DEVELOPMENT SERVICES
ENVIRONMENTAL COORDINATOR
450 110th Ave NE., P.O. BOX 90012
BELLEVUE, WA 98009-9012

OPTIONAL DETERMINATION OF NON-SIGNIFICANCE (DNS) NOTICE MATERIALS

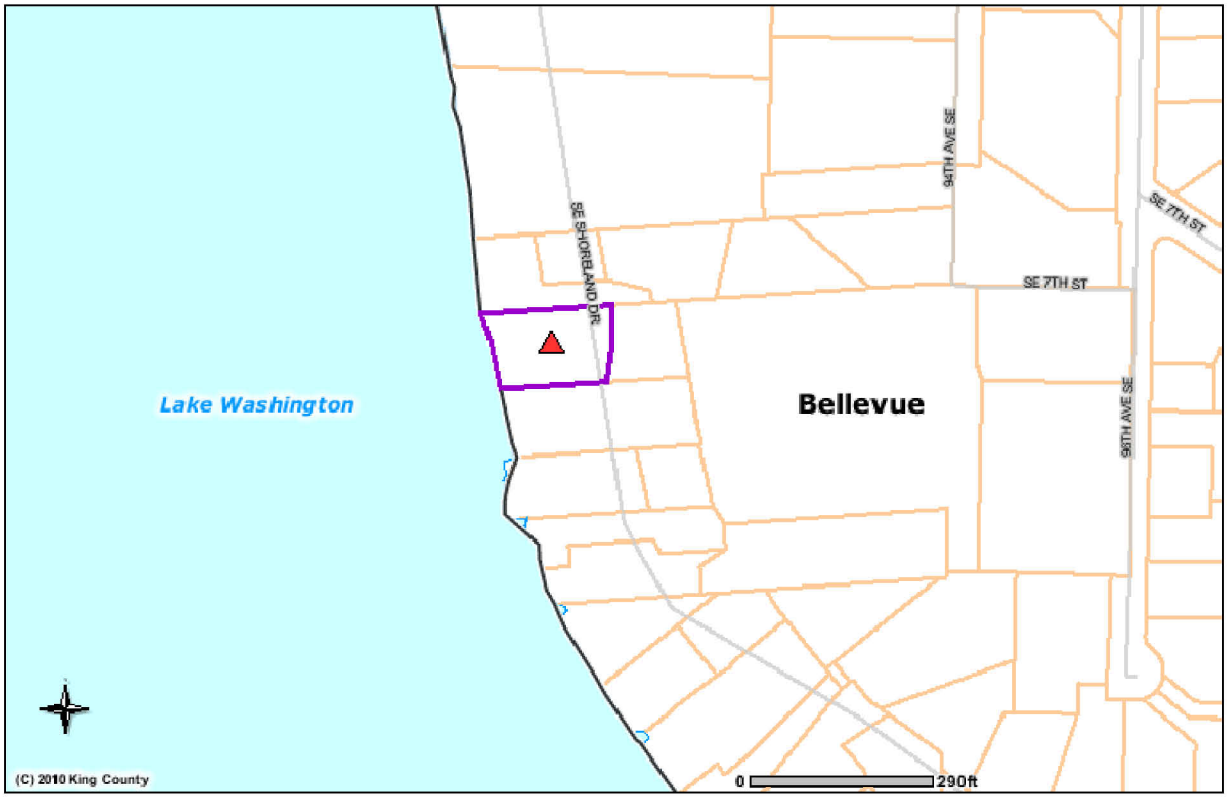
The attached materials are being sent to you pursuant to the requirements for the Optional DNS Process (WAC 197-11-355). A DNS on the attached proposal is likely. This may be the only opportunity to comment on environmental impacts of the proposal. Mitigation measures from standard codes will apply. Project review may require mitigation regardless of whether an EIS is prepared. A copy of the subsequent threshold determination for this proposal may be obtained upon request.

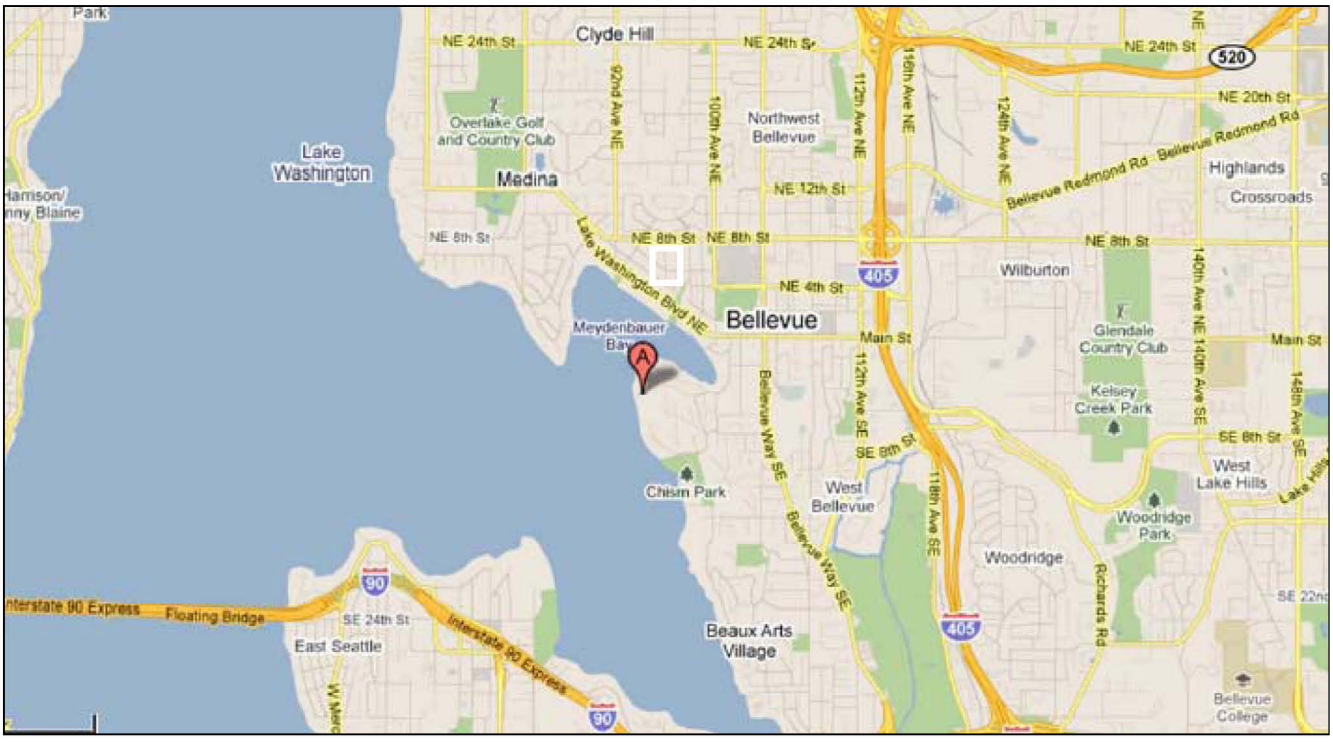
File No.	11-119136-LO and 11-119137-WG
Project Name/Address:	Wang Residence 701 Shoreland Drive SE
Planner:	Reilly Pittman
Phone Number:	425-452-4350
Minimum Comment Period:	**November 10, 2011**
	November 28, 2011 (30 days for Shoreline Permit only)

Materials included in this Notice:

- ☒ Blue Bulletin
- ☒ Checklist
- ☒ Vicinity Map
- ☒ Plans
- ☒ Other: Critical Areas Report
  Geotech Report

Vicinity Map from iMAP (top) Google Maps (below)





SEPA Checklist Annotated by Reilly Pittman on 8/3/2011

City of Bellevue Submittal Requirements	27

ENVIRONMENTAL CHECKLIST

12/21/00

Thank you in advance for your cooperation and adherence to these procedures. If you need assistance in completing the checklist or have any questions regarding the environmental review process, please visit or call the Permit Center (425-452-6864) between 8 a.m. and 4 p.m., Monday through Friday (Wednesday, 10 to 4). Our TTY number is 425-452-4636.

INTRODUCTION
Purpose of the Checklist:

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

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Answer the questions briefly, with the most precise information known, or give the best description you can. You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the Planner in the Permit Center can assist you.
The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. Include references to any reports or studies that you are aware of which are relevant to the answers you provide. The City may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impacts.

Use of a Checklist for Nonproject Proposals: *A nonproject proposal includes plans, policies, and programs where actions are different or broader than a single site-specific proposal.*

For nonproject proposals, complete the Environmental Checklist even though you may answer "does not apply" to most questions. In addition, complete the Supplemental Sheet for Nonproject Actions available from Permit Processing.

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

Attach an 8½" x 11" vicinity map which accurately locates the proposed site.

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City of Bellevue Submittal Requirements	**27a**

ENVIRONMENTAL CHECKLIST

12/21/00

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BACKGROUND INFORMATION

Property Owner: **Eagle Horizon Limited**

Proponent: **Robert Hutchison**
4010 Whitman Avenue North
Seattle, WA 98103
(206) 545-1991

Contact Person: **Kenny Booth, The Watershed Company**
(If different from the owner. All questions and correspondence will be directed to the individual listed.)

Address: **750 Sixth Street South, Kirkland, WA 98033**

Phone: **(425) 822-5242**

Proposal Title: **Shoreland Drive Residence**

Proposal Location (Street address and nearest cross street or intersection) Provide a legal description if available:

Street Address:
701 SE Shoreland Drive
Bellevue, WA 98004

Parcel:
5627300180

Legal Description:
MOORLAND ADD LOT 2 TGW SH LDS ADJ OF BELLEVUE SP #81-24 R REC # 8302039001 SD SP DAF LOTS 1 & 2 BLK 4 & LOTS 1 & 2 BLK 11 & PORS VAC MOORLAND AVE & VAC AQUA AVE ADJ

Please attach an 8½" X 11" vicinity map that accurately locates the proposal site. **See last page.**

Give an accurate, brief description of the proposal's scope and nature:

1. General description: **The proposed project includes the demolition of the existing single-family residence, as well as the existing nonconforming accessory structure. The existing residence, which includes an attached carport, is located in the upland (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. After removal of both structures, construction of a new single-family residence, with an approximately 5,300 square feet footprint, would begin.**

   The new residence will be horseshoe-shaped to limit development on the steep slope. The eastern portion of the residence, comprised of two levels, will be positioned at the top of the steep slope in

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the area currently occupied by the existing residence and carport. Two separate attached garages are also to be located in this area. This upper portion of the residence will be attached to a connecting portion, approximately 30 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 25 feet in width.

2. Acreage of site: **The entire parcel is 22,890 square feet (0.52 acre).**

3. Number of dwelling units/buildings to be demolished: **One dwelling unit and one accessory structure will be demolished.**

4. Number of dwelling units/buildings to be constructed: **One single-family residence will be constructed.**

5. Square footage of buildings to be demolished: **The building envelope of the existing residence is approximately 1,160 square feet in size. The building envelope of the accessory structure is approximately 566 square feet.**

6. Square footage of buildings to be constructed: **The building envelope of the new residence will be approximately 5,300 square feet in size, while the conditioned space within the residence is approximated at 10,000 square feet (not including the garage).**

7. Quantity of earth movement (in cubic yards): **Cut: Approximately 850 CY /Fill: Approximately 250 CY**

8. Proposed land use: **No changes are proposed to the existing land use.**

9. Design features, including building height, number of stories, and proposed exterior materials: **Due to the steeply sloped nature of the site, the building height varies between one and three stories high depending on location on the site. In general, the building steps down with the slope of the site. Building height meets City of Bellevue height requirements per Handout L-11 "Calculating Building Height", treating the terraced building as a series of "building segments". Exterior materials are anticipated to include concrete, metal siding/roofing, and wood.**

10. Other

Estimated date of completion of the proposal or timing of phasing:

It is anticipated that an application for a building permit will be submitted to the City sometime late summer or early fall 2011. Demolition of the existing structures and construction of the new residence would begin immediately following issuance of the building permit. Demolition and site work will be coordinated with City of Bellevue moratorium requirements.

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

None at this time.

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

Critical Areas Report – Shoreland Drive Residence, Bellevue, WA. The Watershed Company. July 2011.
Preliminary Geotechnical Engineering Study. PanGeo, Inc. July 5, 2011.

Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. List dates applied for and file numbers, if known.

No other applications are pending for government approvals of other proposals directly affecting the subject property.

List any government approvals or permits that will be needed for your proposal, if known. If permits have been applied for, list application date and file numbers, if known.

1. Critical Areas Land Use Permit (City of Bellevue) – submitted concurrently with this SEPA Checklist
2. Shoreline Substantial Development Permit – submitted concurrently with this SEPA Checklist
3. Building Permit (City of Bellevue) – not yet applied

Please provide one or more of the following exhibits, if applicable to your proposal.
(Please check appropriate box(es) for exhibits submitted with your proposal):

- ☐ Land Use Reclassification (rezone)
  Map of existing and proposed zoning

- ☐ Preliminary Plat or Planned Unit Development
  Preliminary plat map

- ☐ Clearing & Grading Permit
  Plan of existing and proposed grading
  Development plans

- ☐ Building Permit (or Design Review)
  Site plan
  Clearing & grading plan

- ☑ Shoreline Management Permit
  Site plan

A. ENVIRONMENTAL ELEMENTS

1. EARTH

a. General description of the site (circle one): Flat Rolling Hilly **Steep slopes** Mountains Other:

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

Slopes on site are greater than 40%.

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

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.

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

According to PanGeo, Inc. there are no surface indications of unstable soils on the project site.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

All proposed cut and fill activities are associated with construction of a new single-family residence. Approximately 850 cubic yards of excavation will occur. An additional 250 cubic yards of fill will take place. Excavated soils will be reused on-site to the maximum extent feasible, as dictated by the project geotechnical consultant (PanGeo, Inc.).

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

Erosion could occur if exposed soils are mobilized by rainfall. Short-term erosion may occur in areas cleared of vegetation. However, any impacts would be short-term and the measures described below would help minimize erosion.

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

The proposed project would include approximately 7,000 square feet of impervious surfaces. This equates to approximately 30 percent of the total site area.

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

All clearing and grading construction would be in accordance with City of Bellevue Clearing & Grading Code (Chapter 23.76), permit conditions, and all other applicable codes, ordinances, and standards. As needed, the applicant will install temporary erosion and sedimentation control measures such as silt fencing. A silt fence would be installed around exposed soils as necessary to prevent slope instability or silt-laden water from leaving the site during rainfall events.

Further, erosion control will be conducted as recommended by PanGeo, Inc. recommendations include, "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."

2. AIR

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

Minimal emissions from vehicle trips and construction equipment would occur during site construction. After project completion, emissions to the air would occur from vehicle trips associated with a single-family residence.

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

No off-site sources of emissions or odor would affect the proposal.

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

Vehicles and construction equipment would be kept in good working order.

3. WATER

a. Surface:

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

The project site is located adjacent to Lake Washington. No other waterbodies are on or in the immediate vicinity of the site.

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

The entirety of the proposed project will occur within 200 feet of Lake Washington. However, no work will occur closer than approximately 25 feet from the ordinary high water mark of the lake. No structures are proposed closer than 50 feet from the ordinary high water mark.

Existing accessory structure to be demolished within 50 feet of OHWM.

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

None.

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

The proposal would not require surface water withdrawals or diversions.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

The proposal does not lie within a 100-year floodplain.

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

The proposal does not involve any discharges of waste materials to surface waters.

b. Ground

1. Will ground water be withdrawn, or will water be discharged to ground water? Give a general description, purpose, and approximate quantities if known.

No withdrawal of ground water or discharge of water to ground water would occur as part of this project.

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

No waste material from septic tanks or other sources would be discharged into the ground as part of this project.

c. Water runoff (including stormwater):

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

An increase in on-site impervious surfaces will result in an increase in storm water runoff. 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 600 to 700 square feet of bio-retention planter area and a roof area of 5,400 square feet, resulting in an approximately 11 to 13 percent planter sizing factor. Therefore, it is presumed that the proposed quantity of bio-retention planters should be adequate to accommodate all roof stormwater (per Surface Water Engineering Standards Table 6.13: Sizing Factors for On-site BMP's). In addition to bio-retention planters, the project proposes approximately 1,500 square feet of pervious pavement at the driveway entry courtyard. 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.

