
	S-4		4 6 12			Very stiff, gray-light gray, slightly sandy SILT, moist **(Glaciolacustrine Deposits).**
10	S-5		4 7 10			-becomes gray, SILT/cleyey SILT, very stiff, moist.
15	S-6		4 10 16			-becomes clayey SILT with trace fine sand, very stiff, moist.
	S-7		10 21 24			Hard, gray, sandy SILT/silty fine SAND, very moist.
20						Bottom of Boring at about 19 ft. Groundwater was observed at about 5.5 feet about two hour after drilling.



Completion Depth:	19.0ft
Date Borehole Started:	2/7/11
Date Borehole Completed:	2/7/11
Logged By:	HMX
Drilling Company:	CN Drilling, Inc.

Remarks: Acker Portable Drill. Standard Penetration Test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism.

PanGEO INCORPORATED
Phone: 206.262.0370

LOG OF TEST BORING BH-1

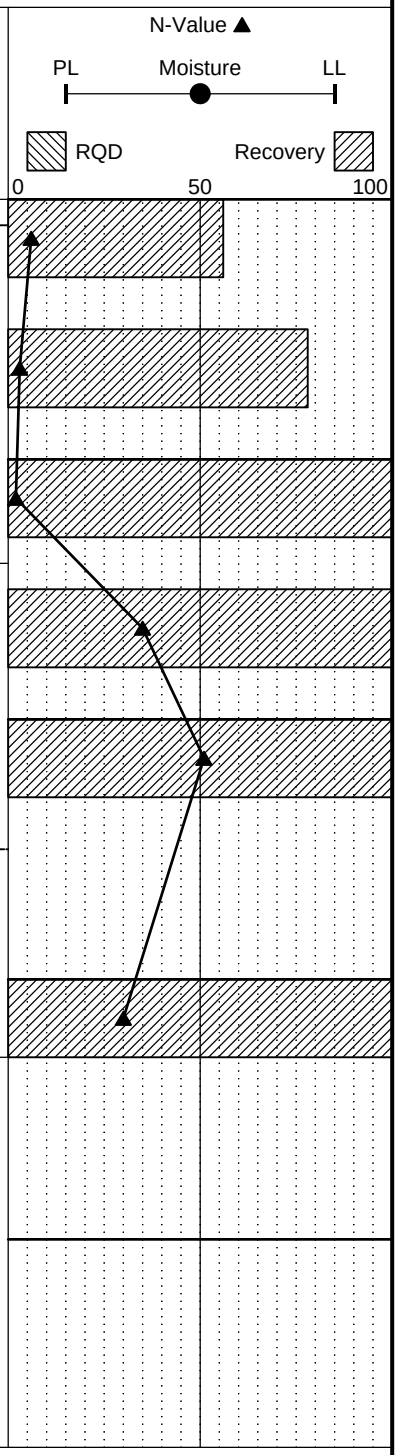
Figure 4

The stratification lines represent approximate boundaries. The transition may be gradual.

LOG OF BOREHOLE 11-016 BORING LOGS.GPJ PANGEO.GDT 2/25/11

Project:	701 Shoreland Drive SE	Surface Elevation:	~48'
Job Number:	11-016	Top of Casing Elev.:	
Location:	Bellevue, Washington	Drilling Method:	Hollow Stem Auger
Coordinates:	Northing: , Easting:	Sampling Method:	SPT

Depth, (ft)	Sample No.	Sample Type	Blows / 6 in.	Other Tests	Symbol	MATERIAL DESCRIPTION
0	S-1		6 4 2			Loose, gray, crushed rock, moist **(Fill).**
						Loose, brown, fine to medioum SAND, moist.
	S-2		1 1 2			-becomes brown, silty fine SAND, trace roots, loose, moist.
5	S-3		2 1 1			-becomes brown, fine SAND, some silt, very loose, moist.
	S-4		5 17 18			Dence, brown-gray, fine SAND, some silt, moist **(Advance Outwash).**
10	S-5		12 23 28			-becomes gray-brown, fine SAND with some silt to slightly silty SAND, very dense, moist.
						Dense, gray-brown, silty fine SAND, occosional thin silt layers, moist to very moist.
15	S-6		7 13 17			
						Bottom of Boring at about 16.5 ft. Groundwater was not observed during drilling.
20						



Completion Depth:	16.5ft
Date Borehole Started:	2/7/11
Date Borehole Completed:	2/7/11
Logged By:	HMX
Drilling Company:	CN Drilling, Inc.