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

Waste materials would not enter ground or surface waters.

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

The erosion control measures described under question 1h would be implemented as necessary.

4. PLANTS

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

- ☒ deciduous tree: alder, maple, aspen, other
- ☒ evergreen tree: fir, cedar, pine, other
- ☒ shrub
- ☐ pasture
- ☐ crop or grain
- ☐ wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
- ☐ water plants: water lily, eelgrass, milfoil, other
- ☒ other types of vegetation

For a detailed list of vegetation found on the site, please see the Critical Areas Report – Shoreland Drive Residence, Bellevue, WA prepared by The Watershed Company (July 2011).

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

The primary type of vegetation to be removed is non-native invasive vegetation. Invasive species to be removed include English ivy, Himalayan blackberry, morning glory bindweed, and bamboo. A total of approximately 8,000 square feet of non-native vegetation will be removed. The proposed project also includes the removal of two trees. The most significant of the trees to be removed is a mature Douglas-fir in the center of the property. This particular tree measures greater than 40 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 remainder of the on-site existing trees will be preserved.

Fir tree proposed for removal is 60-inches in diameter per survey.

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

No threatened or endangered plant species are known to be on or near the site.

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

The proposal involves the planting of 6,300 square feet of native vegetation on the property. Proposed plantings include western red cedar, bitter cherry, vine maple, evergreen huckleberry, squashberry, lady fern, sword fern, salal, false solomon's seal, and kinnikinnick.

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5. ANIMALS

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

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other

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

Adult and juvenile chinook salmon and steelhead trout (listed as Threatened under the Federal Endangered Species Act) migrate through Lake Washington. Adults migrate upstream to reach spawning grounds; juveniles migrate downstream from their natal streams to reach the ocean. Lake Washington also contains coho salmon (Species of Concern under the Federal Endangered Species Act). Lake Washington potentially contains bull trout, a salmonid listed as Threatened under the Federal Endangered Species Act.

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

As described above, adult and juvenile salmon migrate up and downstream, respectively, through Lake Washington. Migrating waterfowl may use the lake as resting and foraging areas during spring and fall migrations.

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

The proposed project will enhance wildlife habitat through the removal of invasive species and the planting of native species within the project area.

6. ENERGY AND NATURAL RESOURCES

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

The forms of energy currently used for the existing residence will also be used for the proposed residence. Otherwise, no additional forms of energy will be necessary for the new residence.

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

The project would not affect the potential use of solar energy by adjacent properties.

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

Those types of energy conservation measures common to a new residence will most likely be incorporated.

7. ENVIRONMENTAL HEALTH

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

Typical hazards related to heavy equipment fuels and fires are associated with construction of the proposed project. After project completion, hazards would consist of those related to a single-family residence.

1) Describe special emergency services that might be required.

Emergency services are not anticipated at the site. In the unlikely event that an accident (spill, fire, other exposure) occurs involving toxic chemicals or hazardous wastes, the local Fire Department's Hazardous Materials Team would respond. If necessary, local medical services might also be required. The full range of safety and accident response supplies would be on-site to treat any emergency during construction. After project completion, emergency services would not be required, beyond those typical of a single-family residence.

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

Standard precautions would be taken to ensure the safety of the work crew. The construction manager would be contacted by a crew member immediately upon discovery of a spill. The construction manager would then ensure that the spill is cleaned up in the manner dictated by the chemical use instructions and would contact the appropriate authorities.

b. Noise

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

The type of noise in the area is that typical of a single-family neighborhood, and would not affect the project.

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

Noise associated with project construction would be restricted to use of excavating and grading equipment and house construction. Construction noise would be limited to normal daytime working hours. There would be no long-term noise associated with the completed project, other than that associated with typical residential waterfront use.

Noise regulated by BCC 9.18

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

As mentioned above, construction noise would be limited to daylight weekday hours. No other noise-control measures are necessary.

8. LAND AND SHORELINE USE

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

The current use of the site is single-family residential. The current use of properties immediately adjacent to the north, south, and east is also single-family residential. Lake Washington is located immediately west of the site.

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

The site has not been used for agriculture.

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c. Describe any structures on the site.

A single-family house, with attached carport, an accessory structure, and a dock are currently located on the site.

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

With the exception of the dock, all of the above mentioned structures are proposed for demolition.

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

The current zoning classification is R-2.5 (Single-Family Residential).

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

The current comprehensive plan designation is SF-M (Single Family, Medium Density).

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

Residential.

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

Steep slopes on the property have been classified as "environmentally sensitive" areas. Further, Lake Washington is also considered an "environmentally sensitive" area.

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

The new residence will be home to one family.

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

No people would be displaced as a result of this project.

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

No measures are necessary.

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

This project does not affect existing land use.

9. HOUSING

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

A newly constructed single-family residence will replace an existing single-family residence.

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

One unit will be eliminated. However, as part of the proposed project, a new unit will be built to replace the existing unit that is to be eliminated.

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

No measures are necessary.

10. AESTHETICS

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

The top height of the proposed residence will be no greater than 30 feet above average finished or existing grade elevation for each building segment, in keeping with City of Bellevue height requirements. The residence's principle exterior materials will be concrete, metal, and wood.

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

The proposed project calls for a newly constructed residence that will replace an outdated residence. The entirety of the new residence will be located below the top of the slope at the eastern edge of the site. Therefore, views from the east will not be obstructed by the residence. Further, the existing residence located on the adjoining north site is located much closer to the shoreline than the proposed residence for this project, thus no impact on their views are anticipated. The adjoining south property contains two structures; removal of the existing accessory structure for this project will improve views from the south property looking towards the lake. To further minimize 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 south property line).

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

No such measures are necessary.

11. LIGHT AND GLARE

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

Light or glare may slightly increase as a result of the construction of a large residence.

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

No.

c. What existing off-site sources of light or glare may affect your proposal?

The only potential off-site source of glare is the lake itself. Lake Washington may reflect the sun during late afternoon and evening hours.

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

The potential reflections of glare off Lake Washington are natural and potential increases in glare from the new residence would be insignificant. Therefore, no reduction measures will be necessary

12. RECREATION

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

Lake Washington provides boating, swimming, fishing and wildlife viewing opportunities. Chism Beach Park is located approximately 0.25 mile south of the project site.

b. Would the proposed project displace any existing recreational uses? If so, describe.

The proposed project would not displace any existing recreational uses.

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

No such measures are necessary.

13. HISTORIC AND CULTURAL PRESERVATION

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

No such places or objects are known to be on or next to the site.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

No such landmarks or evidence is known to be on or next to the site.

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

Should historic, archeological, scientific or culturally significant items be encountered during implementation of this project, work would be temporarily stopped while the appropriate agencies are notified.

14. TRANSPORTATION

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

The site is currently accessed via SE 11th Street. Site access would not be changed as a result of the proposed project.

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

The nearest King County Metro transit stop is located at the corner of 104th Avenue SE and SE 16th Street, approximately one mile away.

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

This project would eliminate an existing carport which provides four parking spaces. The newly constructed residence will include a garage for up to four vehicles.

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

The proposal would not require any new roads or streets, or improvements to existing roads or streets.

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

Water, rail, or air transportation would not be utilized by the completed project.

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

The proposed project would not create any additional vehicle trips above those already generated by the existing residence. No increase in traffic generation is expected.

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

No such measures are necessary.

15. PUBLIC SERVICES

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

No increase in public service needs would result from this project. In a June 30, 2011 meeting with City of Bellevue Utility Review Coordinator Robert Lombard and Fire Department Plan Reviewer Adrian Jones, the City was notified that the residence will be fully sprinklered. Water pressure at the site is more than adequate for a sprinkler system (148 psi). The closest fire hydrant (#124451) is located approximately 150 feet from the driveway entrance.

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

No such measures are necessary.

16. UTILITIES

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

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

No new utilities are proposed as part of the project.

Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature 

Kenny Booth, AICP
Associate Planner

Date Submitted: July 18, 2011

Critical Areas Report

Shoreland Drive Residence - Bellevue, WA

JULY 2011

Prepared for:

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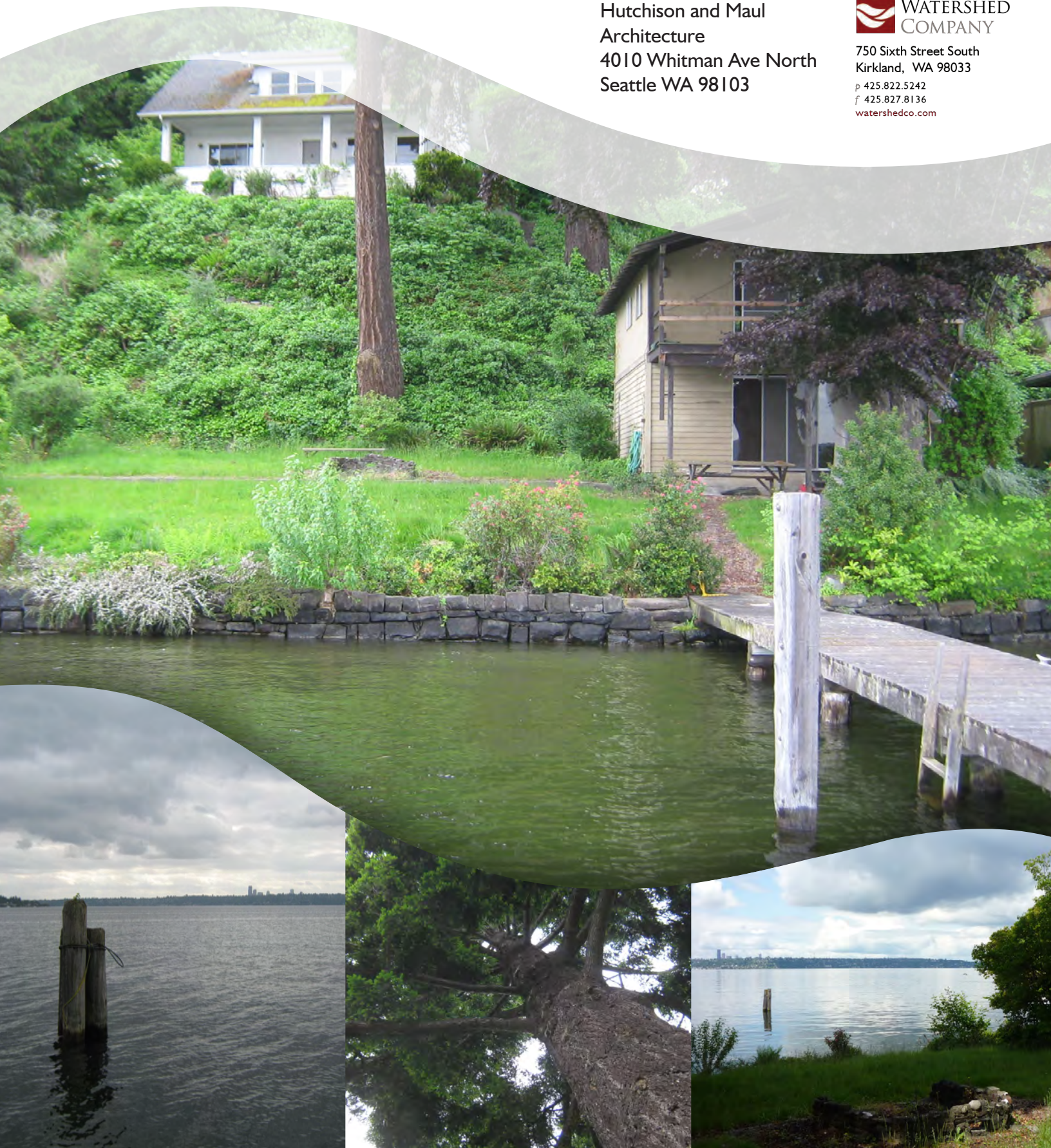

CRITICAL AREAS REPORT

Shoreland Drive Residence – Bellevue, WA

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110207

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

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LIST OF EXHIBITS

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. 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.

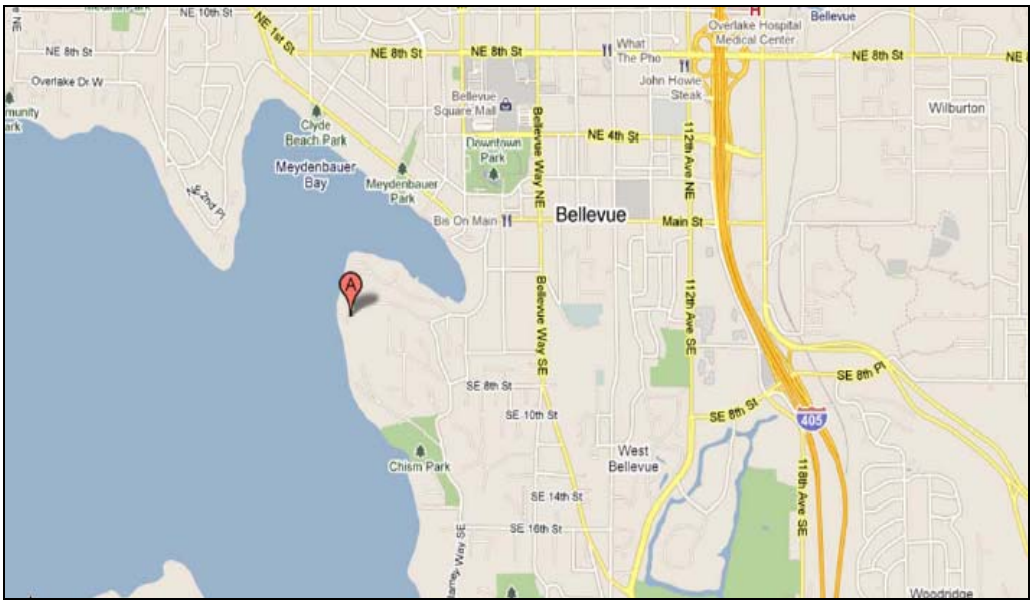


Figure 1. Vicinity Map.

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 occasional use by perching eagles may occur. Eagle nests are most commonly built near the tops of tall trees. 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. Signed documentation of compliance with these recommendations is included with this report.

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. Steep slope, steep slope buffer, and steep slope 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 removing invasive plant species and 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. After removal of both structures, construction of a new single-family residence would begin.

The new residence will be horseshoe-shaped to limit development on the steep slope. The eastern portion of the residence, approximately 25 feet in width, will be positioned at the top of the steep slope in the area currently occupied by the existing residence and carport. Two separate attached garages are also to be located in this area. This upper portion of the residence will be attached to a connecting portion, approximately 30 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 25 feet in width. Due to the steeply sloped nature of the site, the building height varies between one and three stories high depending on location on the site. In general, the building steps down with the slope of the site in a series of building segments (following the City's 'Calculating Building Height' Handout L-11). The building also steps down from the north to south of the property to provide natural light into the courtyard for vegetation and passive solar gain to the residence, and to reduce impacts to views for the southern neighbor. To further minimize 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 views are impacted to the northern neighbor since the residence on that property is located significantly to the west (closer to the water) than the proposed project, and existing trees will conceal the proposed residence from the residence to the north.

The proposed project includes the removal of two 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 greater than 40 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 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 5,300 square feet, would be compatible with existing shoreline residences within the neighborhood.

Alternatives Considered

Alternatives designs were considered in an attempt to further limit impacts to the steep slope critical area, buffer, and setback. Alternatives included:

1. Limiting development to the existing residence footprint, and to the top of the slope, while keeping the existing accessory structure along the shoreline. This alternative results in a buildable area much smaller than that required to construct a residence compatible with the existing neighborhood. This alternative also results in the continuance of a nonconforming accessory structure within the shoreline setback.

2. Limiting development to the existing residence footprint, and to the top of the slope, while constructing a new accessory structure at the toe of the slope. This alternative results in a buildable area smaller than that required to construct a residence compatible with the existing neighborhood. It also results in the creation of a new accessory building, which generally, the City does not support modification of buffers and setbacks to allow for the construction of a new accessory structure.

Therefore, the proposed design is the preferred alternative.

As mitigation for placing a portion of the new residence within the critical area, buffer, and setback, 6,300 square feet on the property will be enhanced within the steep slope, buffer, and setback (Appendix A). Enhancement will consist of planting native trees, shrubs and groundcover. Restoration will occur in areas currently occupied by non-native vegetation and structures. Proposed species for planting include western red cedar, bitter cherry, vine maple, evergreen huckleberry, squashberry, sword fern, lady fern, salal, false solomon's seal, and kinnikinnick. The proposed restoration will provide an additional level of protection for the critical area and will offset the addition of 2,392 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. New structures/impervious surfaces within the steep slope critical area will total 2,392 square feet while new structures/ impervious surfaces within the steep slope critical area, buffer, and setback combined will total 5,491 square feet. However, a total of 6,300 square feet of native vegetation will be planted within the steep slope critical area, buffer, and setback. 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 (Sq. Ft.)
Steep Slope Critical Area	2,392	4,180
50' Top of Slope Buffer	1,632*	1,686
75' Toe of Slope Setback	1,467	434
Total	5,491	6,300

*Per LUC 20.25H.035(B), this doesn't include the footprint of the existing primary structure.

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

area. 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.	Remove invasive species and enhance/restore with native trees and shrubs.	Water Quality will be maintained. New native plantings will help to filter storm water prior to it reaching receiving waters.
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.	Remove one >24" dbh Douglas-fir and one 12" dbh Pacific dogwood; all other significant trees to remain. Remove invasive species and enhance/restore habitat with native trees and shrubs.	Yes, while one significant perch tree will be removed, 6,969 square feet of new native plantings will provide a net increase in species and structural diversity and provide organic matter and foraging opportunities for terrestrial wildlife.
Net Condition	Degraded critical areas and associated buffer.	Invasive species are removed throughout the steep slope and buffer; native trees, shrubs, and groundcover are planted in the steep slope and buffer.	Habitat restored with an increase in native vegetation; filtering of stormwater by native plantings; improved slope stability, increased habitat complexity, and an increase in organic material to the food chain.

6 CRITICAL AREAS REPORT CRITERIA

As previously mentioned, steep slope critical areas, steep slope buffers, and steep slope 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. 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 proposal includes restoration of the critical area with native plantings as mitigation for the addition of 2,392 square feet of new structural/impervious coverage within the steep slope critical area and a total of 5,491 square feet of new structural/impervious coverage within the steep slope critical area, buffer and setback combined. Restoration will consist of planting 6,300 square feet of native trees, shrubs, and groundcover within the steep slope critical area, buffer, and setback. 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, buffer, and setback. Compliance with the relevant critical areas report criteria listed in LUC 20.25H.250(B) is addressed below.

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 applicant proposes to construct a new single-family residence within portions of the critical area, buffer, and 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 and the included documentation.

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.

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;

See 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, buffer, and setback. Under strict application of the code, the footprint of the existing residence could be utilized for a new

home. However, at approximately 1,160 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 would remain in their existing degraded condition and no restoration would occur. Other than remaining free of any additional structure, the critical area would remain void of any significant native vegetation that would help to improve ecological functions over existing conditions.

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 critical area and buffer, and improved slope stability. [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 critical area and buffer. 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. Restoration will involve the planting of 6,300 square feet 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. A monitoring and maintenance plan for the proposed mitigation area is also included in this report. Overall, a net gain in critical area functions is proposed. Therefore, modification of the on-site critical area, 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 steep slope critical area, buffer, and setback. 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. Further, impacts to the shoreline buffer and structure setback have been avoided entirely. Finally, the applicant has compensated for impacts to the critical area 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.

To allow a steep slope critical area 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 steep slope critical area, buffer, and setback modification 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. Restoration will involve planting 6,300 square feet of native vegetation (trees, shrubs, and groundcover) within the critical area and buffer. The planting layout incorporates a diversity of native plant species.

   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. 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 three-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 three years following implementation. Furthermore, to ensure that the proposed plantings are installed and that the three-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 buffer 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 Table 2.

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, 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.

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 600 to 700 square feet of bio-retention planter area and a roof area of 5,400 square feet, resulting in an approximately 11 to 13 percent planter sizing factor. Therefore, it is presumed that the proposed quantity of bio-retention planters should be adequate to accommodate all roof stormwater (per Surface Water Engineering Standards Table 6.13: Sizing Factors for On-site BMP's). In addition to bio-retention planters, the project proposes

approximately 1,500 square feet of pervious pavement at the driveway entry courtyard. 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 and steep slope buffer, these innovative 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 to modify the on-site steep slope critical area, buffer, and setback. 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 Critical Areas Land Use Permit.

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 critical area and buffer impacts of the proposed residence, the existing degraded critical area, buffer, and setback will be restored with native plantings.

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, alternative designs were considered in an attempt to further limit impacts to the critical area and buffer. However, the slopes and buffer encumber a majority of the site and some level of critical area intrusion is necessary to construct a residence compatible with other residences within the surrounding neighborhood. The project has been designed to avoid impacting the on-site shoreline buffer and shoreline setback. Innovative design techniques include a non-standard home configuration, utilization of approximately 1,500 square feet of pervious pavement at the driveway

entry courtyard, and bio-retention planters as a means of capturing stormwater runoff from the roof. These development techniques, coupled with 6,300 square feet of native restoration, 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.

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;*

The structures and improvements will be designed to minimize alterations to the natural contour. Specifically, the majority of development has been

sited at the top and toe of the slope. See the PanGeo, Inc. report for additional details regarding recommended foundations.

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.

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

The proposed improvements will not have an adverse impact on neighboring properties.

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;*

The existing natural slopes outside of the new improvement areas (building and walls) will be maintained and no artificial slopes are planned for the project.

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; utilization of approximately 1,500 square feet of pervious pavement at the driveway entry courtyard; and bio-retention planters 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;*

Building foundation walls will be utilized to the maximum extent possible for the project.

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;*

The new building foundations will be designed and constructed to follow the existing site topography as much as possible by using stepped foundations or piles, which would minimize site topographic modifications.

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*

The parking areas and garage will be constructed on existing developed areas and no new fills are proposed to support the parking areas and garages.

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.

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;*

Proposed site improvements will not increase the threat of geological hazard to adjacent properties, as compared with the standard application of the code. Construction on the steep slope will utilize the best available design techniques and proposed restoration of the remainder of the slope will provide increased slope stability through the planting of native trees and shrubs with deep root systems.

B. *Will not adversely impact other critical areas;*

The proposed project will not adversely impact other critical areas. The only other critical area within proximity of the site is Lake Washington. As demonstrated earlier in this report, proposed restoration will maintain stormwater functions within the slope, allowing filtration of stormwater adjacent to the lake and also by helping to remove pollutants from stormwater on the slope. Further, stormwater runoff originating from the roof of the residence will be directed to bio-retention planters to ensure infiltration occurs onsite.

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;*

The proposed project will be designed to mitigate the threat of hazard to a level at least equal to the threat that would exist with the standard application of the code. Construction on the steep slope will utilize the best available design techniques and proposed restoration of the remainder of the slope will provide increased slope stability through the planting of native trees and shrubs with deep root systems. See also accompanying geotechnical report by PanGeo, Inc.

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

See accompanying geotechnical report by PanGeo, Inc.

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 accompanying geotechnical report by PanGeo, Inc.

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

Final design of the proposed project will comply with all BMPs, construction techniques and other recommendations as outlined by PanGeo, Inc.

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.

See Section 2 for a discussion of impacts to habitat associated with species of local importance.

7 VEGETATION MANAGEMENT OBJECTIVES

The management objective is to replace functions and values provided by removed native trees. A total of two significant trees are proposed for removal from the site. The trees are a mature Douglas-fir and a Pacific dogwood. As mitigation for tree removal, a total of three western red cedar trees and 81 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 shrub and 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. Establish new, native sapling trees on the property.
2. Reduce invasive weed cover, specifically remove non-native English ivy and Himalayan blackberry from the restoration area.
3. Increase native plant density per the planting plan (see Appendix A).
4. Maintain existing habitat features; specifically preserve and protect existing native vegetation to the greatest extent feasible.
5. Properly mulch and irrigate installed plants to help them become established (see Appendix A).
6. Achieve 100 percent survival of all installed plants in the first year.

7.2 Long-term Objective

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

The long-term objective should be substantially achieved when the projected stated performance standards (Section 8.2.2) are met.

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 Maintenance

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 and Three Maintenance

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 three. 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 on-site steep slope critical area and buffer. 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 planting of 6,300 square feet of native trees, shrubs and groundcover within the steep slope critical area, buffer, and setback. The restoration plan can be found in Appendix A. Species include western red cedar, bitter cherry, vine maple, evergreen huckleberry, squashberry, sword fern, lady fern, salal, false solomon's seal, and kinnikinnick.

8.2 Maintenance and Monitoring Plan

Appendix A includes details of the 3-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 support little invasive or noxious weed cover.

3) Increase cover, forage, and refuge habitat for amphibians, small mammals, invertebrates, and 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 3, 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.

3) Species diversity: Establish at least two native shrub species by Year 3. Native volunteer species may count towards this standard. Establish at least three western red cedar trees and at least ten 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 three 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 and Year-3 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** (84 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 and 3 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: 84 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 three 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. <u>At least twice yearly,</u> 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 3.
   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 3.
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.

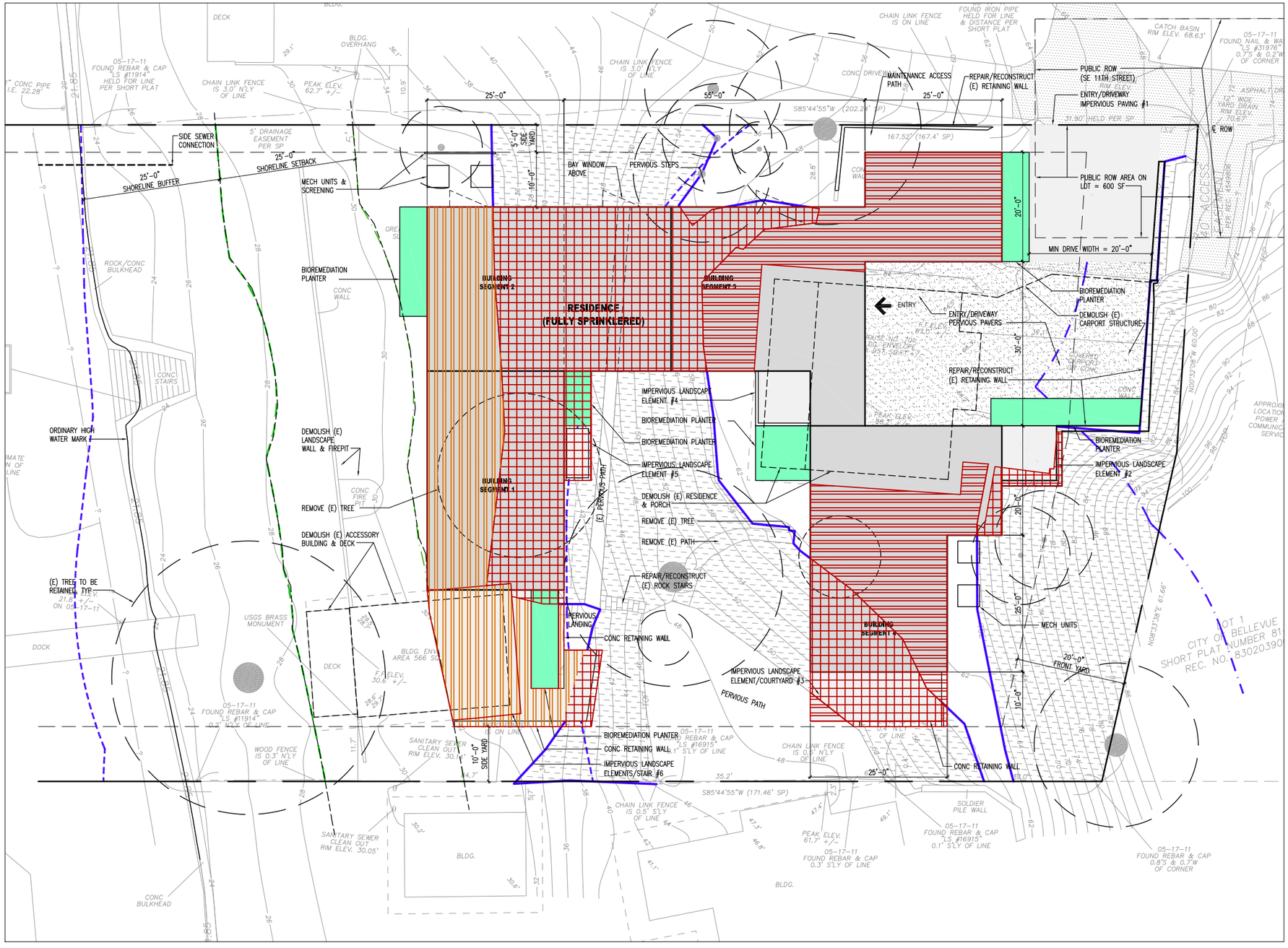
9 SUMMARY

Construction of a new single-family residence within a steep slope critical area, buffer, and setback is proposed. The proposal includes the addition of 2,392 square feet of new structural/impervious coverage within the steep slope critical area and a total of 5,491 square feet of new structural/impervious coverage within the steep slope critical area, buffer, and setback combined. Remaining areas of the critical area, buffer, and setback currently covered in non-native vegetation, will be restored with native vegetation. A total of 6,300 square feet of native restoration is proposed. Native species include western red cedar, bitter cherry, vine maple, evergreen huckleberry, squashberry, sword fern, lady fern, salal, false solomon's seal, 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
- BIOREMEDIATION PLANTERS

IMPACT LEGEND

NEW STRUCTURE AND/OR IMPERVIOUS SURFACE IN STEEP SLOPE	2,392 SF
NEW STRUCTURE AND/OR IMPERVIOUS SURFACE IN 50'-0" TOP OF SLOPE BUFFER	1,632 SF
NEW STRUCTURE AND/OR IMPERVIOUS SURFACE IN 75'-0" TOE OF SLOPE SETBACK	1,467 SF
TOTAL NET NEW IMPACT	5,491 SF

SHEET INDEX

STEEP SLOPE & BUFFER, IMPACTS 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

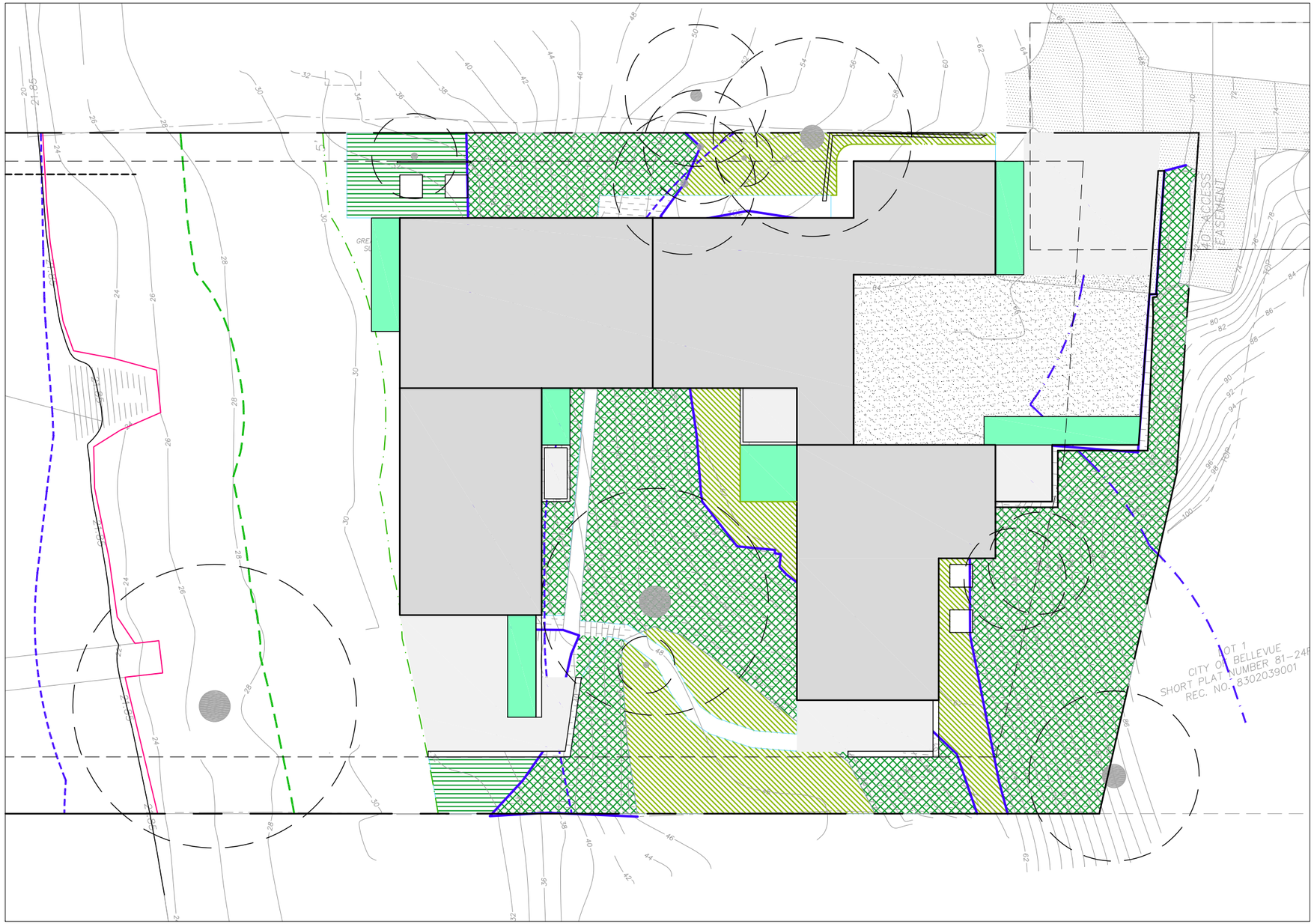
THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242 f 425.827.8136
www.watershedco.com
Science & Design