Remarks: Acker Portable Drill. Standard Penetration Test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism.

PanGEO INCORPORATED
Phone: 206.262.0370

LOG OF TEST BORING BH-2

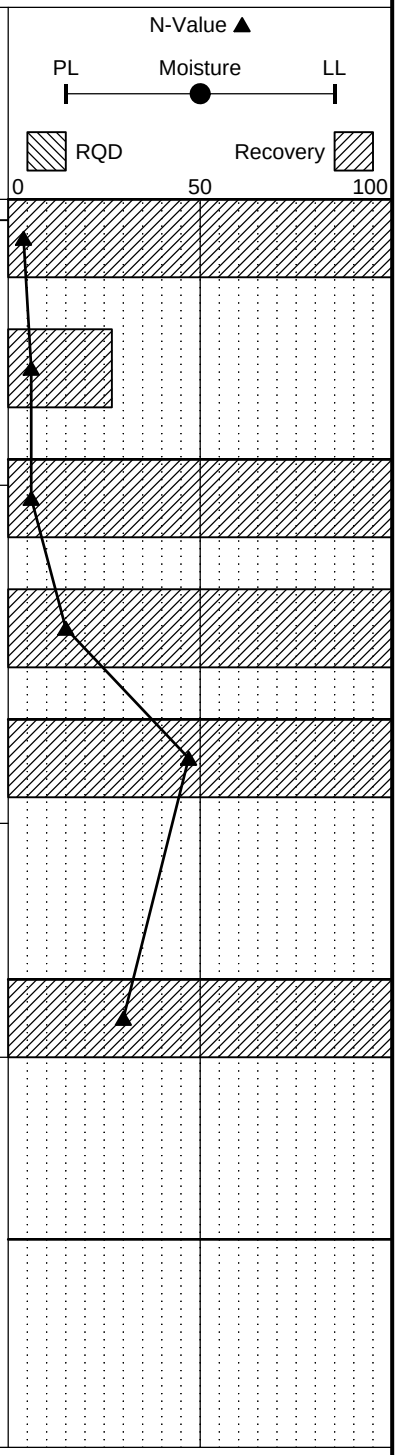
Figure 5

The stratification lines represent approximate boundaries. The transition may be gradual.

LOG OF BOREHOLE 11-016 BORING LOGS.GPJ PANGEO.GDT 2/25/11

Project:	701 Shoreland Drive SE	Surface Elevation:	~62'
Job Number:	11-016	Top of Casing Elev.:	
Location:	Bellevue, Washington	Drilling Method:	Hollow Stem Auger
Coordinates:	Northing: , Easting:	Sampling Method:	SPT

Depth, (ft)	Sample No.	Sample Type	Blows / 6 in.	Other Tests	Symbol	MATERIAL DESCRIPTION
0						Approximately 5-inch bark and tree leaves.
	S-1		2 2 2			Loose, brown-dark brown, silty SAND, some gravel and roots, trace brick gragments, very moist **(Fill).**
	S-2		2 2 4			-becomes brown, silty gravelly SAND, loose, very moist.
5	S-3		2 2 4			Loose, gray-brown, silty fine SAND/sandy SILT, moist **(Ice-Contact Deposits?).**
	S-4		6 8 7			Stiff, light brown-light gray, sandy SILT/silty fine SAND, damp.
10	S-5		9 21 26			-grades to hard.
						Dense, gray-brown, fine SAND, some silt, moist **(Advance Outwash).**
15	S-6		11 13 17			
						Bottom of Boring at about 16.5 ft. Groundwater was not observed during drilling.
20						



Completion Depth:	16.5ft
Date Borehole Started:	2/7/11
Date Borehole Completed:	2/7/11
Logged By:	HMX
Drilling Company:	CN Drilling, Inc.