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)

STEEP SLOPE & BUFFER, IMPACTS LAYOUT

EV1.1



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
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Science & Design

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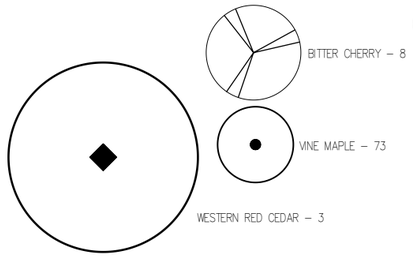
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)

MITIGATION LAYOUT

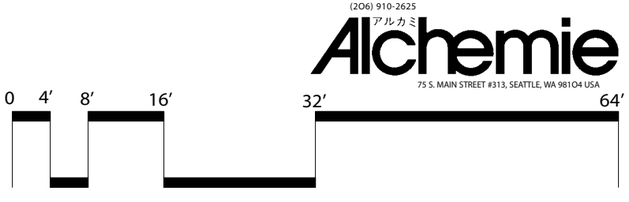
EV1.2

WANG/CHEN MITIGATION PLANT SCHEDULE

	QUANTITY	SCIENTIFIC NAME	COMMON NAME	SPACING	SIZE	CONDITION
TREES	73	ACER CIRCINATUM	VINE MAPLE	6' O.C.	5 GALLON	CONTAINER
	8	PRUNUS EMARGINATA	BITTER CHERRY	8' O.C.	5 GALLON	CONTAINER
	3	THUJA PLICATA	WESTERN RED CEDAR	14' O.C.	10 GALLON	CONTAINER
SHRUBS	31	VACINNIUM OVATUM	EVERGREEN HUCKLEBERRY	42" O.C.	2 GALLON	CONTAINER
	33	VIBURNUM EDULE	SQUASHBERRY	12" O.C.	2 GALLON	CONTAINER
PERENNIALS	118	ATHERIUM FELIX FEMINA	LADY FERN	24" O.C.	1 GALLON	CONTAINER
	298	POLYSTICHUM MUNITUM	SWORD FERN	24" O.C.	1 GALLON	CONTAINER
GROUND COVERS	156	ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	24" O.C.	2"-3" POTS	CONTAINER
	454	GAUTHERIA SHALLON	SALAL	30" O.C.	1 GALLON	CONTAINER
	58	MAIANTHEMUM RACEMOSUM	FALSE SOLOMON'S SEAL	24" O.C.	2"-3" POTS	CONTAINER



HUCKLEBERRY – 31
SQUASHBERRY – 33
SWORD FERN – 298
LADY FERN – 118
SALAL – 2,842 SQ FT
FALSE SOLOMON'S SEAL – 233 SQ FT
KINNIKINNICK – 624 SQ FT



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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)

MITIGATION PLANTING PLAN

EV1.3

VEGETATION MANAGEMENT OBJECTIVES

THE MANAGEMENT OBJECTIVE IS TO REPLACE FUNCTIONS AND VALUES PROVIDED BY REMOVED NATIVE TREES. A TOTAL OF TWO SIGNIFICANT TREES ARE PROPOSED FOR REMOVAL FROM THE SITE. THE TREES ARE A MATURE DOUGLAS-FIR AND A PACIFIC DOGWOOD. AS MITIGATION FOR TREE REMOVAL, A TOTAL OF THREE WESTERN RED CEDAR TREES AND 81 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 SHRUB AND GROUNDCOVER SPECIES AS MITIGATION FOR STEEP SLOPE CRITICAL AREA, BUFFER, AND SETBACK IMPACTS ASSOCIATED WITH CONSTRUCTION OF THE NEW RESIDENCE.

SHORT-TERM OBJECTIVES

- 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.

LONG-TERM OBJECTIVES

ESTABLISH NATIVE TREES ALONG THE STEEP SLOPE 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:

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.

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.

YEARS TWO AND THREE

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 THREE. 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

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 ON-SITE STEEP SLOPE CRITICAL AREA AND BUFFER. 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 PLANTING OF 6,300 SQUARE FEET OF NATIVE TREES, SHRUBS AND GROUNDCOVER WITHIN THE STEEP SLOPE CRITICAL AREA, BUFFER, AND SETBACK. THE RESTORATION PLAN CAN BE FOUND IN APPENDIX A. SPECIES INCLUDE WESTERN RED CEDAR, BITTER CHERRY, VINE MAPLE, EVERGREEN HUCKLEBERRY, SQUASHBERRY, SWORD FERN, LADY FERN, SALAL, FALSE SOLOMON'S SEAL, AND KINNIKINNICK.

MAINTENANCE AND MONITORING PLAN

APPENDIX A INCLUDES DETAILS OF THE 3-YEAR MAINTENANCE AND MONITORING PLAN, ALSO DETAILED BELOW.

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 3, 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.
3) SPECIES DIVERSITY: ESTABLISH AT LEAST TWO NATIVE SHRUB SPECIES BY YEAR 3. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS STANDARD. ESTABLISH AT LEAST THREE WESTERN RED CEDAR TREES AND AT LEAST TEN 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.).

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 THREE 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 AND YEAR-3 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.

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.

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** (84 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.

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 AND 3 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: 84 CUBIC YARDS.

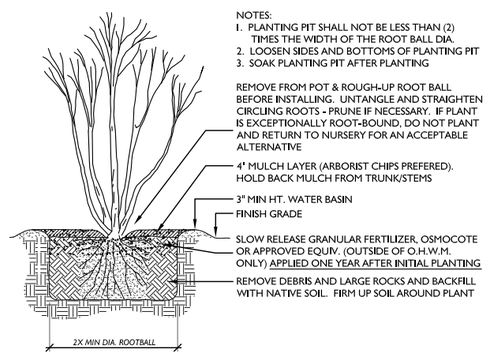
CONTINGENCIES

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.

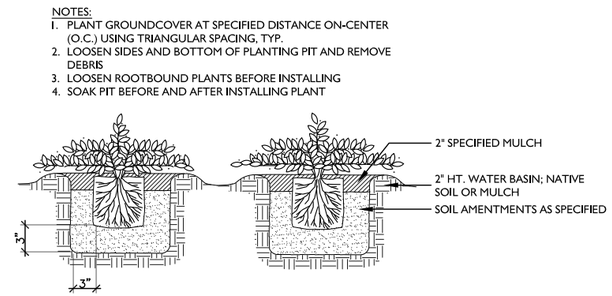
MAINTENANCE

THE SITE WILL BE MAINTAINED IN ACCORDANCE WITH THE FOLLOWING INSTRUCTIONS FOR THREE 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 3.
   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 3.
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

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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)

MITIGATION NOTES

EV1.4

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
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Tel (206) 262-0370
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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.

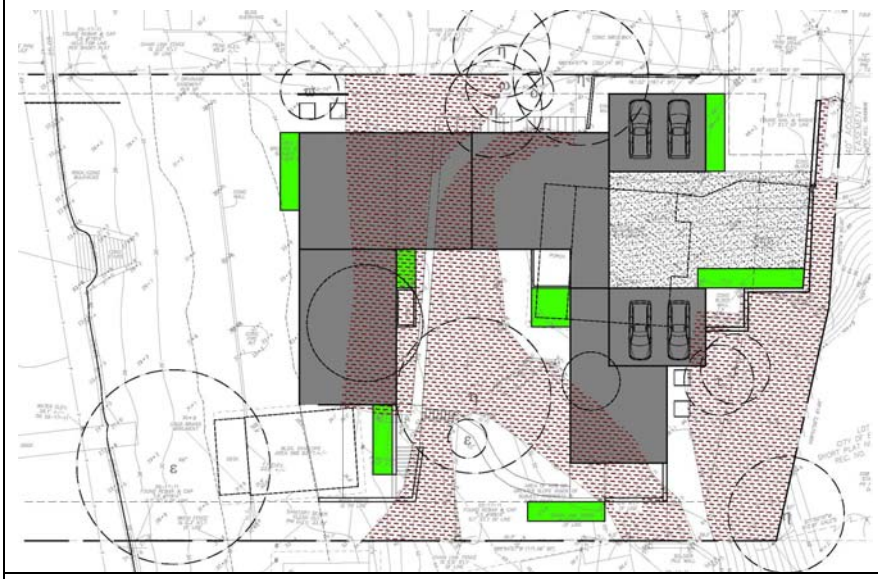


Plate 3. Conceptual site plan provided by the architect dated June 30, 2011.

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.

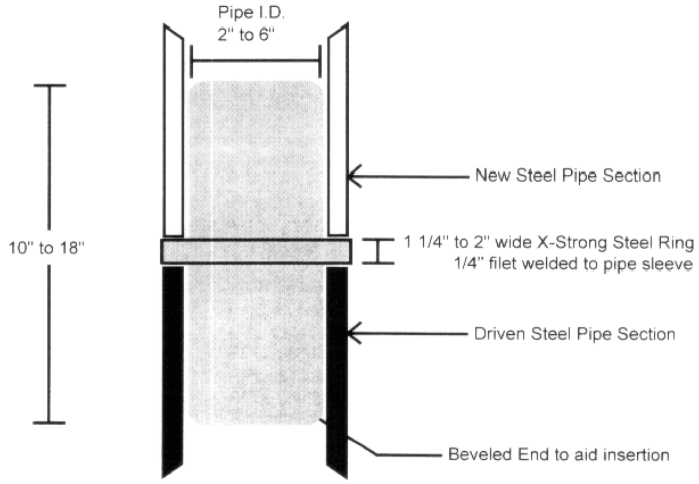
The quality of a pin pile foundation is dependent in part on the experience and professionalism of the installation company. Therefore, a qualified contractor with pin pile driving experience on similar projects should be selected to install the piles. We recommend that the following specifications be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

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.*

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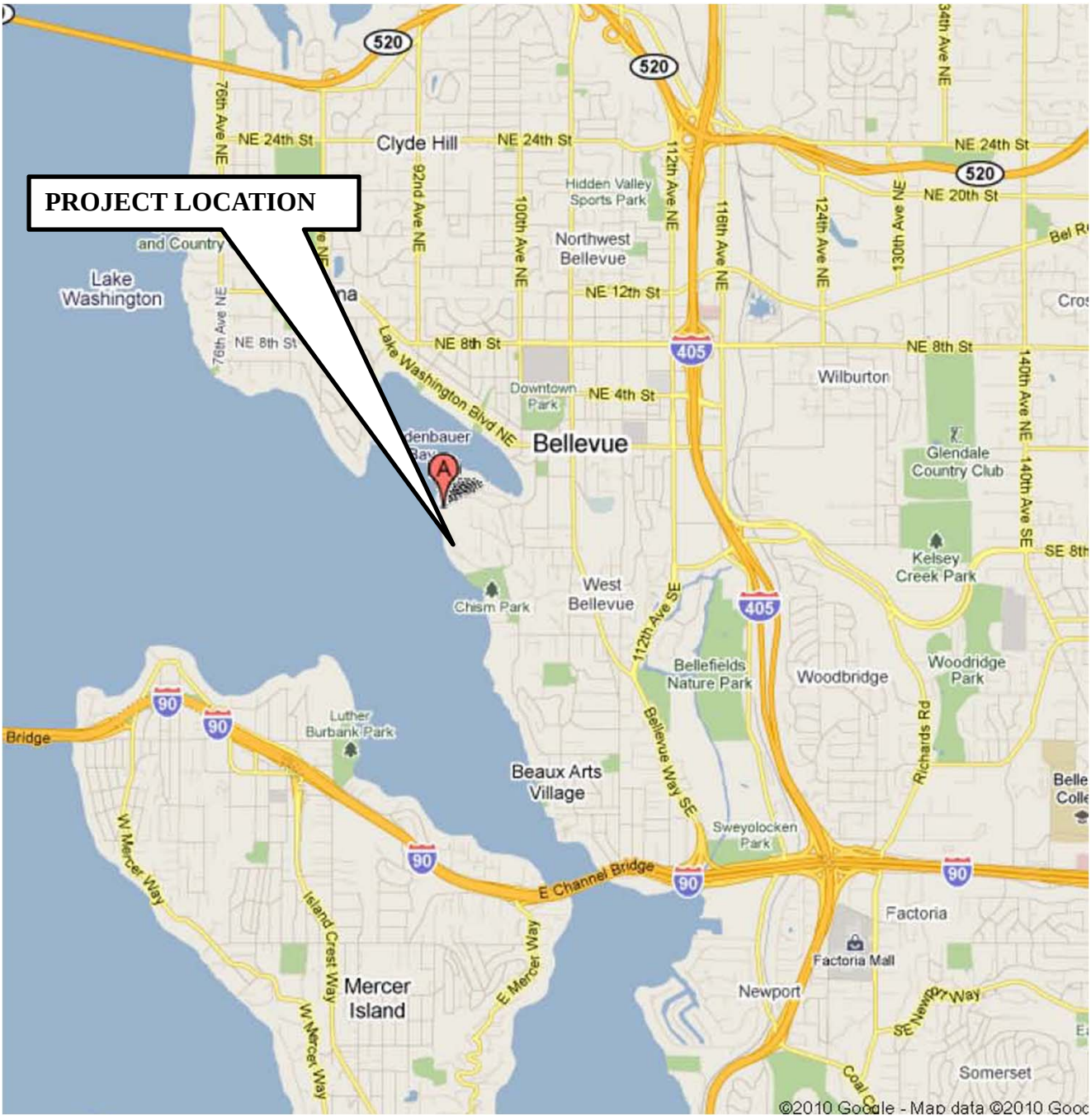
WSDOT, 2010, *Standard Specifications for Road, Bridges, and Municipal Construction.*



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Reference: Google Map

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

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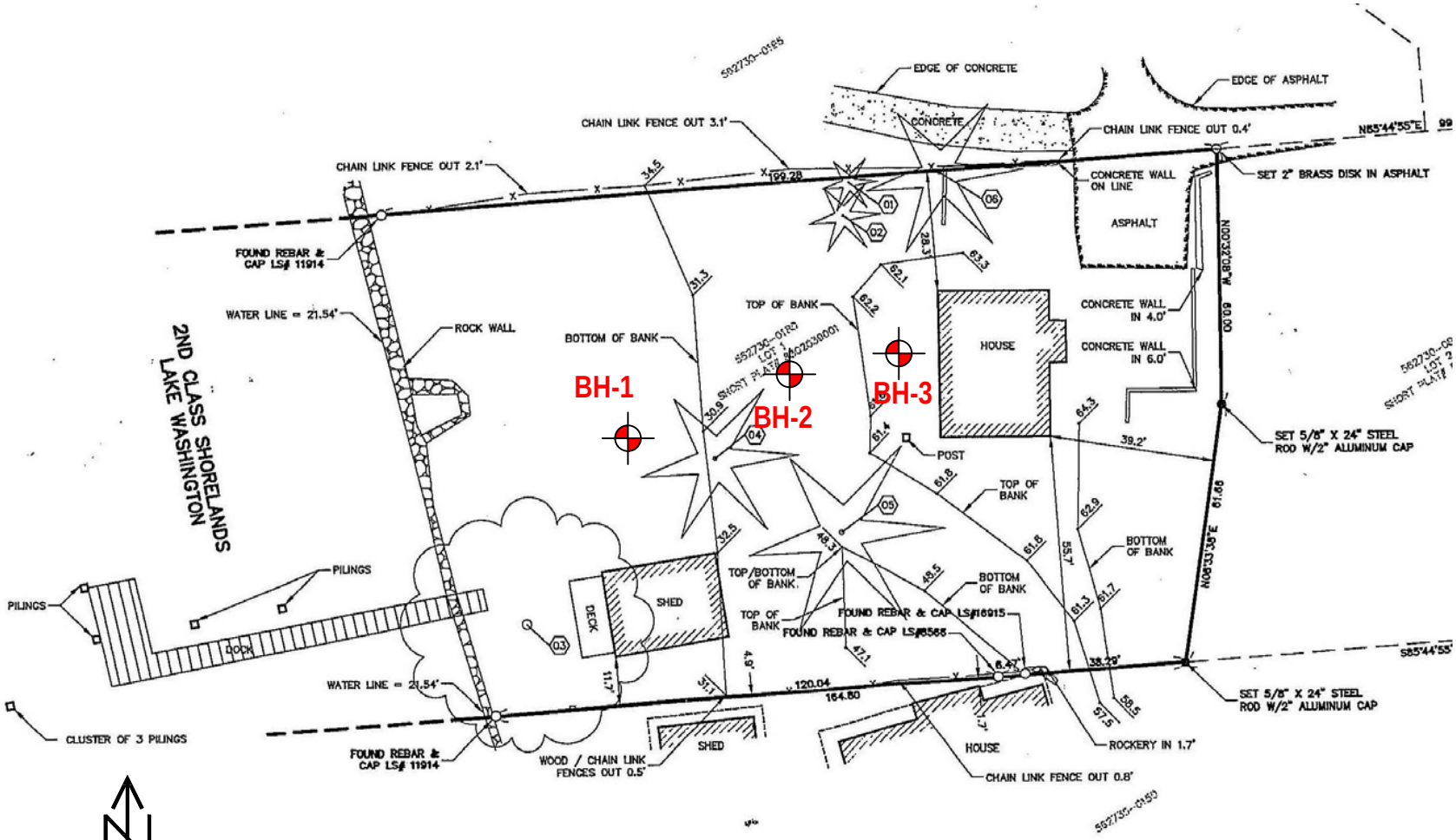

Approx. Scale
1" = 40'

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

Laminated: Layers of soil typically 0.05 to 1mm thick, max. 1 cm

Lens: Layer of soil that pinches out laterally

Interlayered: Alternating layers of differing soil material

Pocket: Erratic, discontinuous deposit of limited extent

Homogeneous: Soil with uniform color and composition throughout

Fissured: Breaks along defined planes

Slickensided: Fracture planes that are polished or glossy

Blocky: Angular soil lumps that resist breakdown

Disrupted: Soil that is broken and mixed

Scattered: Less than one per foot

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

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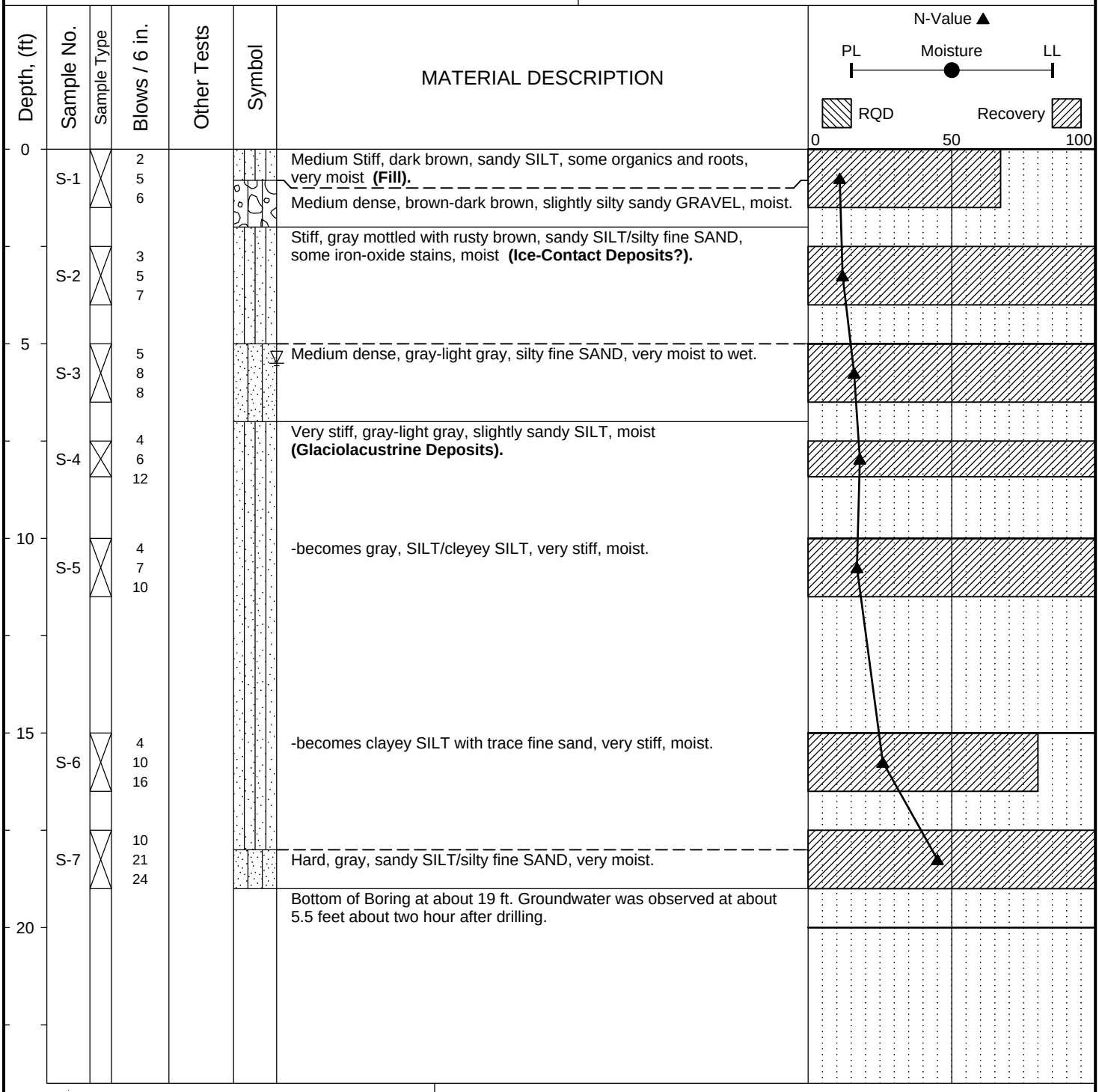
Phone: 206.262.0370

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



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.