Remarks: Acker Portable Drill. Standard Penetration Test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism.

PanGEO INCORPORATED
Phone: 206.262.0370

LOG OF TEST BORING BH-3

Figure 6

The stratification lines represent approximate boundaries. The transition may be gradual.

LOG OF BOREHOLE 11-016 BORING LOGS.GPJ PANGEO.GDT 2/25/11

International Forestry
CONSULTANTS, INC.
11415 NE 128th Street, Suite 110, Kirkland, WA 98034 USA
(425) 820-3420 • Fax (425) 820-3437 • www.inforestry.com

Arborist Report
Recommendations for Tree Protection
701 Shoreland DR SE
Bellevue, WA

September 15th, 2011

Table of Contents

1. Introduction.....1
2. Description.....1
3. Observations 1
4. Discussion 1
5. Tree Protection Measures.....2
6. Monitoring Tree Health 2

Appendix

Site/Tree Photos – Pages 3 - 7

Copy of Proposed Site Plan

1. Introduction

International Forestry Consultants, Inc. was contacted by Robert Hutchison, and was asked to compile an arborist report to address the condition of a large Douglas-fir tree to be retained during the demolition of an existing house and the construction of a new residence.

The assignment is to perform a condition/risk assessment of the subject tree and to make recommendations for tree protection throughout all phases of development.

Date of Field Examination: September 15, 2011

2. Description

There are three trees subject to this report:

Tree #1 Douglas-fir
Tree #2 American Beech
Tree #3 Norway spruce

Tree locations are plotted on the attached site plan. Diameter, height and drip-line information can be found on the attached tree summary table.

3. Observations

Tree #1 is a mature Douglas-fir, a native coniferous species. It is estimated at approximately 200 years of age. The trunk appears sound and in good condition. The trunk has developed excellent taper. No outward indicators of internal stem decay were observed. Insect infestations in the lower bark are strictly confined to the outer thick bark, and are not concerning. The foliage is of good color and density. Overall vigor is good for age. Failure risk or potential is low.

Tree #2 is a mature American beech. No concerning defects were observed. The trunk is sound with no outward indicators of internal stem decay. The foliage is of normal color and density. The crown is large spreading. Very little deadwood was observed. Minor limb tip dieback was observed on the west side of the crown, which is not concerning. Failure risk or potential is low.

Tree #3 is a semi-mature Norway spruce. It has a slight natural lean to the south, away from adjacent trees. The majority of crown is on the south side. The foliage is of good color and normal density. No concerning defects were observed.

4. Discussion

Tree drip-lines and limits of disturbance measurements can be found on the attached tree summary table. The limit of disturbance is the recommended limit of encroachment from the trunk face. No grade alterations or soil compaction shall be allowed within this no disturbance zone.

The large subject Douglas-fir tree and beech tree can be successfully retained. All ground work within the recommended limits of disturbance should be performed by hand. This includes the removal of ivy, pavers, bricks, etc. It is my understanding that the grades within the drip-line will not be altered.

The old concrete steps adjacent to the subject Douglas-fir tree can be removed without affecting health or stability, with the exception of the few steps below a large buttress root. (See photo below). The step that the large root has grown over and the two below it should be left in place for tree stability. For finish landscaping, simply cover these steps with mulch.

Some minor clearance pruning may be necessary for the subject Douglas-fir and beech trees. Leaders should be removed back to a smaller side branch to provide clearance. Heading cuts are not recommended.

The Norway spruce tree on the north side of the proposed house is too close to the foundation to be successfully retained. Spruce trees have prolific root systems that are far reaching and very shallow. In addition, this tree has a lean toward the proposed residence. Substantial crown raising and clearance pruning will be needed to construct the residence. Removal in this situation is warranted. The removal of the spruce will afford more space, sunlight and nutrients to the adjacent pine and ash trees.