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Phone: 206.262.0370

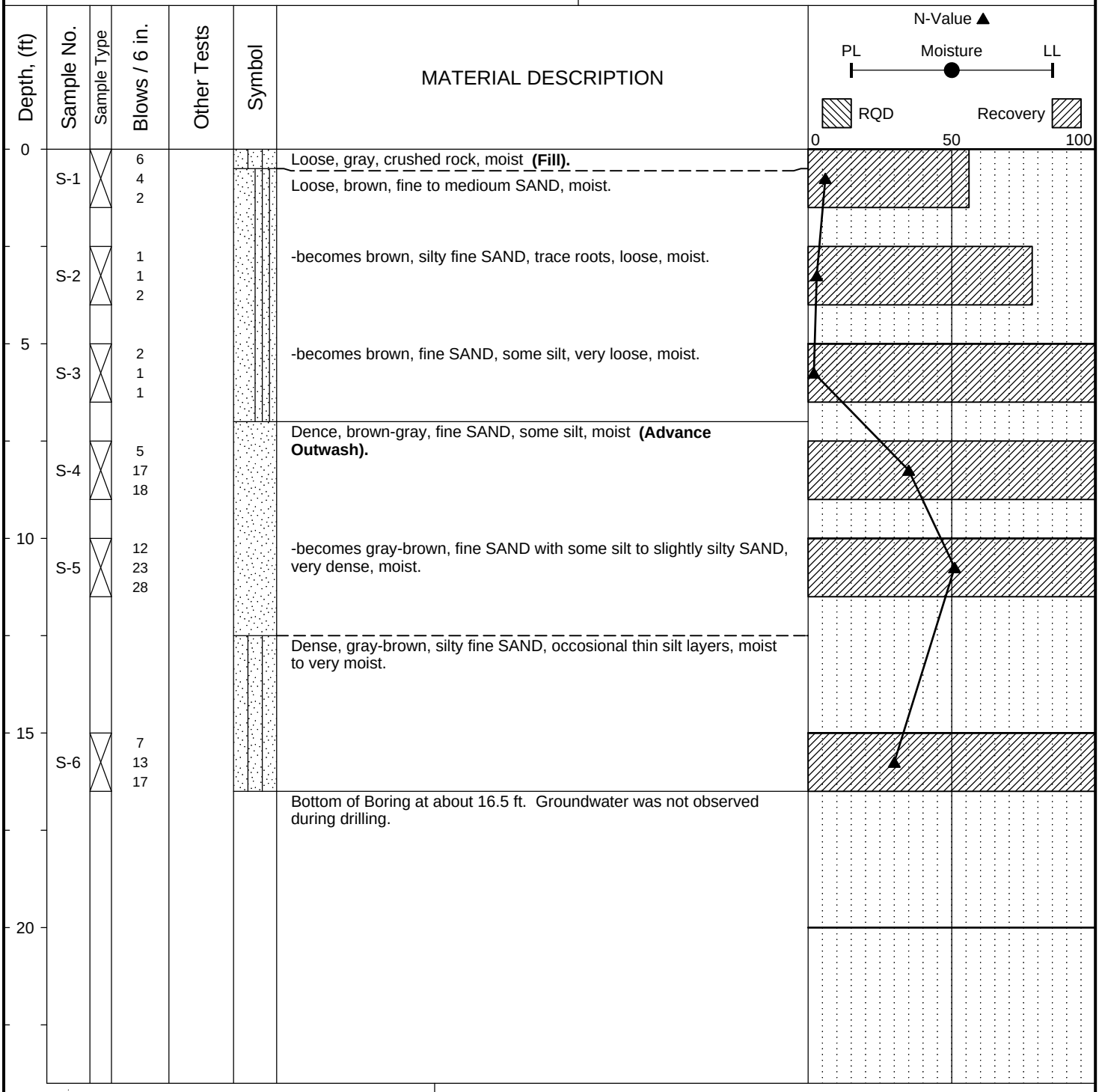
LOG OF TEST BORING BH-1

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



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

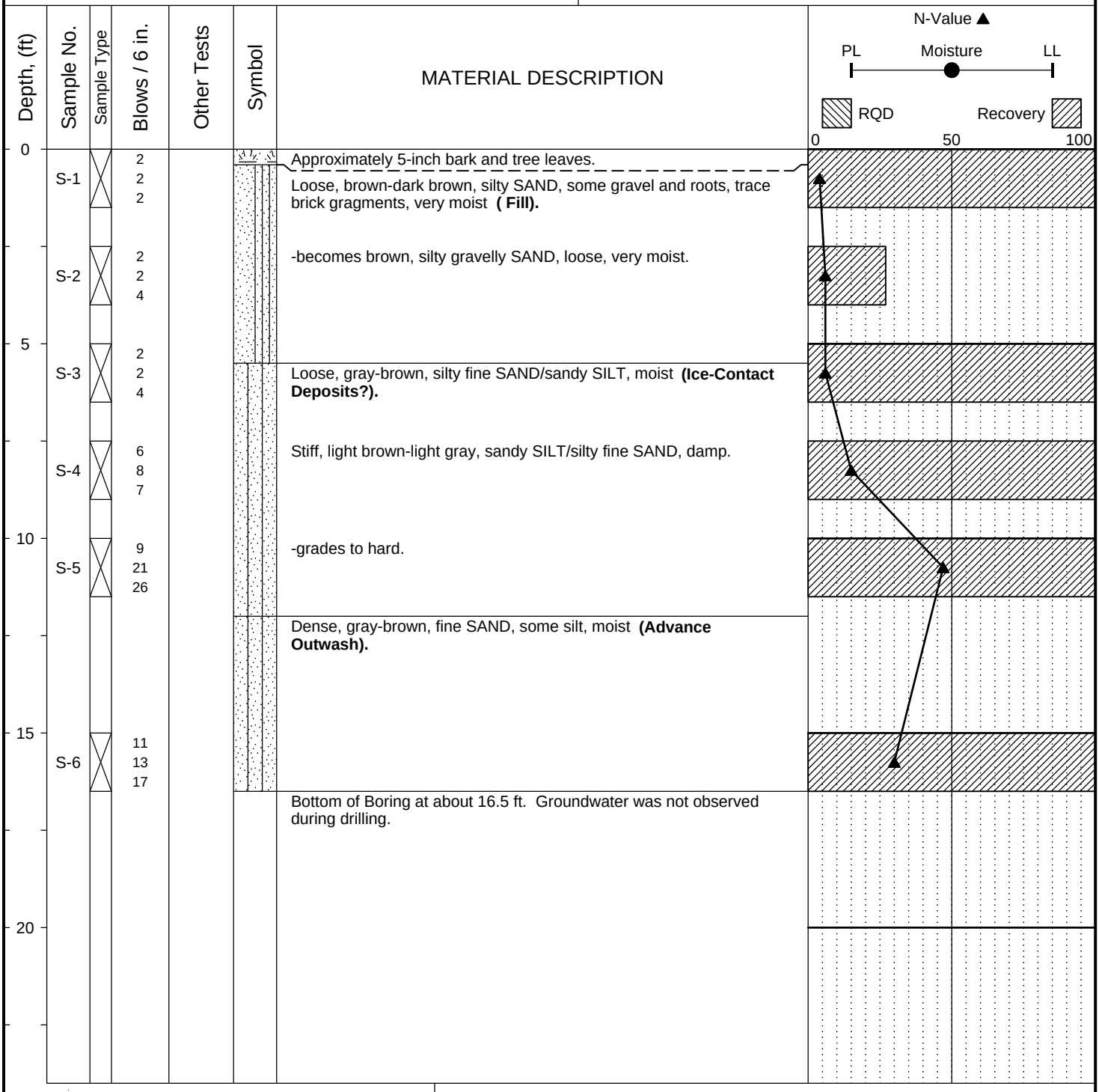
LOG OF TEST BORING BH-2

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



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

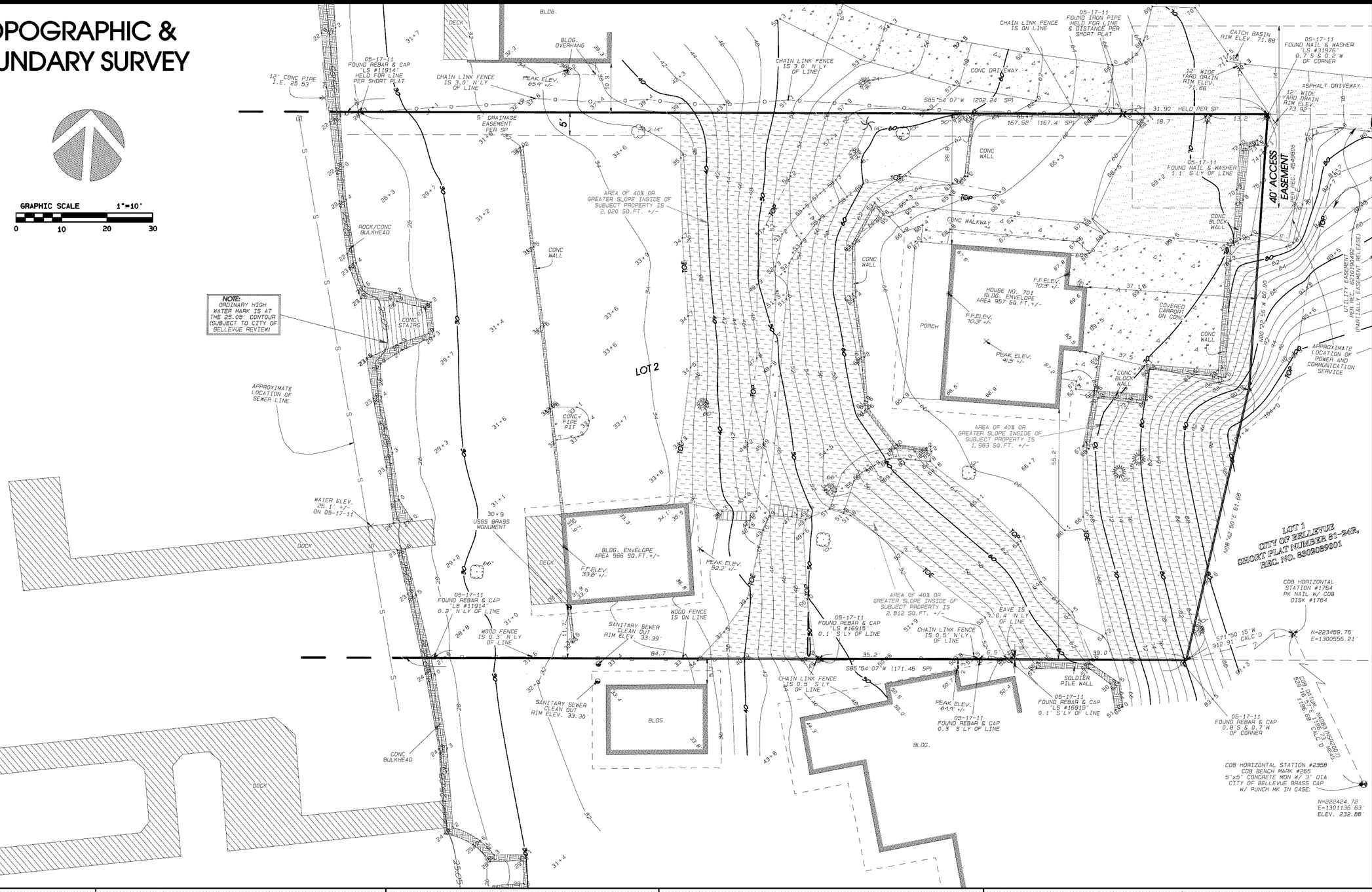
Figure 6

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

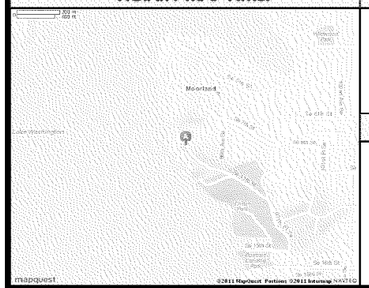
LOG OF BOREHOLE 11-016 BORING LOGS.GPJ PANGEO.GDT 2/25/11

TOPOGRAPHIC & BOUNDARY SURVEY

GRAPHIC SCALE 1"=10'
0 10 20 30



VICINITY MAP N.T.S.



LEGAL DESCRIPTION

LOT 2, CITY OF BELLEVUE SHORT PLAT NUMBER 81-24R, RECORDED UNDER RECORDING NUMBER 8502039001 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.

HORIZONTAL DATUM

(CITY OF BELLEVUE DATUM NAD83(NSR2007) - WASHINGTON NORTH ZONE)

CITY OF BELLEVUE HORIZONTAL STATION #1764
PK NAIL W/ COB DISK #1764

N=223459.76'
E=1300556.21'

CITY OF BELLEVUE HORIZONTAL STATION #2358.
FOUND 5"X5" CONCRETE MON W/3" DIA CITY OF BELLEVUE BRASS CAP W/PUNCH MK IN CASE;

N=222424.72'
E=1301136.63'

BEARING MERIDIAN

(CITY OF BELLEVUE DATUM NAD83(NSR2007) - WASHINGTON NORTH ZONE)

A BEARING OF S29°16'57"E BETWEEN COB HORIZONTAL STATION #1764 AND COB HORIZONTAL STATION #2358.

VERTICAL DATUM

CITY OF BELLEVUE BENCH MARK NO. 265
(NAVD 88) VISITED 05/17/2011

FOUND 5"X5" CONCRETE MON W/3" DIA CITY OF BELLEVUE BRASS CAP W/PUNCH MK IN CASE; TOP MON TO TOP RIM CASE 0.54 FEET, LOCATED INTERSECTION 97TH PL SE & 97TH AVE SE (NORTHERLY OF 2 MONS)

ELEVATION = 232.88'

METHOD OF SURVEY

INSTRUMENTATION FOR THIS SURVEY WAS A LEICA ELECTRONIC DISTANCE MEASURING UNIT. PROCEDURES USED IN THIS SURVEY WERE DIRECT AND REVERSE ANGLES, NO CORRECTION NECESSARY. MEETS KING COUNTY AND STATE STANDARDS SET BY WAC 332-130-090.

SURVEYOR'S NOTES

1) THE TOPOGRAPHIC SURVEY SHOWN HEREON WAS PERFORMED IN MAY 2011. THE FIELD DATA WAS COLLECTED AND RECORDED ON MAGNETIC MEDIA THROUGH AN ELECTRONIC THEODOLITE. THE DATA FILE IS ARCHIVED ON DISC OR CD. WRITTEN FIELD NOTES MAY NOT EXIST. CONTOURS ARE SHOWN FOR CONVIENENCE ONLY. DESIGN SHOULD RELY ON SPOT ELEVATIONS.

2) SUBJECT PROPERTY TAX PARCEL NO. 562730-0180.

3) SUBJECT PROPERTY UPLAND AREA PER THIS SURVEY IS 22,776 SQ.FT.±.

4) EASEMENTS SHOWN ARE PER SHORT PLAT ONLY. A TITLE REPORT WAS NOT FURNISHED AND THEREFORE OTHER EASEMENTS IF ANY, ARE NOT SHOWN ON THIS MAP.

5) THE BURIED SANITARY SEWER INFO SHOWN ON THIS MAP IS AN APPROX. LOCATION ONLY PER SANITARY SEWER CARD NO. LC 163, UPON CONSTRUCTION, IF ANY, PLEASE CONTACT A UTILITY UNDERGROUND LOCATION SERVICE.

6) THE TOP OF SLOPE SHOWN ON THIS SURVEY IS THE FIELD CREWS INTERPRETATION OF THE TOP OF SLOPE. THIS DOES NOT REPRESENT THE LIMITS OF A "40%" SLOPE AREA.

LEGEND

- FOUND MONUMENT AS NOTED
- FOUND IRON PIPE AS NOTED
- FOUND NAIL & WASHER AS NOTED
- FOUND REBAR & CAP AS NOTED
- CATCH BASIN
- X SPOT ELEVATION
- ELECTRIC TRANSFORMER ON CONC PAD
- WATER METER
- PILING
- GREEN SEWER STAKE
- SIDE SEWER CLEAN OUT
- FINISHED FLOOR ELEVATION
- ELECTRIC METER
- X SPOT ELEVATION

CONC CONCRETE
SP BELLEVUE SHORT PLAT 81-24R
R-O-W RIGHT-OF-WAY
( ) RECORD AS NOTED

- S SEWER LINE
- E POWER & COMMUNICATION SERVICE
- BUILDING LINE
- SLOPE AS NOTED
- EAVES
- BUILDING OVERHANG
- CHAIN LINK FENCE
- WOOD FENCE

ASPHALT SURFACE
RET. WALL
CONC SURFACE
STAIRS
DECK / DOCK

TREE DRIP LINE

- DECIDUOUS TREE (NOT SHOWN TO SCALE) TRUNK DIA SHOWN IN INCHES.
- PINE TREE (NOT SHOWN TO SCALE) TRUNK DIA SHOWN IN INCHES.
- MAPLE TREE (NOT SHOWN TO SCALE) TRUNK DIA SHOWN IN INCHES.
- HOLLY TREE (NOT SHOWN TO SCALE) TRUNK DIA SHOWN IN INCHES.
- FIR TREE (NOT SHOWN TO SCALE) TRUNK DIA SHOWN IN INCHES.
- BIRCH TREE (NOT SHOWN TO SCALE) TRUNK DIA SHOWN IN INCHES.

TOPOGRAPHIC & BOUNDARY SURVEY
SW 1/4 OF THE SE 1/4 OF SEC. 31, TWP. 25N., RGE. 5E., W.M.
CITY OF BELLEVUE, KING COUNTY, WA.

WANG RESIDENCE
701 SHORELAND DR SE
BELLEVUE, WA 98004

measure success

GeoDimensions
GeoDimensions, Inc., 10801 Main Street, Suite 102, Bellevue, WA 98004
phone 425.454.0494 e-mail: info@geodimensions.net
www.geodimensions.net

JOB NUMBER:	11211
DATE:	05/20/2011
DRAFTED BY:	J.G-M.
CHECKED BY:	E.J.G.
SCALE:	1" = 10'
REVISION HISTORY	
DATE:	05/23/2011
DATE:	05/26/2011
DATE:	06/29/2011
SHEET NUMBER	
1 OF 1	

Site Plan General Notes

1. BACKGROUND SURVEY PROVIDED BY GEODIMENSIONS DATED 06-29-2011.
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.

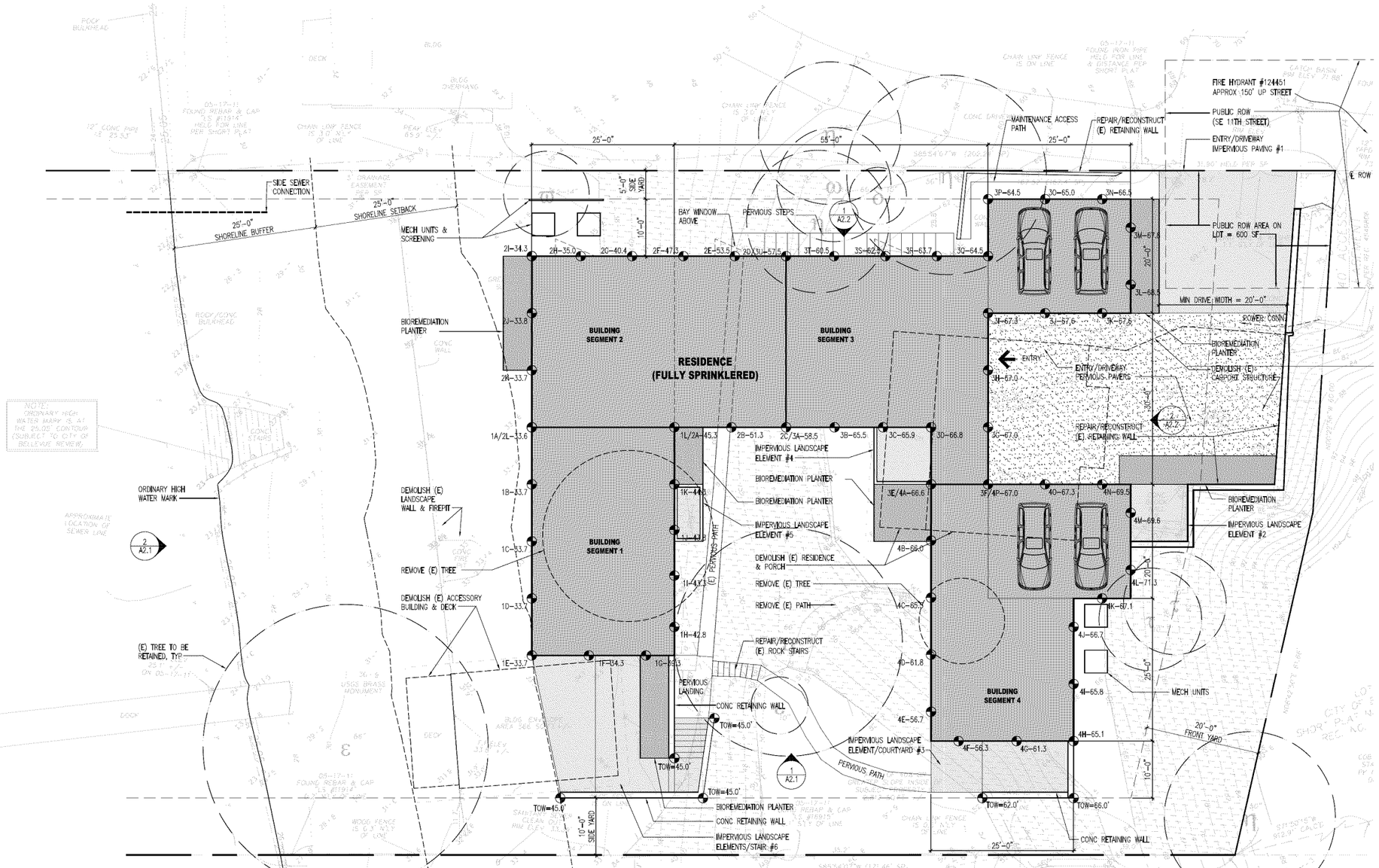
Drawing Legend

- PROPOSED RESIDENCE & GARAGE
- IMPERVIOUS SURFACE
- BIOREMEDIATION PLANTER
- PERVIOUS PAVERS
- SPOT ELEVATION

PROJECT NORTH

GRAPHIC SCALE 1"=10'

0 10' 20' 30'



Average Elevation Calculations

SEGMENT 1		SEGMENT 2		SEGMENT 3		SEGMENT 4	
1A	33.6	2A	45.3	3A	58.5	4A	66.6
1B	33.7	2B	51.3	3B	65.5	4B	66
1C	33.7	2C	58.5	3C	65.9	4C	65.5
1D	33.7	2D	57.5	3D	66.8	4D	61.8
1E	33.7	2E	53.5	3E	66.6	4E	56.7
1F	34.3	2F	47.3	3F	67	4F	56.3
1G	39.3	2G	40.4	3G	67	4G	61.3
1H	42.8	2H	35	3H	67	4H	65.1
1I	43.3	2I	34.3	3I	67.3	4I	65.8
1J	43.8	2J	33.8	3J	67.6	4J	66.7
1K	44.3	2K	33.7	3K	67.6	4K	67.1
1L	45.3	2L	33.6	3L	68.5	4L	71.3
				3M	67.8	4M	69.6
				3N	66.5	4N	69.5
				3O	65	4O	67.3
				3P	64.5	4P	67
				3Q	64.5		
				3R	63.7		
				3S	62.5		
				3T	60.5		
				3U	57.5		
	38.5		43.7		65.1		65.2

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. PROPOSAL ALSO INCLUDES PERVIOUS PAVEMENT AT DRIVEWAY ENTRY COURTYARD.

Lot Coverage Calculation
SITE AREA = 22,890 SF
STEEP SLOPE CA AREA = 6,815 SF
PUBLIC ROW AREA = 600 SF
SITE AREA FOR LOT COV'G CALC = 22,890-(6,815+600)=15,475 SF
MAX ALLOW LOT COVERAGE = 35%x15,475 = 5,416 SF
AREA OF ACTUAL LOT COV'G = 5,325 SF (OK)

Impervious Surface Calculation
MAX ALLOW IMPERV. SURF. = 50%x15,475 = 7,738 SF
RESIDENCE FOOTPRINT = 5,325 SF
IMPERVIOUS AREA #1 = 580 SF
IMPERVIOUS AREA #2 = 100 SF
IMPERVIOUS AREA #3 = 215 SF
IMPERVIOUS AREA #4 = 100 SF
IMPERVIOUS AREA #5 = 50 SF
IMPERVIOUS AREA #6 = 500 SF
TOTAL IMPERVIOUS AREA = 6,870 SF (OK)

Floor Area Ration (FAR) Calculation
MAX FAR = 50%x22,890 = 11,450 SF
GARAGE AREA = 1,000 SF
PROPOSED 4TH FLOOR AREA = 1,990 SF
PROPOSED 3RD FLOOR AREA = 3,355 SF
PROPOSED 2ND FLOOR AREA = 2,880 SF
PROPOSED 1ST FLOOR AREA = 1,820 SF
TOTAL PROPOSED FLOOR AREA =11,045 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

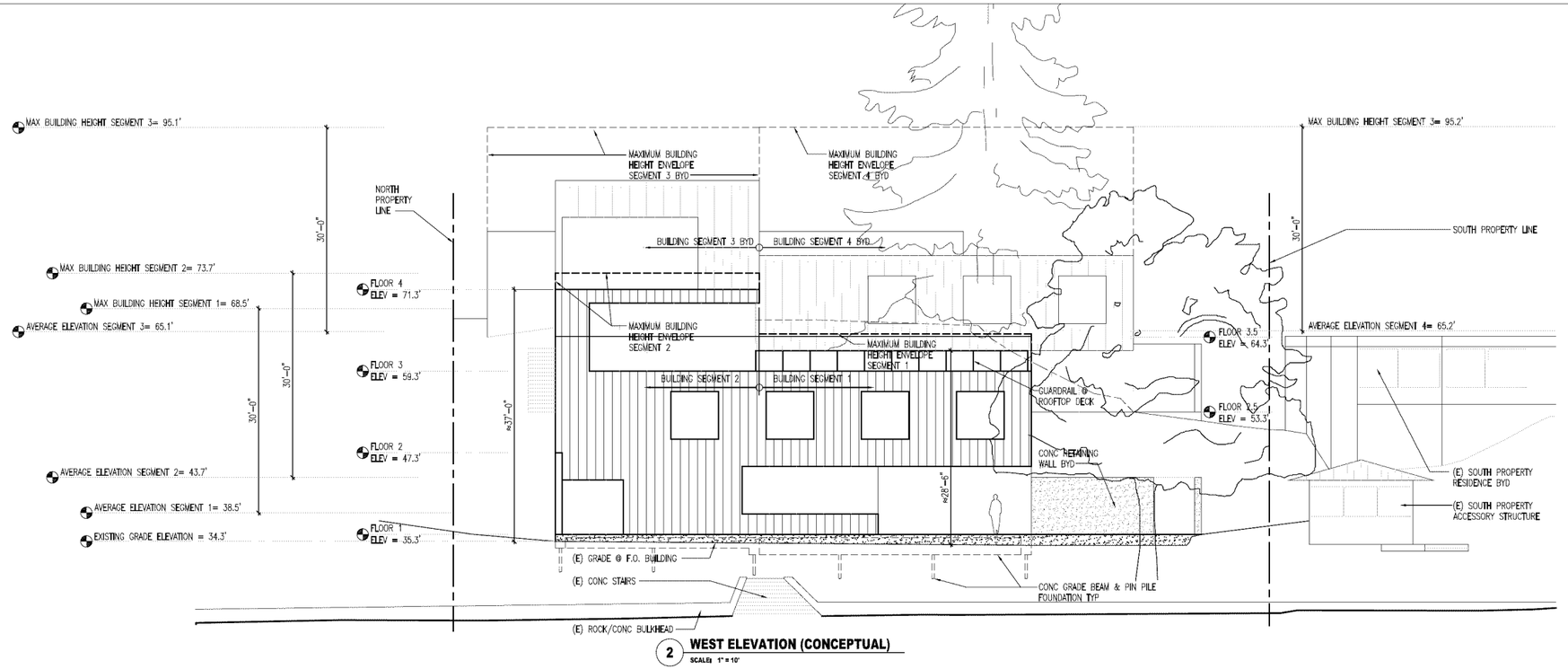
Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

PRE-DESIGN DOCUMENTS

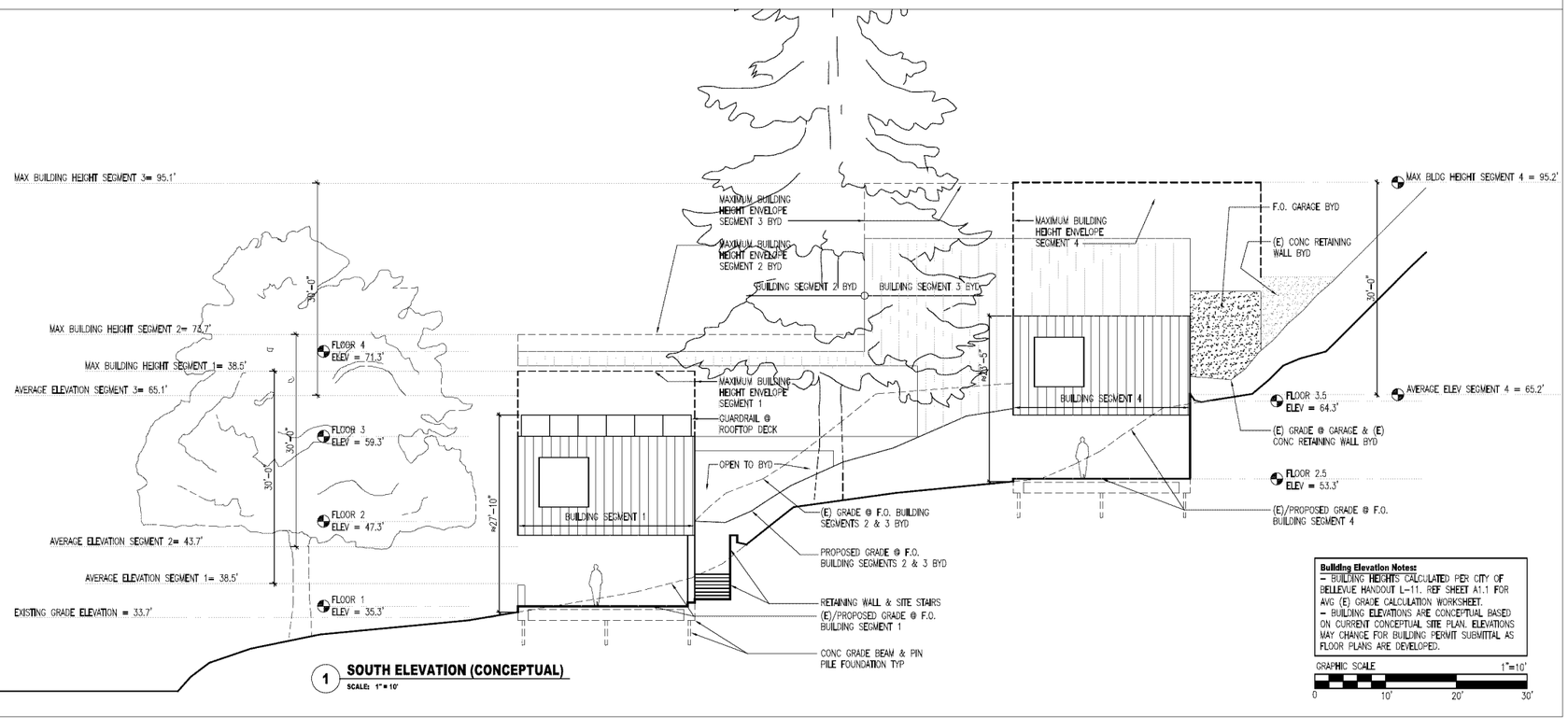
05.17.2011	DRAFT TO WATERSHED
05.26.2011	MEETING W/ JESSICA
06.06.2011	MEETING W/ LANDSCAPE
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)

ARCHITECTURAL
SITE PLAN

A1.1



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



1 **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
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06.30.2011	CHECK SET
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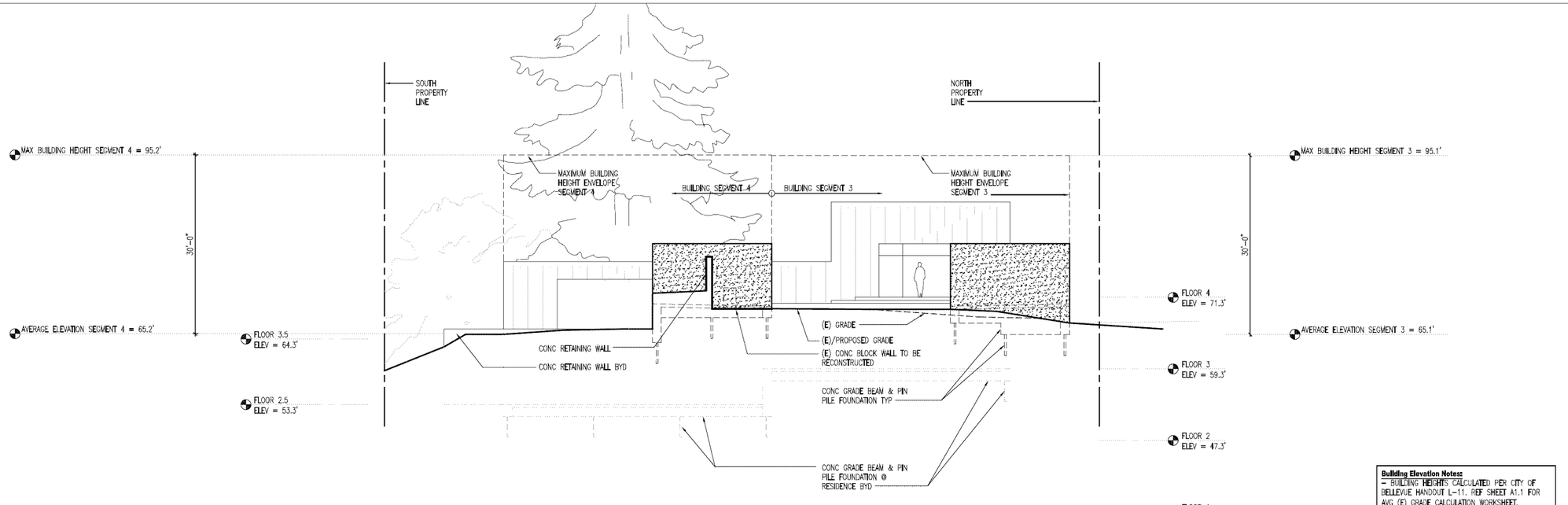
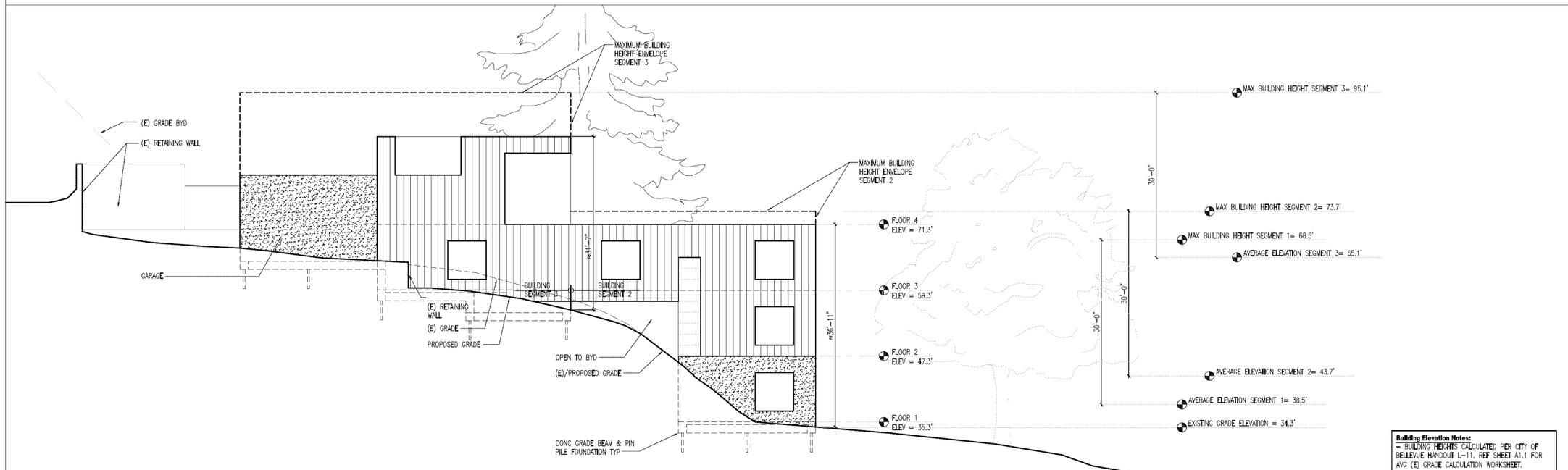
07.18.2011	PERMIT INTAKE (CALU)

ARCHITECTURAL
BUILDING ELEVATIONS

A2.1



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



1 NORTH 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:
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Seattle, WA 98104
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Environmental:
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Contact: Kenny Booth
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PRE-DESIGN DOCUMENTS

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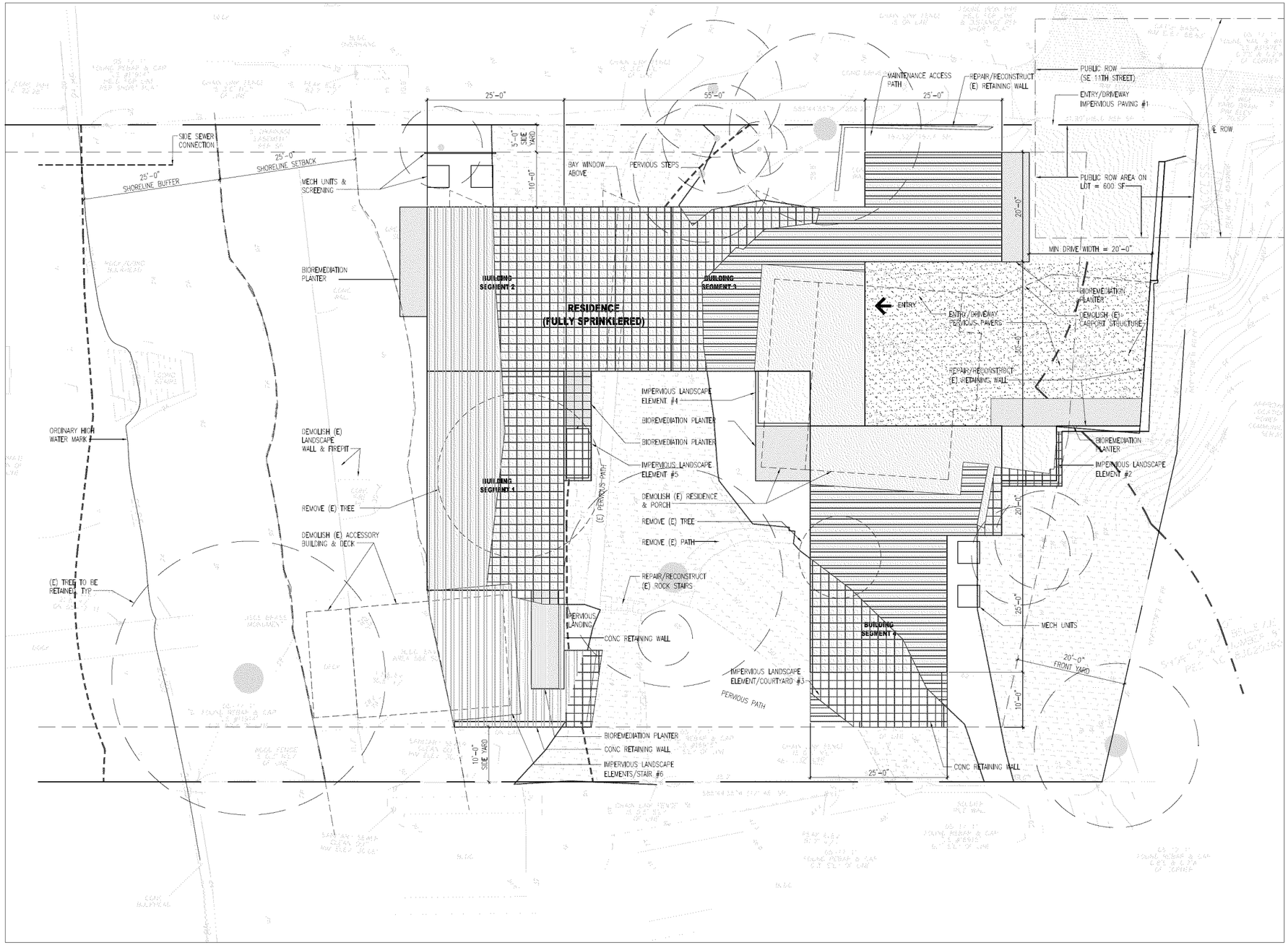
06.10.2011	REVISED TO WATERSHED
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)