5. Tree Protection Measures

The following guidelines are recommended to ensure that the designated space set aside for the preserved trees is protected and construction impacts are kept to a minimum.

1. Tree protection fencing should be erected at the limit of disturbance line prior to moving any heavy equipment on site. Doing this will set clearing limits and avoid compaction of soils within root zones of retained trees.
2. Excavation limits should be laid out in paint on the ground to avoid over excavating.
3. Excavations inside the drip-lines shall be monitored by a qualified tree professional so necessary precautions can be taken to decrease impacts to tree parts.
4. To establish sub grade for foundations near the trees, soil should be removed parallel to the roots and not at 90 degree angles to avoid breaking and tearing roots that lead back to the trunk within the drip-line. Any roots damaged during these excavations should be exposed to sound tissue and cut cleanly with a saw. Cutting tools should be sterilized with alcohol.
5. Areas excavated within the drip-line of retained trees should be thoroughly irrigated every two weeks during dry periods.
6. Preparations for final landscaping shall be accomplished by hand within the drip-lines of retained trees. Large equipment shall be kept outside of the tree protection zones.

6. Monitoring Tree Health

As your trees mature, you should be aware of the following conditions that may be indicators of declining tree health.

- Appearance of fungal fruiting bodies which will appear as small “shelves” on the bole and branches or mushroom-like growths near the base of the tree.
- Dead or soft flaky wood in cavities or under the bark.
- Thinning crowns.
- The appearance of yellow or orange needles other than near the stem. (Cedar trees may exhibit orange needles in the fall; called “flagging” that is a normal response to drought and not a symptom of long-term decline.)
- Leaning stems, extraordinary bark flaking, stem swelling or any other abnormalities on the bole.
- Extraordinary cone production.
- Insect entry holes. These are about the size of a pencil lead and probably are accompanied by “sawdust”.
- Premature leaf-fall or the appearance of dead limb tips. Droopy top or thinning crown. Dying treetop.

There is no warranty suggested for any of the trees subject to this report. Weather, latent tree conditions, and future man-caused activities could cause physiologic changes and deteriorating tree condition. Over time, deteriorating tree conditions may appear and there may be conditions, which are not now visible which, could cause tree failure. This report or the verbal comments made at the site in no way warrant the structural stability or long term condition of any tree, but represent my opinion based on the observations made.

Nearly all trees in any condition standing within reach of improvements or human use areas represent hazards that could lead to damage or injury.

Please call if you have any questions or I can be of further assistance.