ARCHITECTURAL
BUILDING ELEVATIONS

A2.2



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	
BIOREMEDIATION PLANTERS	

IMPACT LEGEND

NEW STRUCTURE AND/OR IMPERVIOUS SURFACE IN STEEP SLOPE	2,392 SF
NEW STRUCTURE AND/OR IMPERVIOUS SURFACE IN 50'-0" TOP OF SLOPE BUFFER	1,632 SF
NEW STRUCTURE AND/OR IMPERVIOUS SURFACE IN 75'-0" TOE OF SLOPE SETBACK	1,467 SF
TOTAL NET NEW IMPACT	5,491 SF

SHEET INDEX

STEEP SLOPE & BUFFER, IMPACTS LAYOUT

0 10' 20' 40'

HUTCHISON & MAUL LLC

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Bellevue WA

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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
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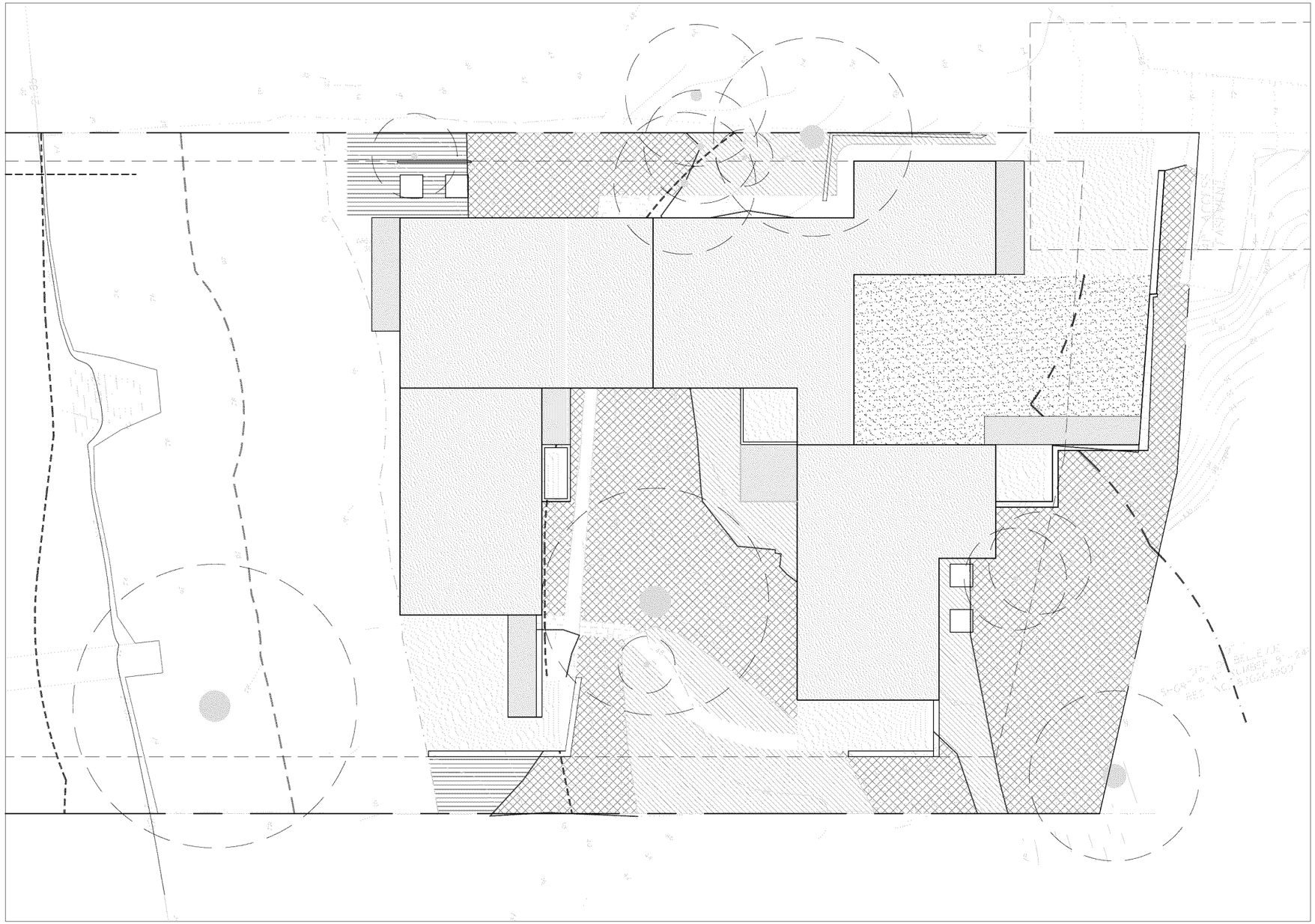
06.30.2011	CHECK SET
07.07.2011	MEETING W/ OWNER
07.18.2011	PERMIT INTAKE (CALU)

STEEP SLOPE & BUFFER, IMPACTS LAYOUT

EV1.1



MITIGATION LEGEND

	PROPOSED STEEP SLOPE MITIGATION AREA (REMOVE INVASIVES & INSTALL NATIVE PLANTS)	4,180 SF
	PROPOSED STEEP SLOPE BUFFER MITIGATION AREA (REMOVE INVASIVES & INSTALL NATIVE PLANTS)	1,686 SF
	PROPOSED STEEP SLOPE SETBACK MITIGATION AREA (REMOVE INVASIVES & INSTALL NATIVE PLANTS)	434 SF
	TOTAL MITIGATION (1.15 : 1)	6,300 SF
	BIOREMEDIATION PLANTERS	

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
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Landscape Architect:
Alchemie
75 South Main Street, #313
Seattle, WA 98104
Contact: Bruce Hinckley
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Environmental:
The Watershed Company
750 6th St S.
Kirkland, WA 98033
Contact: Kenny Booth
P: 425.822.5242

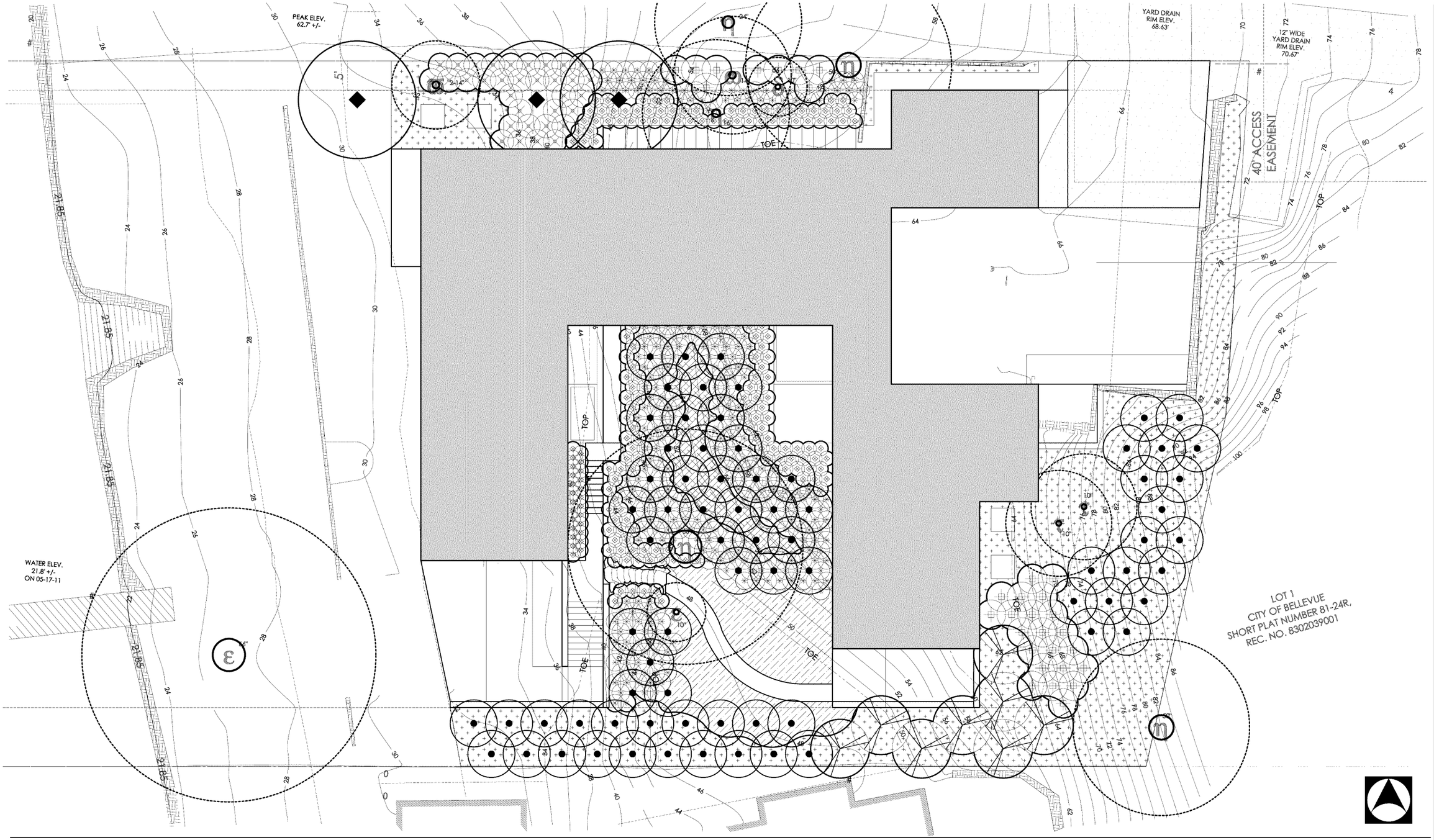
THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242 f 425.827.8136
www.watershedco.com
Science & Design

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)

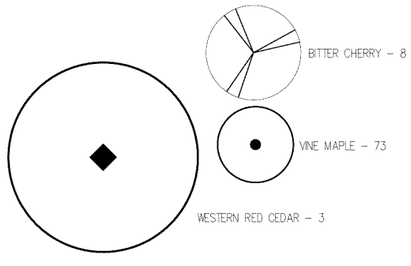
MITIGATION LAYOUT

EV1.2



WANG/CHEN MITIGATION PLANT SCHEDULE

	QUANTITY	SCIENTIFIC NAME	COMMON NAME	SPACING	SIZE	CONDITION
TREES	73	ACER CIRCINATUM	VINE MAPLE	6' O.C.	5 GALLON	CONTAINER
	8	PRUNUS EMARGINATA	BITTER CHERRY	8' O.C.	5 GALLON	CONTAINER
	3	THUJA PLICATA	WESTERN RED CEDAR	14' O.C.	10 GALLON	CONTAINER
SHRUBS	31	VACINNIUM OVATUM	EVERGREEN HUCKLEBERRY	42" O.C.	2 GALLON	CONTAINER
	33	VIBURNUM EDULE	SQUASHBERRY	12" O.C.	2 GALLON	CONTAINER
PERENNIALS	118	ATHERIUM FELIX FEMINA	LADY FERN	24" O.C.	1 GALLON	CONTAINER
	298	POLYSTICHUM MUNITUM	SWORD FERN	24" O.C.	1 GALLON	CONTAINER
GROUND COVERS	156	ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	24" O.C.	2"-3" POTS	CONTAINER
	454	GAUTHERIA SHALLON	SALAL	30" O.C.	1 GALLON	CONTAINER
	58	MAIANTHEMUM RACEMOSUM	FALSE SOLOMON'S SEAL	24" O.C.	2"-3" POTS	CONTAINER



HUCKLEBERRY – 31
SQUASHBERRY – 33
SWORD FERN – 298
LADY FERN – 118
SALAL – 2,842 SQ FT
FALSE SOLOMON'S SEAL – 233 SQ FT
KINNIKINNICK – 624 SQ FT

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

0 4′ 8′ 16′ 32′ 64′

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

PRE-DESIGN DOCUMENTS

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06.10.2011 REVISED TO WATERSHED
06.30.2011 CHECK SET
07.07.2011 MEETING W/ OWNER
07.18.2011 PERMIT INTAKE (CALU)

MITIGATION PLANTING PLAN

EV1.3

VEGETATION MANAGEMENT OBJECTIVES

THE MANAGEMENT OBJECTIVE IS TO REPLACE FUNCTIONS AND VALUES PROVIDED BY REMOVED NATIVE TREES. A TOTAL OF TWO SIGNIFICANT TREES ARE PROPOSED FOR REMOVAL FROM THE SITE. THE TREES ARE A MATURE DOUGLAS-FIR AND A PACIFIC DOGWOOD. AS MITIGATION FOR TREE REMOVAL, A TOTAL OF THREE WESTERN RED CEDAR TREES AND 81 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 SHRUB AND GROUNDCOVER SPECIES AS MITIGATION FOR STEEP SLOPE CRITICAL AREA, BUFFER, AND SETBACK IMPACTS ASSOCIATED WITH CONSTRUCTION OF THE NEW RESIDENCE.

SHORT-TERM OBJECTIVES

- 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.

LONG-TERM OBJECTIVES

ESTABLISH NATIVE TREES ALONG THE STEEP SLOPE 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:

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.

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.

YEARS TWO AND THREE

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 THREE. 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

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 ON-SITE STEEP SLOPE CRITICAL AREA AND BUFFER. 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 PLANTING OF 6,300 SQUARE FEET OF NATIVE TREES, SHRUBS AND GROUNDCOVER WITHIN THE STEEP SLOPE CRITICAL AREA, BUFFER, AND SETBACK. THE RESTORATION PLAN CAN BE FOUND IN APPENDIX A. SPECIES INCLUDE WESTERN RED CEDAR, BITTER CHERRY, VINE MAPLE, EVERGREEN HUCKLEBERRY, SQUASHBERRY, SWORD FERN, LADY FERN, SALAL, FALSE SOLOMON'S SEAL, AND KINNIKINNICK.

MAINTENANCE AND MONITORING PLAN

APPENDIX A INCLUDES DETAILS OF THE 3-YEAR MAINTENANCE AND MONITORING PLAN, ALSO DETAILED BELOW.

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 3, 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.
3) SPECIES DIVERSITY: ESTABLISH AT LEAST TWO NATIVE SHRUB SPECIES BY YEAR 3. NATIVE VOLUNTEER SPECIES MAY COUNT TOWARDS THIS STANDARD. ESTABLISH AT LEAST THREE WESTERN RED CEDAR TREES AND AT LEAST TEN 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.).

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 THREE 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 AND YEAR-3 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.

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.

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** (84 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.

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 AND 3 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: 84 CUBIC YARDS.

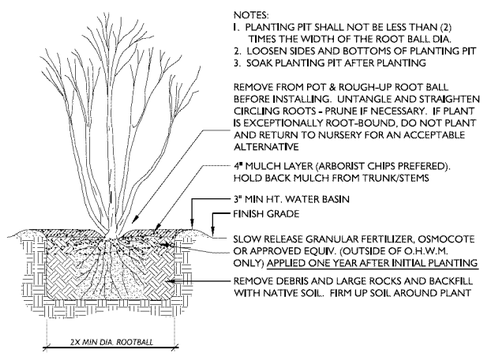
CONTINGENCIES

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.

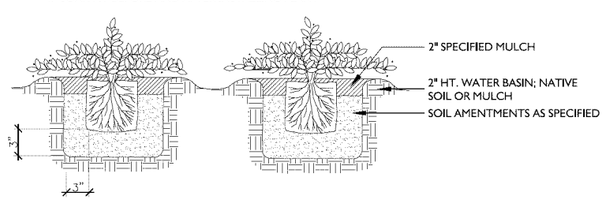
MAINTENANCE

THE SITE WILL BE MAINTAINED IN ACCORDANCE WITH THE FOLLOWING INSTRUCTIONS FOR THREE 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 3.
   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 3.
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

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Architect:
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MITIGATION NOTES

EV1.4