Sincerely,

Bob Layton
ISA Certified Arborist #PN-2714A
Certified Tree Risk Assessor #233

Tree #1

Lower Trunk of Tree #1

Large root grown over concrete step, retain this step and the two below it

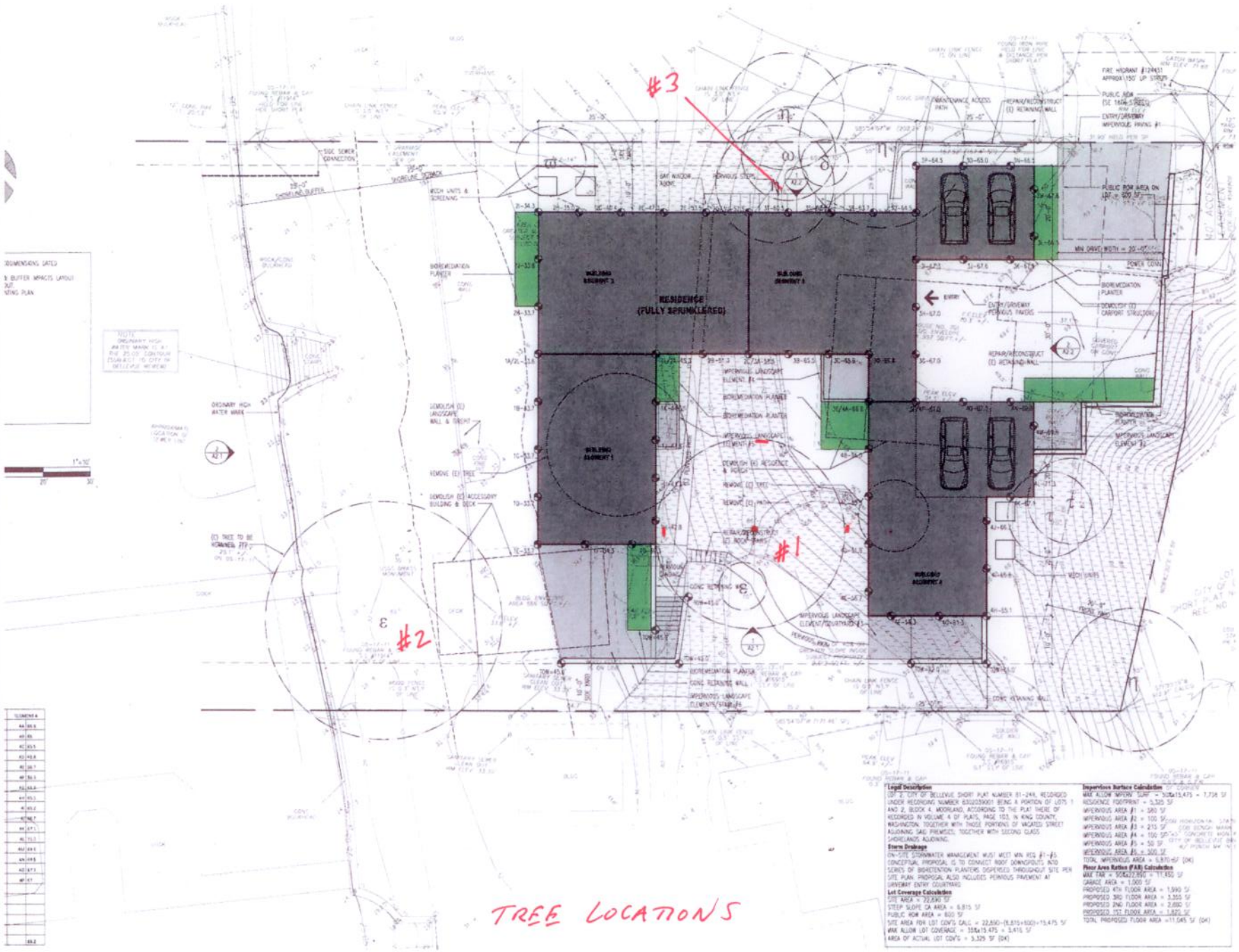
Tree #2

Upper Crown of Tree #2

Remove bricks within limits of disturbance with hand tools and hand labor

Tree #3

Upper Crown of Tree #3



HUTCHISON & MAUL LLC

Shoreland Drive Residence
701 Shoreland Drive SE
Bellevue WA

Architect:
Hutchison & Maul LLC
4010 Whitman Avenue N
Seattle WA 98103
Contact: Robert Hutchison
P: 206.545.1991

Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
P: 206.521.0358

Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

PRE-DESIGN DOCUMENTS

05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)

ARCHITECTURAL
SITE PLAN

A1.1

Tree Summary Table

For: 701 Shoreland Drive SE
Bellevue

International Forestry Consultants, Inc

Date: 9/15/2011
Inspector: Layton

Tree/Tag #	Species	Native/ Planted/ Volunteer	DBH	Height		Drip-Line/Limits of Disturbance (feet) N	S	E	W	Condition	Viability	Comments
1	Douglas-fir	N	56	138		26/18	26/20	26/18	25/20	good	viable	sound, excellent taper
2	beech	P	59	115		32/22	30/16	32/17	27/15	good	viable	large spreading crown
3	Norway spruce	P	18	75		na	15/10	12/12	10/na	fair-good	viable	minor lean to south
Trees on neighboring properties												

Parcel Trees - Drip-Line and Limits of Disturbance measurements from face of trunk
Trees on neighboring properties - Drip-Line and Limits of Disturbance measurements from property line